

**KWAME NKRUMAH UNIVERSITY OF SCIENCE AND
TECHNOLOGY KUMASI**

**“Adversarial Relationships in Design Service Delivery in Ghana: Effects
on Supply Chains Information Flow and a Business Relationship
Management Proposals for Improvement”**

**BY
NANYI KOBINA ORGEN**

NOVEMBER, 2015

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BY

NANYI KOBINA ORGEN (BSc, MSc)

THIS THESIS IS SUBMITTED TO THE DEPARTMENT OF BUILDING TECHNOLOGY,
COLLEGE OF ART AND BUILT ENVIRONMENT IN PARTIAL FULFILLMENT OF THE
REQUIREMENT FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

NOVEMBER, 2015

DECLARATION

I, hereby declare that this submission is my own work towards the award of a PhD to the best of my knowledge. This work contains neither materials previously published by another person nor materials which has been accepted for the award of any other degrees of the university except where due acknowledgement has been made.

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ABSTRACT

The construction industry in developing countries like Ghana faces a number of Design Service Delivery (DSD) challenges. These challenges include non-collaborative activities and adversarial business relationships among various construction actor groups and clients. Such challenges mostly end in discords, disputes and conflicts (DDC). Subsequently, while the discords, disputes and conflicts are pervasive and not in doubt, the impact is not known, making it difficult to appreciate the severity of the problem and also to propose appropriate measures for addressing the problem. In view of these challenges this study aims at developing a framework for the empirical understanding of the nature of adversarial business relationships and how they impact on the supply chains of information flow (SCIfs) for DSD activities in Ghana and also to put together the attitudinal behaviours that can be proposed for improvement.

An extensive review of relevant literature helped to identify concepts, issues, frameworks and models essential for isolating both collaborative and non-collaborative activities in business relationships. Using relevant theories such as the action oriented system theory, thinking and rethinking, and the inclusion of pertinent cultural issues like individualism and collectivism, a theoretical framework has been developed. Non-probability sampling methods such as purposive, non-proportional quota sampling were used to select samples. Further, the samples have been drawn through eligibility selection criteria. The criteria enabled the selection of forty-five DSD participants (interviewees) suitable for interview. The interviewees included Chief Executives and Senior DSD actors of both public and private companies with over 10 years experiences in DSD activities in Ghana and the West African sub-region.

Qualitative data were collected electronically with automatic voice recording, written summaries from the participants and recorded observations were carefully analysed using conventional, directed and summative content analyses techniques, supported by Pareto analysis.

The research contributes to knowledge by revealing the nature of the adversarial business relationships in three broad categories: no collaboration, less collaboration and close-to-average collaboration relationships among the DSD actor groups. Again, the study shows that the nature of SCIFs is as disjointed (36% frequency); fragmented and uncoordinated (16% each). These three attributes account for a total of 68% frequency. This describes the serious challenges that the nature of adversarial relationships impose on the current SCIFs developed and constituted especially in Ghana.

The attributes used to describe the construction business relationships predominantly confirm the literature claims of non-collaborative business relationships, which cause improper functioning of the processes and procedures used in developing the SCIFs. The malfunctioning processes and procedures reveal 'unsystematic and insufficient details'; 'inconsistent or use of outmoded design, interpretation and transfer methods. Additionally, the processes and procedures show 'sub-standards with gaps or no standard for supply chains' and 'the use of weak incomplete supply chain'. The five attributes outlined also account for a total of 68% inefficiencies which cause malfunctioning of the processes and procedures used in developing and constituting SCIFs in Ghana.

Based on these identified challenges as pre-conditions, 23 attitudinal behavioural attributes and 15 technical attributes of knowledge required to transform the situation have been identified from the study. Additionally, assessment and improvement frameworks for quality improvement

of the DSD activities based on the pre-conditions and multi-theories among other concepts, attitudinal behavioural attributes and technical attributes of knowledge have been developed. This could be used for collaborative, harmonious and cordial business relationship in developing and constituting the SCIFs for hygienic, cost and time effectiveness in infrastructural development.

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DEDICATION

This work is dedicated to the Almighty God the giver of life, for this great chance in life.

*Also, to my dear brother and his wife, the Very Rev'd & Mrs. Joshua Kwaku Aboagye Orgen
and their three children: Nellie A. Orgen, Papa K. Baah Orgen and Nana K. Aboagye Orgen
for their wonderful support, assistance and encouragement
during the period of the research.*

ACKNOWLEDGEMENT

This is to express my profound gratitude to the Almighty God, the Father for his protection and sustenance throughout the research study.

My most sincere thanks go to my thesis supervisors Dr Divine K. Ahadzie, Senior Research Fellow of the Centre for Settlements Studies and Professor Joshua Ayarkwa former Head of Department of Building Technology for their professional guidance and invaluable contributions to the research. I am also grateful to all the lecturers in the Department of Building Technology, KNUST, for various contributions and encouragement.

Again, I wish to thank my colleagues Messrs. Safo Mensah, Collins Ameyaw, Godfred Fobiri, Kofi Owusu and all other lecturers of the Department of Building Technology, Kumasi Polytechnic for their constant motivation and financial support throughout the period of the study.

Finally, I owe a debt of gratitude to the contractors Messrs. Mak Project and C.A. Ventures for the financial support given for the publications of research papers from this study.

CHAPTER ONE

INTRODUCTION

1.1 Chapter Outline

This chapter offers a background of brief global concerns and contributions made by other researchers on the topic under study. These global concerns and contributions show the attention and importance attached to the topic in construction project delivery. Further, essential definitions and explanation of terminologies are covered to provide clearer understanding and direct the focus of the study. The problem statement, aim, key research questions, objectives and research methods adopted in the study are presented. The significance of the research, the scope of study and contribution to knowledge made are also covered to show the extent and relevance of the study.

1.2 Background to the Research

A lot of discussions and debates concerning the harsh or adversarial business relationship situations in the construction industry in general have been raised for decades. The challenges seem to be steadily raging on in developing economies which are not new in the Ghanaian construction industry, GCI (Laryea, 2010; Du Plessis, 2007; Anvuur et al., 2006; Adebayo, 2000). A close observation of the industry shows that a study of design service delivery (DSD) and its supply chain of activities as major aspects of the construction industry can have an influence on all other construction supply chains and networks (Pryke, 2009).

1.2.1 Global Situation and Focus of the Research Topic

There is sufficient evidence in literature that suggests the construction industry is fragmented, accounting for its poor performance over the years (Ankrah et al., 2010; Pryke,

2009; Bresnen, 2007; Baiden et al. 2006; Naoum, 2003; Bresnen and Marshall, 2002; Egan, 1998; Latham, 1994). Besides, the industry is recognized as being full of mistrust, self-interest and competitive behaviour. Further, the lack of effective communication has resulted in non-collaborative and adversarial business relationship (Pryke, 2009; Chan et al. 2004; Latham, 1994). Therefore, the quest of literature to transform the varying negative characteristics of the construction business relationship (Cheung and Rowlinson, 2005) as seen in many developing countries like Ghana, is not in doubt. However, while the search to transform the varying negative characteristics are on-going there is little empirical understanding of the specific characteristics of these adversarial business relationship (Tazelaar and Snijders, 2010). The nature of their impact on DSD activities especially the SCIFs in the context of emerging economies is also a problem (Tazelaar and Snijders, 2010). The desire to change the situation call for a search for a proactive business relationship management improvement approach, an approach which studies why there are non-collaborative working and adversarial business relationship in DSD activities. An integral approach for the development of an improvement proposals to improve DSD activities is required. Additionally, there are research gaps in construction supply chain relationship (SCR) and relationship management (RM) concepts, processes and models, which demand contributions that could improve the DSD activities.

1.2.2 Contributions by Other Researchers

It is very clear in relevant construction literature that non-collaborative working and adversarial business relationship has existed in the construction industry for many years (Meng, 2010; Pryke, 2009; Bresnen, 2007). The situation is exacerbated by mistrust and an inward looking attitude by construction firms, organisations and some individual practitioners who play similar roles in different project delivery (Ankrah et al., 2010; Pryke,

2009; Chan et al. 2004). Apart from these, there is also the lack of commitment for the success of others and full pursuance of individual professional agenda. Inevitably, these account for the poor performance of the construction industry (Pryke, 2009; Bresnen, 2007; Naoum, 2003; Bresnen and Marshall, 2002; Egan, 1998; Latham, 1994). Many researchers realize how bad the state of non-collaboration and adversarial business relationship is and their effects on the performance of the construction industry. Therefore, they have made legitimate strides to produce some interventional measures over the years to correct the situation. The various interventions are to break down the barriers and cycles of the harsh or adversarial business relationship culture. Many of such interventions include relationship management concepts development, partnering and alliancing (Smyth and Edkins, 2007; Cheung and Rowlinson, 2004).

The construction supply chain management principles have also engaged the attention of a number of researchers who seek to find ways of collaboration and improvement in construction business relationship (Meng, 2010; Pryke, 2009; Yeo and Ning, 2002). Also, team integration has attracted similar efforts to break down barriers to ensure effective construction collaborative working (Smyth, and Fitch, 2009; Pryke, 2009; Baiden et al., 2006). However, despite the observation of Baiden et al. (2006) that none of the project teams as per the case study projects covered by their research is completely fragmented, there is current evidence to the contrary. Additionally, this observation was based on a certain project size, professionals and in a cultural setting which may differ from the situation in other construction activities of other economies. Moreover, Pryke (2009) compares the current state of the construction industry to Steven's (1989) model of transition of firms. The conclusion drawn is that a vast majority of the industry falls in the baseline category, the traditional fragmented state. This is a manifestation that the non-

collaborative and adversarial business relationship in construction business culture has not seen much change. Meng (2010), in an effort to deal with the adversarial business relationships, distinguishes four clear levels of construction culture and business relationships. These concern the categorization of business relationship maturity periods or levels including traditional, transitional, short-term and long-term periods. However, the gap between short-term and long-term maturity periods is a long one which require bridging for gradual and smooth maturity development (Meng, 2010; Pryke, 2009).

1.3 The Ghanaian Situation

In an effort to achieve a good business situation, the Ghana Public Procurement Act 2003 (Act 663) was enacted to reform procurement of works, goods, and consultancy services and to improve investor business relationships in Ghana. It was also to correct inefficiencies in the public system. However, a probe revealed that the Act could not achieve any effective cultural change in procurement system to realize value for money. The failure of the Act to achieve value for money is partly due to disputes, waste, corruption, non-collaborative working and adversarial business relationship associated with, such as the traditional procurement practices which the Act 663 sought to correct (Ameyaw et al., 2013; Anvuur et al., 2006). Besides, there are persistent adversarial contracting relationships, which have other serious implications including quality of construction workforce and business relationship (Anvuur et al., 2006). The argument is carried out further that there is the need to allow the adaptation of other methods, frameworks and models with guidelines, if effective value for money is to be realised (Anvuur et al., 2006). Similarly, it is on record that contractors in Ghana face many difficulties, which create harsh business relationships that normally call for arbitration and mediation. Worst of all, they also get very late payment for work done without interest on delayed payment (Laryea, 2010). As a way of improving

collaborative working and business relationship, it is recommended that there should be change through the adoption of the right strategy, proper development of professionalism and seeking mergers with other firms of similar organizational values (Laryea, 2010).

From the desk study, non-collaborative and adversarial business relationship in construction activities in developing countries including Ghana, seem to be persistent while real collaborative cultural change in the industry is still not in sight (Laryea, 2010; Du Plessis, 2007; Adebayo, 2000). The various interventions mentioned seem not to have engendered the expected changes in the non-collaborative and adversarial business relationship for the improvement of DSD activities. Moreover, there are many unanswered issues that need to be investigated, such as the characteristics and impact of the adversarial business relationship culture and fragmentation in an emerging country like Ghana faced with a global search to improve project management principles for accelerated construction industry development. This situation is exacerbated by fiscal and monetary constraints and corruption (Ameyaw et al., 2013; Anvuur et al., 2006). It seems there is lack of knowledge of business relationship. No learning of relationships of the traditional procurement practices takes place among individuals, groups/organizations. The business relationship observed are mate rates type that can neither be sustained nor caused the required change (Cheung and Rowlinson, 2005).

The non-collaborative and adversarial business relationship persists (Yiu and Cheung, 2006), for there is no increase in knowledge to reduce or reverse the trend by sharing or exchanging learning experiences to improve DSD activities (Mensah, 2007). As shown in the above statement, increased knowledge implies not encountering the same problems over and over again and not reinventing solutions to problems (Ankrah et al., 2010; Mensah, 2007; Loo, 2003). The learning process must be made to include the practice of taking

feedback from executed projects (Anim, 2012). In support of this practice, Anim (2012) and Loo (2003) stress that taking feedback from projects and learning from experiences improve performance of a project. Therefore, there is the need to find out how to transform the adversarial business relationship culture through the change of ‘mind set’ (change in the usual way of thinking and showing different acceptable attitudinal behaviours towards an issue) in order to learn and share information (Anim, 2012; Ankrah et al., 2010; Loo, 2003). These concepts are for constant increase in knowledge to allow for improvement and continuous improvement of DSD activities in Ghana.

1.4 Definitions

The problem statement and contribution to knowledge are presented in 1.4 and 1.10. however, some important key words used in the study need to be defined.

1.4.1 Design Service Delivery (DSD)

In this study, design service delivery (DSD) activities cover the work of professionals (DSD practitioners) trained in Project Management, Architecture, Quantity Surveying, Services Engineering, Civil/Structural Engineering, Geotechnical Engineering, Geomatic Engineering and Planning, who develop and constitute the supply chains of information flow (chains of project documentations for construction works). It also includes the use of information flow (chain of project documentations) from initiation, planning, execution, control to the close of a project, where general contracting is inclusive (Alhassan, 2012; Walker and Lloyd-Walker, 2012; Hatmoko and Scott, 2010; Titus and Bröchner, 2005). DSD practitioners are professionals who are either in-house or external consultants working for clients. They also guide or offer advice in the selection of contractors for clients’ work. These are professionals who form part of clients’ organization and therefore need to develop an appropriate business relationship culture for the success and sustainable project delivery (Du

Plessisa, 2007; Cheung and Rowlinson, 2005). The professionals could be agents of principals (clients) who run agencies of DSD work which produce supply chains of information flow (chains of project documentations) for both tendering and selected contractors for construction works and for projects (Hatmoko and Scott, 2010).

The DSD practitioners provide the supply chain of information flow (SCIf) which is different from other construction business supply chains such as the supply chains of materials, labour, plant and equipment including temporary work (Hatmoko and Scott, 2010). The contractors who receive the SCIfs- chains of project documentations for the project delivery process are important and their inputs cannot be overlooked in the SCIfs processes (Alhassan, 2012; Walker and Lloyd-Walker, 2012).

1.4.2 Supply Chain of Information Flow (SCIf) - Chain of Project Documentations and its Importance in the Study.

The supply chain of information flow (SCIf) consists of a chain of project documentations such as drawings, specifications, contract conditions, explanations and clarifications which form the basis of all activities in any project (Edum-Fotwe et al., 2001). The DSD work of providing SCIf-chain of project documentation is for decision-making, which affects planning, executing, controlling and closing of projects. Thus, it is obvious that DSD practitioners are responsible for the overall conduct of project delivery (Edum-Fotwe et al., 2001). It is also, most important to understand that the supply chain members (DSD practitioners) need to share information with one another through the chain of project documentation during project delivery. The information sharing among members is seen as key to effective supply chain management of all projects (Hatmoko and Scott, 2010; Titus and Bröchner, 2005). It is also worth noting that delay in constituting the SCIf might slow

down decision-making of all project teams. That situation is identified as the main cause of delays in project deliveries (Chan and Kumaraswamy, 1997). Also, these issues may be potential sources of discords, disputes and conflicts (DDC) leading to further delay, and destruction of all project objectives (Ramus and Birchall, 2006). It can as well result in a cycle of business relationship failure and abandonment of projects (Ramus and Birchall, 2006; Humphries and Wilding, 2004).

1.4.3 Relationship

Relationship is the patterns of interaction among people and the behaviours shown towards one another (Mullins, 2005). Again, according to Hornby (2008), relationship is the way two or more people or professionals act towards one another or deal with one another. A behaviour or a deed between or among groups that can lead to a good or a bad working environment (Cole and Kelly, 2011).

1.4.3.1 Business Relationship

Personal relationship is a form of meaningful friendship and intimate living or other significant intimate issues including relations by blood, adoption, marriage, or domestic partnership such as spouse, parent or child (Board of Regents Policy, 2012; Miller et al., 2009). This is invariably a kind of relationship that involves individual (personal) knowledge and emotional linkages (connections). It is never “just business.” The relationship can be direct or long-term highest acquaintance and friendship (Miller et al., 2009). It is a type of relationship that is not formal, but domestic and lacks acceptable features for this study. The study is focused on a collaborative business relationship which deals with formal rules and regulations to eliminate or reduce adversarial relationship for

development and to constitute SCIFs (Edum-Fotwe et al., 2001). The concentration is on the DSD actors collaboratively working together to improve DSD activities (Anim, 2012).

1.4.3.2 Industrial Relationship

This involves patterns of interaction and behaviours shown to one another that concern the relationships between the policies and practices of the organization and its members and the behaviour of the workforce or work groups (Mullins, 2005). Another aspect of industrial relationship concerns itself with public relations. Public relations deals with the business of internal (workforce within entity) and external (outside world) communication. Both are important for healthy relationships

1.4.3.3 Working Relationship

Working relationship is the kind of openness, cordial and harmonious business relationship that should exist and be maintained with all the parties that work together to ensure that the work is done efficiently to satisfy customers who receive the product or service (Texas Association of Professional Support Staff, 2012). It is a kind of business relationship that has special connections between or among actors, which are referred to as bonds that are important for how they are perceived by others in or out of the work. Also, a working relationship involves purpose-directed attitudes and behaviours where actors' bond exist, to seek for individual capacity to recognize, communicate, learn, teach, develop and transfer to the collective level (Hakansson and Snehota, 1995). It can as well influence the success or failure of the cycles of business relationship (business relationship success or failure cycles) depending on the strength or weakness of the actors' business relationship bonds; moreover, it concerns the image or communication, both inside and outside the organization (Nickson and Siddons, 2006; Hakansson and Snehota, 1995)

1.4.4 Partnering

Rowlinson and Cheung (2004) define partnering as a well-organized method which allows stream of work across contractual boundaries. Harries and McCaffer (2005) put forward the idea that the partnership arrangement also involves proven reliable track records in business savings in terms of time and cost. The main components involve mutual objectives, agreed problem resolution approaches and continuous search for measurable continuous improvement in time and cost savings as well as quality (Harries and McCaffer, 2005). Harries and McCaffer (2005) further observe that the partners in this arrangement settle for fair rewards among themselves. In another development, partnering is understood to mean a way of improving mechanisms and technologies useful to innovative construction projects causing less stressful environments and lowering transaction cost coming from uncertainty, competition and information asymmetry (Liu and Fellows, 2009)

1.4.5 Alliancing

In alliance, the parties form a cohesive entity which together bears project risks and rewards based on an agreed formula and commitment in terms of previous attitudinal behavioural working records (Harries and McCaffer, 2005). There are two forms of alliance: strategic and project alliancing. The common definition of the strategic alliancing is to develop long-term inter-organisational relationship which involves collaborative behaviour for specific purposes. On the other hand, project alliancing is agreed upon by the parties in specific projects and very often ends with the project period. It is a kind of arrangement which is legally binding on the parties (Rowlinson and Cheung, 2004)

1.4.6 Team Integration

Construction management team integration brings to the fore or involves collaborative working practices, methods and behaviours that promote the environment where information

is freely exchanged among the construction parties or entities. Further, integration in construction is considered as a way to improve project delivery team performance (Ibrahim et al., 2011; Baiden et al. 2006).

1.4.7 Procurement

According to Cole and Kelly (2011, p.417) procurement can simply be defined as “the act of getting possession of something from a supplier.” Further, Kirkham (2007) mentions that procurement concerns the processes and procedures which deal with the acquisition of an asset, for instance a building. Thus, additionally, construction procurement is generally seen as a way of designing, constructing and commissioning of new buildings (Kirkham, 2007). Also, Laryea et al. (2012) in support of this view observe that construction procurement is a strategic process which expresses how construction contracts are formed, managed and executed.

1.4.7.1 Traditional Procurement

It is a procurement type in which the employer generally accepts design work separated from construction activities. Consultants are appointed for design and cost control, and a contractor is selected to be responsible for the execution of the construction (Davis et al., 2006). Also, Turina et al. (2008) assert that the traditional procurement which separates the design and construction functions within the construction supply chain processes is primarily responsible for a general lack of consideration given to the necessary and vital collaborative working within the project phases. The obvious evidence in this procurement approach is the loss of propensity for improvement of construction functions which is deliberately separated from project planning and design (Davis et al., 2006). This kind of procurement is the most common method used in the Ghanaian construction industry (Anvuur et al., 2006). As in many construction economies where the practice is entrenched,

the environment created through this type of procurement is more of non-collaborative and harsh or adversarial business relationships, due to the separation of design from the construction causing divisions among the DSD actors (Laryea, 2010; Anvuur et al., 2006). These also affect the business relationship situation and environment in developing and constituting SCIfs (Hatmoko and Scott, 2010; Titus and Bröchner, 2005; Chan and Kumaraswamy, 1997).

1.4.7.2 Co-operative Procurement

This is a kind of procurement procedure that follows the conventional method where cooperation between contractor and client or consultant is allowed. The responsibility for the design and construction is kept separate such as negotiation, two-stage selective tendering etc. occur (Eriksson and Westerberg, 2011; Masterman, 1997). It is a kind of method of acquiring works which is not very common in Ghana but some clients use it when there are budget constraints. Moreover, contractor's selection is key to project delivery. The delivery environment and conditions are not different from harsh or adversarial business relationship (Laryea, 2010; Anvuur et al., 2006). The DSD actors engaged in the use of these procurement approaches seem to be non-collaborative and face challenging conditions among themselves that demand a change of mind set for mutual benefits (Cheung and Rowlinson, 2005).

1.4.8 Working Definitions for the Research

From the definitions of the various methods of working in co-operations such as partnering, alliancing and team integration in sections 1.4.4, 1.4.5 and 1.4.6, it can be argued that working cooperation and business relationship lack full concern for other actors' interest. This is realised in the argument of Harries and McCaffer (2005) that in partnering for

instance, the partners need proven reliability record with respect to time and cost savings. Besides, in alliancing arrangement previous full commitment in terms of attitudinal behavioural records are necessary. These two situations: proven track records of reliability with respect to time/ cost savings and full commitment in terms of attitudinal behavioural records may not be available to a number of other actors who are not part of such business relationship arrangements.

That apart, the cultural and social classes or ethnic groupings in developing countries like Ghana are other influencing factors that contribute to lack of full concern for actors' interest in such business relationship (Laryea, 2010; Pryke, 2009). These situations lead to non-collaborative working and unco-operative business relationship or adversarial behaviour happening among actors. The situation occurs where there are especially new actors or parties without previous proven business cost and time savings and quality records; contrary to the conditions mentioned in the work of Harries and McCaffer (2005). According to Rowlinson and Cheung (2004), for partnering the main components involve mutual objectives, agreed problem resolution approaches and continuous search for measurable improvement. In the partnering agreement, emphasis or references are not more on attitudinal behaviours of actors and concern for equitable benefit to the actors (Harries and McCaffer, 2005). This explanation of partnering is evident as in the statement that, it is a way of improving mechanisms and technologies (Liu and Fellows, 2009). Here, the main concern is clear and that is the advancement of mechanisms and technologies for work. Also, other aspects of the mechanisms and technologies look for how they can be useful to innovative construction projects, causing less stressful environment, and lowering transaction cost coming from uncertainty, competition and information asymmetry (Liu and Fellows, 2009). These inputs are not concerned with the attitudinal behavioural change or

change of ‘mind set’ of the actors towards equitable benefits and the development of business relationship among all actors to create a free exchange of information flow for effective SCIFs towards improvement of DSD activities. In alliance cooperation (section 1.4.5), the parties form a cohesive entity which together bears project risks and rewards based on an agreed formula. Here, there is rigidity in the agreement, especially with project alliance (Rowlinson and Cheung, 2004). This rigidity, which is based on legally enforceable relationship, prevents the willingness and voluntary relinquishing of some professional autonomy or independence to embrace long-term benefits of win-win-win situations and free exchange of information flow for improvement (Pryke, 2009)

Concerning team integration in section 1.4.6, Ibrahim et al. (2011) state that construction management team integration involves collaborative working practices, methods and behaviours that promote an environment where information is freely exchanged among the construction entities or parties. But it does not signify patterns of interaction and equitable or fair share of benefits showing concern for others which border on good relationship (Pryke, 2009). On this basis, the procurement of works and the various stages of execution to completion of the design service and project deliveries should evolve from business relationship management of the actors and their work with concern for others in all respects (Pryke, 2009). It is in line with this concept and the foregone argument carried across that the following working definitions are adopted for this study.

1.4.8.1 Working Definition of Business Relationship in the Context of the Study

Business relationship is an attitudinal and behavioural change of the DSD actors working relationship culture (personal and industrial), which will allow development of long-term fruitful collaborative working, inter-professional, cordial and harmonious business

relationship (business relationship that extends beyond non- contractual and socio-cultural boundaries). This change of DSD actors focuses on change of ‘mind set’ of all the different actors for joint goals in producing and using the supply chains of information flow (chains of project documentations) with mutual respect. Thus, it is to realise a business relationship involving the use of relationship improvement factors such as trust, openness, and commitment for free exchange of project information among the actors, for improvement and continuous improvement in procurement of design service delivery works, for fair and impartial benefits to all the DSD actors.

1.4.8.2 Collaboration or Collaborative Working

‘Collaboration’ carries different meanings in different contexts. In this study, the researcher uses ‘collaboration’ not for inter-professional communication (Miles and Trott, 2011) nor does it also mean partnership working, where just two DSD organisations are working together (Miles and Trott, 2011; Al-Amoudi, 2011; Bygballe, et al., 2010). Neither does it mean a contracting relationship like in design and build where one firm procures a design and construct contract from another entity or client. All these are forms of collaborative working with their inherent weaknesses or challenges; however, they are not the focus of this inquiry (Miles and Trott, 2011).

The writer’s use of collaboration or collaborative working concentrates particularly on situations where all the nine DSD actors including contractors as explained in section 1.4.1, are involved one way or the other, working together with all who have the capacity to contribute to improve the DSD activities; to develop infrastructure of public value (Miles and Trott, 2011). It concerns collaborative working where the business relationship among the DSD actors is pitched at a level to eliminate or avoid continuously non-collaborative and

adversarial business relationship elements. This kind of collaborative working is carried out among DSD professionals in developing and constituting SCIfs in healthy competing priorities (Humpherys, et al., 2003). The DSD actors are to be seen not only working consistently together, but also, there should be an internal seamless or tight business relationship for feedback, share of knowledge and learning to achieve effective and efficient SCIfs. Therefore, the focus of collaborative working in the study is not just looking for DSD actors consulting each other on an ad hoc or regular basis (Miles and Trott, 2011).

Indeed, it needs to be a ‘whole systems approach’. Collaborative working in this sense, calls for efforts to expand DSD actors’ interaction with the focus of getting inputs and outputs from all the DSD actors in the formation of each SCIf to improve DSD project delivery for clients (Orgen et al., 2013a; 2012b; Miles and Trott, 2011). In collaborative working scope covers the need to consider good business relationships among the professions and DSD actors, not just as constituent parts of the system, but as integral parts which are not independent of one another; focusing on promoting clients’ interest through improved performance for equitable mutual benefits (Miles and Trott, 2011; Humpherys, et al., 2003).

1.5 The Problem Statement

An extensive literature review reveals strong indications that, as happens in many developing countries, DSD actors in the Ghanaian construction industry (GCI) including contractors always face a number of problems (Ssegawa-Kaggwa et al., 2013; Laryea, 2010; Du Plessisa, 2007). The problems include long-term effects of poor project delivery, incoherent business relationship and environment (Ssegawa-Kaggwa et al., 2013; Du Plessisa, 2007; Adebayo, 2000). It has been confirmed that these problems sometimes end in non-collaborative working and harsh business relationship (Laryea, 2010; Anvuur et al.,

2006). Again, it is evident in many publications that discords, disputes, conflict and harsh or adversarial relationships exist in the construction industry, which are largely conceptual, or mere claims about the situation without reference to empirical data based on specific experiences, impressions, perceptions and opinions of practitioners (Tazelaar and Snijders, 2010; Ankrah et al., 2010). In this sense, the extent of the non-collaboration or adversarial business relationship and their effects on the quality of SCIFs and how the processes and procedures function are not clearly understood; especially in the context of developing countries where the construction challenges are exacerbated by uncertain economic, political and business environments.

Additionally, these non-collaborative working relationship also causes adversarial business relationship, which are documented (Hawkins, 2011; Tazelaar and Snijders, 2010; Mullins, 2005). However, the nature or characteristics of the adversarial relationships especially in the context of developing countries such as Ghana are also not clearly understood including the strategies for improvement. Indeed, the literature suggests that the problems that cause non-collaborative working and adversarial business relationships situations among the DSD actors (DSD practitioners and contractors) keep recurring (Ssegawa-Kaggwa et al., 2013; Laryea, 2010; Anvuur et al, 2006). The issues of non collaborative and adversarial relationship among the DSD actors are such that they drawback national infrastructural development (Anim, 2012; Hawkins, 2011) Also the situation accounts for haphazard infrastructural development in many developing countries, as learning processes are not made to include the practice of taking performance feedback and experiences from properly executed designed projects and applied to other design service delivery (Anim, 2012; Loo, 2003). The need to arrest the problem is the main object of this research, which seeks to find out the nature of the non-collaborative working and adversarial business relationships that

disturb and distort SCIFs and prevent improvement of DSD activities in Ghana, in order to provide a business relationship proposals for improvement.

1.6 Research Questions

Drawing from the problem stated the following research questions are developed

1. How is the nature of adversarial business relationship among the DSD actors in an emerging economy like Ghana where construction challenges are exacerbated by uncertain political and economic business environment?
2. How do the characteristics of the adversarial business relationship affect the supply chains of information flow (SCIFs) in DSD activities?
3. How is the nature of the supply chains of information flow (SCIFs) developed and constituted in the construction industry in Ghana?
4. How do the processes and procedures used in developing and constituting SCIFs function to affect the DSD activities in Ghana?
5. How can attitudinal behavioural and technical knowledge required of DSD actors for collaborative business relationship management to improve DSD activities especially in the Ghanaian context be achieved?

1.7 Aim

This research seeks to establish and understand the nature of the non-collaborative and adversarial business relationship among DSD actors, their effects on the SCIFs and the strategies that can be applied in a business relationship proposals for improvement of Design Service Delivery.

1.8 Research Objectives

The objectives are drawn from the aim to provide the relevant focus for the study.

1. To understand the conceptual and theoretical bases of adversarial business relationship in the construction industry especially in the context of developing countries such as Ghana.
2. To understand the conceptual and theoretical effects of the adversarial business relationship on SCIFs which the DSD actors have developed especially in Ghana in the light of the present challenges of the construction industry
- 3 To undertake a qualitative inquiry to help provide empirical understanding of the characteristics of the adversarial relationship among DSD actors especially in the light of the difficult economic and business operating environment.
4. To understand the nature of the supply chains of information flow (SCIFs) and the construction business relationship situation among DSD actors.
5. To investigate how the processes and procedures used in developing and constituting SCIFs function to affect the DSD activities in Ghana.
6. To identify attitudinal, behavioural and technical knowledge required of the DSD actors for the development of a collaborative business relationship management improvement proposals to improve DSD activities in Ghana

1.9 Research Methodology

An extensive desk study into business relationship management situation in developing SCIFs was first conducted to provide understanding of the concept (Naoum, 2004). A qualitative research which seeks to unearth in-depth truths to help gain understanding of issues such as the non-collaborative working and adversarial business relationship situation was identified as appropriate for the study (Baxter and Jack, 2008; Zainal, 2007; Golafshani, 2003). The qualitative approach is for both deductive and inductive processes and it provided rich insight into interviewees' experiences and views on the topic (Leedy and

Ormrod, 2005; Golafshani, 2003). The approach was useful for the purpose of finding out the nature of the non-collaborative and adversarial business relationships existing among DSD actors and how they affect the development of SCIFs in real professional practice (Baxter and Jack, 2008). A research interview design enabled the necessary multi-theory theorization to be carried out in the discussions (Zainal, 2007). Non-probability sampling methods such as purposive, non-proportional quota sampling were applied (Gravetter and Forzano, 2006; Landreneau and Creek, 2003; Kumekpor, 2002; Greemstein, 2001). The decision to use purposive non-proportional quota sampling was necessary as the DSD population has a distribution which is concentrated in two to three urban centres in Ghana (Kumekpor, 2002). A five-point eligibility criterion was set out. This included a minimum of ten years working experience after professional association membership, size (scale) of projects undertaken, number of DSD actors involved in the projects executed, professional status and awards (Baxter and Jack, 2008; Devers and Frankel, 2000). The sample frame eligibility criteria set, therefore, drew into the research Ghanaian experts who are rich in experience and familiar with DSD professional practices in Ghana (Devers and Frankel, 2000). To gain access to the interviewees some referrals were made by colleagues who have links with DSD professionals. Also, other gatekeepers available who offered useful access assistance (Devers and Frankel, 2000) were the executive secretaries of the various professional associations such as Ghana Institute of Architects (GIA), Ghana Institution of Surveyors (GhIS), Ghana Institution of Engineers (GhIE), Ghana Geotechnical Society and Planners. In-depth interviews were conducted with these DSD practitioners including contractors.

The data collection lasted three and half months starting from 3rd April to 17th July, 2013; with an average time of three hours per interviewee (DSD actor). Before the interviews, a

brief proposal was written. Appointments were booked through telephone calls, personal contacts and appointment notices were filled and signed by all interviewees. Face-to-face in-depth qualitative interviews were conducted with 45 interviewees, 5 interviewees from each of the 9 different DSD professions using interview guide with semi-structured closed and open-ended questions (Yin, 2003). The initial identification of categories of issues such as non-collaborative, adversarial business relationship, its effects and attitudinal behavioural and technical knowledge used to develop the measuring instrument for the data collection fit the study. There was then no need for further adjustment in the instrument for the collection of data from all DSD participants; of different professions for examination and categorization to achieve the research objectives and for development of the improvement proposals. The data collected exercise continued until the data categories acquired were meaningful, important and saturated (Fellows and Liu, 2009). Data was electronically recorded, detailed summaries were written down by each interviewee and relevant observations were recorded by the researcher in a field notebook. The data collected was transcribed verbatim into written text for examination. Constant comparative method of coding was used in grouping themes and for the categorizations to realize the research objectives. These were carried out for reliability and validity (Baxter and Jack, 2008; Devers and Frankel, 2000).

The three kinds of content analysis approaches involving conventional, directed and summative methods were used (Hsieh and Shannon, 2005). Also, in making analyses, the data was coded and put under themes; repeated occurrence of patterns and variables in the data were sought and categorized. The results of the summative analysis of attributes describing the nature of the SCIFs were represented on a Pareto plot to rank the attributes for the selection of the critical ones that could be corrected to improve the nature of the SCIFs

(Ahmed et. al., 2013). This Pareto plot is useful in ranking the attributes and also for selecting the critical attributes of percentage value of 20% that if remedy is applied percentage value of 80% of the non collaborative, adversarial business relationship and nature of the SCIfs developed and constituted could be improved (Ahmed1 et. al., 2013). These methods were used to provide triangulation in the analysis to obtain credible and reliable results (Yin, 2003).

1.10 Contribution to Knowledge

It is well established in the literature that there is non-collaborative and adversarial business relationship in the constructions industry (Ssegawa-Kaggwa et al., 2013; Laryea, 2010; Anvuur et al., 2006). This non-collaborative and adversarial relationship are deeply rooted especially in developing countries and are exacerbated by the difficult economic, political and structural conditions at play. Apart from re-affirming the existence of the non-collaboration and adversarial business relation this study adds to knowledge by identifying the nature, characteristics and degree of existence of the non-collaboration and adversarial relations.

This is shown by the critical attributes which emerged from the study such as disjointed, (36%), fragmented, (16%) and uncoordinated, (16%) which suggests that the nature of the SCIfs developed and constituted is seriously disturbed. The percentage total frequency (68%) obtained from these three attributes describe the extent to which adversarial relationship is embedded in the DSD activities in emerging countries such as Ghana. Additionally, the sum of all attributes obtained in the study describing the nature SCIfs reveal more grievous situation non-collaborative working of over 80% total frequency among the DSD actor groups in developing and constituting SCIfs.

Again, another contribution to knowledge is the identification of attributes describing the nature of construction business relationship (CBR) and its effects on DSD activities. The critical attributes describing CBR in the study as 'lack of harmonization of professional work and good business relationships' and 'hostility, frustration, tension and conflicts' accounting for 14% each; 'lack of interdependencies and sustainability' accounting for 13%. All the three attributes among others in the findings provided evidence of the severity of the adversarial relationship among the DSD actor groups in Ghana. Further, examination of the textual findings show that the business relationship is largely that of non-collaboration. This kind of CBR range is found in the research to be of three broad categories, involving: no collaboration, less collaboration and close-to-average collaboration. These relationship situations cause the DSD activities to delay in time, become cost ineffective leading to poor quality of work and at times manifest in lack of expansion of the DSD activities.

In addition, the study reveals that the functioning of processes and procedures used in developing and constituting the SCIFs are improper. The attributes obtained from the research such as 'umsystematic' and 'insufficient details' with frequency of occurrence of 15% each suggests there is mal-functioning of the processes and procedures used for SCIFs. Further, attributes like 'inconsistent use of outmoded methods'; 'sub-standards with gaps or no standard,' for supply chains' with frequency of 13% each and the 'use of weak incomplete supply chain' with frequency of 12% confirm and strengthen the descriptions providing evidence of poor functioning of the processes and procedures. The five attributes outlined have a percentage total of 68% frequency among others, showing improper functioning of the processes and procedures used in developing and constituting the SCIFs and causing setbacks to on the improvement and continuous improvement of the DSD.

The study shows that documents produced for contractors' use in construction project delivery depended solely on the SCIFs (bonds) which could be improved through action oriented multi-system theory thinking and rethinking (Seebass, 2008; Pickel, 2004; Orgen et. al., 2013a). Therefore, in the application of the multi-theory theorization, a contribution is made that SCIFs exists as a bond and a chain. In that sense, each profession on the chain is identified as a ring with 'I-sense and intention'¹ (see for example Seebass, 2008; Pickel, 2004; Tuomela, 1991). Each ring in any SCIf- chain of project documentations should link up properly with other rings working together willingly with 'we-sense and intention'² which will produce business relationship success cycle of equitable benefit for all actors is identified (see for example Pryke, 2009; Seebass, 2008; Tuomela,1991).

A gap is filled in the literature, as the study identifies the kind of business relationship maturity cyclical order essentially required in developing countries like Ghana to build attitudinal behaviours of professionals from the traditional adversarial level to the final long-term business relationship level. The business relationship maturity cyclical order which would ensure improvement and continuous improvement identified in the study would be possible in DSD activities through relationship improvement factors like trust, alignment of common objectives, joint problem solving, including others in developing the chain of documentations (Meng, 2010). Again, contribution is also made through the use of the identified challenges as preconditions and conditions that necessitate the transformational aspect of this research. These would helped to reveal attitudinal behavioural and technical

¹ I-sense and intention- Individual using his or her own mind without consulting or collaborating with others in work with individual objectives.

² We-sense and intention- Group or groups working using collective ideas or consulting, collaborating with each other with joint objectives.

knowledge required for effective business relationship maturity cyclical order of movement of DSD actors from one maturity level to the other. Such attitudinal behavioural and technical knowledge obtained from the study are identified to have the potential to ensure the free flow of information which would be sorted, filtered and audited in emerging developing economies like Ghana to ensure their effective and efficient use. These potential processes and procedures of developing, managing and utilizing of information have been placed in improvement proposals for the improvement of the DSD activities. This improvement proposals developed seeks to bring proper collaborative relationship in the processes and procedures used in developing and constituting the SCIFs. It is an improvement proposals expected to provide harmonious cordial business relationship for effective and efficient SCIFs, which will improve DSD activities. Thus the improvement proposals is developed in view of the non-collaborative working and adversarial business relationship confirmed by the study and other new DSD challenges revealed. Again, the improvement proposals is structured using multi-theories involving action theory, system theory, thinking and rethinking. The theories are adopted to demonstrate how and why there should be effective and efficient SCIFs for cordial, harmonious business relationship to achieve improvement and continuous improvement for the DSD activities in Ghana (see for example Seebass, 2008; Pickel, 2004; Tuomela, 1991).

1.9 Scope of Study

The research covers experienced DSD practitioners (professionals who are consultants or in-house professionals) including contractors. It concerns practitioners who have handled or are responsible in directing or guiding the conduct of project delivery the on one hand and contractors who carry out the directions or guidance on the other (Baxter and Jack, 2008). Those who satisfy at least sixty percent of participants' (respondents) selection eligibility

criteria are used for the study. The two groups in the study are referred to as DSD actors- the practitioners and the contractors (Devers and Frankel, 2000). The research focuses on the collaborative and non-collaborative working, business relationship situation and cultural practices among DSD practitioners in discharging the professional duties of developing and constituting the supply chains of information flow- SCIFs (Edum-Fotwe et al. 2001; Devers and Frankel, 2000). That apart, the study probes how business relationship issues and situations might robustly cause SCIFs to be effective and efficient. That is for instance, how the traditional procurement system improves DSD activities in Ghana (Orgen et al., 2012b). Contractors considered in the research are those duly registered by the Ghana Ministry of Water Resources, Works and Housing (MWRWH) and with the Registrar General's Department under Act 179 (1963) of the Companies' Registration Code (Amoah et al., 2011). Contractors under classification K1/D1³ who have undertaken government-funded projects and satisfy at least sixty percent of the participants' selection eligibility criteria are included in the interviews. Additionally, attention is placed on how to achieve an improvement and continuous improvement in DSD activities (Orgen et al., 2013a; 2012b; Devers and Frankel, 2000), such as making DSD activities in the traditional procurement system the most common system used in acquiring building contracts to realise continuous improvement in the management and administration of SCIFs in Ghana.

1.12 Summary

The study considers business relationship issues involving harsh business relationship among construction design service delivery actor groups in developing and constituting the SCIFs.

³ K1/D1 – It is the highest class of contractor grading of building works certificate indicating financial value of works that can be undertaken awarded by Ghana Ministry of Water Resources, Works and Housing.

Specifically or particularly, the study looks at understanding the characteristics of the adversarial business relationship that cause discords, disputes and conflicts (DDC). The DDC is identified as a problem which leads to fragmented culture in the construction industry with actors showing mistrust, self-centredness and competitive attitudes and behaviours. These attitudinal behaviours are characterized by harsh business conditions or practices causing non-collaborative working and adversarial business relationships. The business relationships situation stems partly from the traditional procurement system used and unstable construction, economic, political and cultural environment. Significant among the factors to which this business situation can be attributed are poorly articulated designs, excessive reduction of project cost, delayed payments to contractors and the use of the common 'one-way' procurement method.

Again, the study looks at the effect of the non-collaborative adversarial business relationships on SCIfs of the DSD activities. The effect of the adversarial business relationship situation is identified to be distorting and disturbing the development of the SCIfs from both the in-house and external experienced professional DSD practitioners who work within consulting firms and the construction companies in Ghana. Face-to-face interviews were conducted to obtain qualitative information on the characteristics of adversarial business relationship existing among the DSD actors. Further, after studying the effects of the adversarial relationship situation the SCIfs, the functioning of the processes and procedures used in developing of the SCIfs were considered and they were found to be mal-functioning or improperly functioning.

Lastly the study considers ways through which improvement of the business relationship could be attained. The study seeks attributes from qualitative inquiries which provide attitudinal behavioural and technical knowledge for collaborative business relationship and

were used in developing proposals for the improvement and continuous improvement of the DSD activities. Therefore, many interventions such as partnering, alliancing and team integration have been developed by other researchers as approaches towards improving the non-collaborative working and adversarial business relationships existing among Design Service Delivery (DSD) actors in the construction industry, but the situations persist.

For the appropriate transformation, through development of improvement proposals the research focuses on fostering improvement and continuous improvement in the DSD activities through cordial and harmonious business relationship for effective and efficient management of Supply Chain of Information flow (SCI_f) among the DSD actors. The improvement proposals developed is based on non-collaborative working and adversarial business relationship attitudes and behaviours, multi-theory and qualitative information obtained from the interviews. The improvement and assessment placed in improvement proposals prescribe the relationship maturity levels that will serve as landmarks for assessing improvement levels of business relationships among the DSD actors and their firm/companies. Through the multi-theories and the interviews the study has come out with improvement proposals that offer collaborative working, fair and impartial business relationship, attitudinal behaviours for sharing and free flow of information. The flow of information includes effective application of performance feedback, non-adversarial traditional and innovative information, as ways of achieving effective and efficient SCI_fs for the improvement of DSD activities.

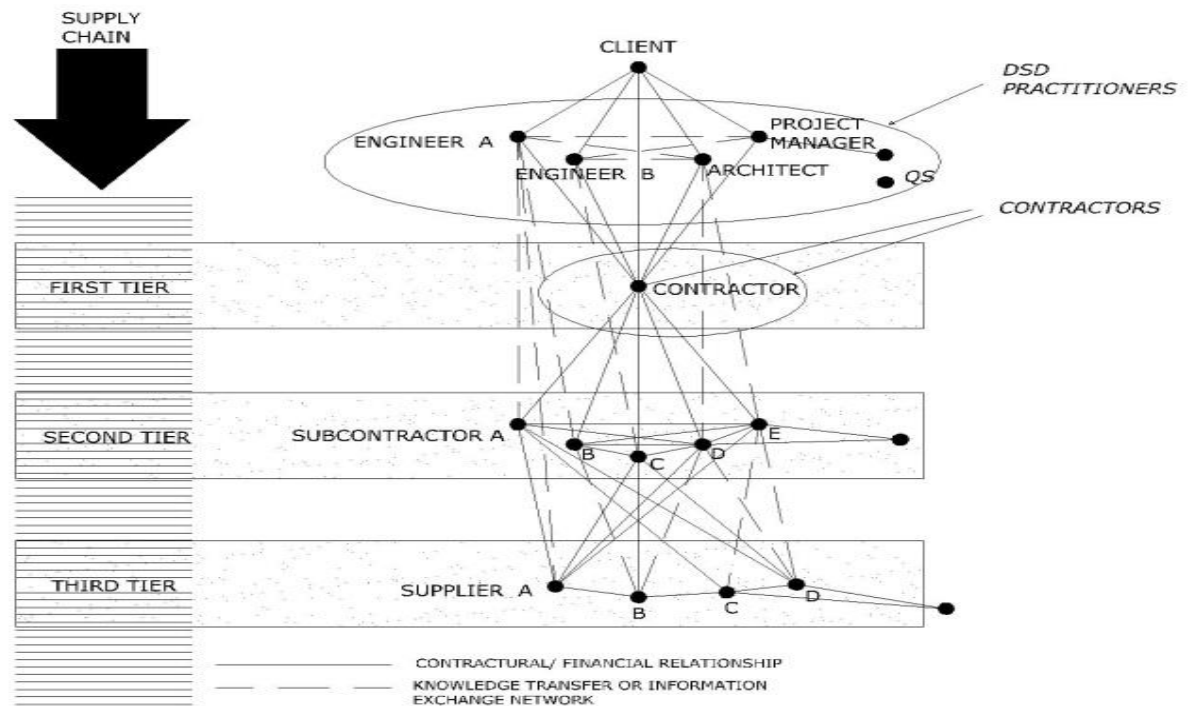
CHAPTER TWO

LITERATURE REVIEW - I

On Business Relationship of Non-collaborative Working and Adversarial Business Relationships

2.1 Chapter Outline

In this chapter, business relationship management issues on non-collaborative working and adversarial relationships among DSD actor groups and their work (SCIfs) are covered. This chapter also considers relevant definitions, explanations of terminologies, concepts, including poor quality supply chain of information flow (SCIf). It looks at how they partly support and underpin the research.



SUPPLY CHAINS AND NETWORKS

SOURCE. (Pryke, 2009)

Figure 2.1 Supply Chains and Networks

The chapter also considers DSD technical issues (contract and administrative) which play a role in promoting non-collaborative working and adversarial business relationships Part of

this aspect of the review involves discords, disputes and conflicts (DDC) issues, which lead to non-collaborative working and adversarial business relationship ending in DSD business relationship failure cycle. Besides, attention is given to how and why the DDC trends and escalating levels influence or cause stalemates in project delivery. Furthermore, the kind of collaboration and business relationships rigorously pursued in the study, are the kind of relationships which emerge among DSD practitioners and between them and contractors. Figure 2.1 is adopted from Pryke (2009) to show the positions and kind of business relationships under study among DSD actors. The DSD actor groups involved in the study are indicated in the two circled areas on the supply chains and networks in Figure 2.1. The DSD practitioners positioned in the same circle and at the same (equal) level which show equal professional autonomy in developing, constituting and using the SCIfs are considered. Also, the DSD practitioners circled and placed between the contractors circled and the client in figure 2.1 show the information flow from clients to DSD practitioners and from them to constructors. Nevertheless, it is the two circled actor groups' (first tier) business relationship which are considered in this study. On the other hand, supply chains and networks concerning subcontractors and supplier groups and their workforce in the second and third tiers respectively in Figure 2.1 are not considered in this study.

2.2 Overview of DSD actors (practitioners) involved in the supply chains and networks, their roles and responsibilities in the supply chains of information flow (SCIfs)

As mentioned in section 1.4.1 there are nine different professional groups which contribute to develop and constitute SCIfs. They deal with the supply chain of information flow (SCIfs) - chains of project documentations - for design service delivery activities. Each profession involved in the DSD activities has a unique role it plays in developing and constituting SCIfs for a successful project execution (Hatmoko and Scott, 2010). The explanations

Tuomela (1991) and Roeser (2005) put forward for collective action that any of the nine professions is like a ring in a chain without which the SCIfs would be short of some information flow making the supply chain incomplete. This could cause incomplete project documentations or poor functioning of the supply chain which would result in shoddy delivery.

2.2.1 Project Managers' Role in SCIfs

In management of construction projects, SCIfs are critical to the success of every project delivery (Hatmoko and Scott, 2010). Project managers' role in managing SCIfs is part of project management profession in its own right (Abu Bakar, 2011; Hills et al., 2008). This is in the sense that Construction Project Managers are to plan, co-ordinate, manage the day-to-day working, utilisation, implementation of technical information from DSD actors engaged in clients construction businesses (Ip and Jaworski, 2006) and reporting progress on projects by suitable media to clients or clients' management. They are also to ensure that correct materials turn up before jobs start, explain the work ethics and activities to other actors (Hills et al., 2008; Ip and Jaworski, 2006). In the view of some DSD practitioners and contractors other actors doubling as PMs create difficulties in developing and constituting the SCIfs, The roles of project managers are not to be doubled for, to cause the supply chains of information flow to be defective by a loss of a ring is to defeat the intent of collective action put forward by Tuomela (1991) and Roeser (2005). This is very important because the co-ordinating roles played by the project managers are continuously full time work and not parttime (Abu Bakar, 2011). The project managers' work embraces all aspects of projects, which follow continuous processes with overall responsibilities that would not allow them to attend to another or any particular professional duty (Abu Bakar, 2011). It

involves active directions and guidance in all the other eight DSD different professions (Hills et al., 2008).

2.2.2 Architects' Role in SCIfs

The role of architects in developing and constituting SCIfs is central in construction business relationship management of DSD as indicated in figure 2.1 (The National Council of Architectural Registration Boards, NCARB, 2010; Shank, 2005). This profession produces initial and tangible design impression of the work- the assignment of the clients based on their brief; showing in pictorial and graphical views the thinking, requests and desires of the clients (see for example American Institute of Architect, AIA, 2003). They make the design themselves or produce their part of the SCIfs (sub-SCIfs) with the help of architectural technologists or technicians (Shank, 2005). Architects vigorously move the DSD information flow into higher motion by their work, which can gain or suffer depending upon the nature of business relationship existing among the DSD actors (NCARB, 2010; Murdoch and Hughes, 2008; Shank, 2005) Designs from architects assist the other different DSD actor groups like structural engineers, services engineers illustrated as (Engineer A and B) and quantity surveyors (QS) in figure 2.1. In responding to the information flow other actors contribute to complete SCIfs by playing their respective roles (AIA, 2003). The SCIfs then continue to be developed and constituted as other professions gets the architects design initiative to complete their portion of the supply chain of information flow (Hatmoko and Scott, 2010; Murdoch and Hughes, 2008).

2.2.3 Quantity Surveyors' Role in SCIfs

In this study, the role of quantity surveyors in developing and constituting SCIfs is provision of cost data and analysis for project delivery (Wynn, 2013; Hatmoko and Scott, 2010). Quantity surveying experts design the project cost (Wynn, 2013). They do so by using the

design information from other DSD practitioners, whose sub-SCIfs responses, have influence on the quantity and quality of information received for the completion of cost inputs in project delivery as far as their business relationship management is concerned (Careers in construction, CIC, 2013). The Quantity surveyors are the cost managers in developing SCIfs, the nature of the business relationship, in line with the supply chains and networks as indicated in figure 2.1, assist them to occupy such a position in order to obtain and effect accuracy in the cost information provided or budgeted for a project (Wynn, 2013; Pryke, 2009). The cost output can occur in three different ways or forms: properly estimated, under estimated and over estimated cost (Chan and Chan, 2002; Atkinson, 1999)

2.2.4 Services Engineers' Role in SCIfs

Services engineers roles are to provide all the mechanical and electrical installations which bring buildings to life by designing these systems to allow people to function within enclosed structures (Fame Pyramids Ltd., 2013). Further, services engineers role in developing and constituting SCIfs is to provide designs of services installations or schematic designs covering electrical, water, telephones, gas, fire and others for buildings to function effectively (Fame Pyramids Ltd., 2013; Hatmoko and Scott, 2010). Any impact that is made by these professions depends on the nature of business relationship management among the DSD practitioners. It can either be collaborative working, which may yield effective designs or non-collaborative working which results in destruction of all project objectives and throwing cost overboard or produce unrealistic cost (Ramus and Birchall, 2006).

2.2.5 Structural Engineers' Role in SCIfs

Structural engineering is the aspect of Civil Engineering which deals with strength calculations, loads, forces and their interactions and effects on construction projects (New

Civil Engineer, NCE, 2013). They produce designs of structures which are supposed to be strong enough to avoid collapse when they come under loads (New Civil Engineer, NCE, 2013). Structural or Civil Engineers produce the structural designs aspect in developing and constituting SCIfs for buildings based on the inputs from particularly the architects and geotechnical engineers (Hatmoko and Scott, 2010). Additionally, the structural designs show that DSD activities gain or lose a lot depending on the conduct of business relationship management that exist or emerges among the DSD practitioners. The type of business relationship displayed or wielded among the practitioners greatly influence the supply information flow needed for the reinforcement designs, detailing and specifications to control structural strength, quality, cost and time of project delivery (NCE, 2013; Hatmoko and Scott, 2010)..

2.2.6 Geotechnical Engineers' Role in SCIfs

Geotechnical Engineering is another aspect of civil engineering which involves the study of behaviours of earth materials like soil, rocks, underground water, and others, including their association with design, construction and various engineering projects activities (NCE, 2013). These show that geotechnical engineers deal with soil mechanics and engineering aspects of a project, which provide vital information for developing and constituting the SCIfs (Hatmoko and Scott, 2010) especially to the structural engineers. Details of soil information include stresses, shear, texture, structure, soil moisture and others to assist particularly the structural engineers for the design of the necessary structural elements for effective project delivery (NCE, 2013; Goe, 2012)

2.2.7 Geomatic Engineers' Role in SCIfs

The DSD actors who provide geomatic designs contribute to the developing and constituting of SCIfs by producing spot levels, contour plans, site plans or block plans and offer other site surveying information (Hatmoko and Scott, 2010). Projections made according to the geomatic actors should be right from inception to completion of the project. The business relationship should be such that the flows of project information is supportive for all setting out, alignments, traversing and levelling accuracies (Hatmoko and Scott, 2010). These will not happen under the influence of the type of business relationship that exists among the practitioners. The inclination to use geomatic engineers to minimize cost and have effective and efficient development of free flow of project information is key to project delivery.

2.2.8 Planners' Role in SCIfs

The planning aspect of developing and constituting SCIfs involve important roles such as construction planning, management and execution of construction projects (Wynn, 2012). Planners also select technology, define various works, tasks, the estimate resources and durations required for individual task. They as well identify any interactions among the different tasks that deal with environment, development and plans which offer useful information on the type of designs acceptable at locations, heights and magnitudes (Wynn, 2012) They also check the infringement of national, regional and local regulations and bye-laws of the Metropolitan, Municipal and District Assemblies (MMDAs). Effective business relationship management among the DSD planners (practitioners) would bring openness, understanding and proper adherence or compliance to the regulations and by-laws (Pryke, 2009; Cheung and Rowlinson, 2005).

2.2.9 Contractors Role in SCIfs

A builder or a building contractor plans, develops and coordinates activities which are in line with the building of structures. The building contractor is the person who undertakes various forms of construction and ensures that all necessary steps are taken to realize the completed building product (Hatmoko and Scott, 2010; Murdoch and Hughes, 2008). In this sense, the building contractors' roles are to fabricate the construction products of the industry using the SCIfs developed and constituted by the DSD practitioners (Murdoch and Hughes, 2008)

2.2.9.1 The Need for Contractors' Involvement in the Design Service Delivery (DSD)

There is a strong global desire to improve project design and execution by using all available opportunities, facilities and strategies from all experts, including the buildability knowledge and experiences of contractors (Alhassan, 2012; Walker and Lloyd-Walker, 2012). It is realised that to leave or ignore contractors' buildability knowledge and experiences as the users of project designs due to adversarial business relationship or procurement approaches used will be a drawback in the effort to improve Design Service Delivery (DSD) (Alhassan, 2012; Walker and Lloyd-Walker, 2012). This situation will let cumulative experiences, checks on project design and auditing feedback from contractors be lost to any DSD improvement strategy (Alhassan, 2012).

Contractors' involvement in design service delivery activities is either through an approach that encompasses various relationship-based project procurement (RBP) forms or early contractor involvement (ECI) as evident in Walker and Lloyd-Walker (2012). It is not the procurement that is essential for a particular design approach that should be adoptive for the improvement of DSD activities but means to achieve quality infrastructural development

(Alhassan, 2012; Song et al., 2009). Observation have shown that “Contractors are selected through competitive bidding at the end of the design process, thus, they offer little or no input to design. Although construction knowledge and experience is recognized as an important design input, its impact on design is limited by the designer’s lack of construction experience and partial understanding of construction requirements” (Songet. al., 2009, p.12). The concern is on DSD improvement, that may suffer from the loss of potential expertise opportunities and facilities that buildability knowledge and experiences of contractors will offer to the DSD activities (Alhassan, 2012). If the contractors’ relationships and their inputs are not considered, an integral aspects of performance feedback- voluntary audit information for effective and efficient SCIIs identified to improve the DSD will be overlooked (Songet al., 2009).

In this instance, the issue is not to try to develop a dimensional framework in which contractors’ involvement fit with understanding to help reduce confusion between design consultants and contractor to improve the DSD for one particular project (Walker and Lloyd-Walker, 2012) but rather it is to develop an improvement proposals that will provide robust, good collaborative business relationship among DSD practitioners and between them and contractors to prevent or reduce adversarial business relationship, for an effective and efficient SCIIs development to improve DSD for clients’ projects (Orgen et al., 2012b; 2011). It is a focus on an approach that will be useful to project delivery in which business relationship management is relevant to the design service delivery as required in all business transactions involving relationships (Alhassan, 2012). This kind of business relationship study seeks to find appropriate ways to improve the DSD through a collaborative theoretical and conceptual frameworks that allows the contributions of all the producers and users of SCIIs in the infrastructure environment (Anim, 2012; Meng, 2010; Smyth and Fitch, 2009).

There is also the need to get the improvement proposals developed to show attitudinal behavioural and working knowledge required from both the producers (DSD practitioners) and users (contractors) of design products (Pryke, 2009; Cheung and Rowlinson, 2005). These are meant to achieve the development of a robust collaborative business relationship improvement proposals for effective and efficient SCIfs to improve DSD activities. Moreover, the improvement proposals is to illustrate attitudinal behavioural change appropriate for collaborative business relationship improvement of DSD for construction project delivery (Cheung and Rowlinson, 2005).

2.3 Definitions and Explanations of Terminologies, Features and Concepts

In the study of business relationship management of design services delivery activities, it is essential to understand situations in which the supply chain of information flow (SCIf) is developed, constituted, managed, and used in controlling projects. It is the insights into these situations in which SCIf is constituted that make the study of business relationships issues such as non-collaborative working, adversarial business relationship and collaborative working relationship management so appreciative (Harvard Business Review, 2006). Therefore, the content of the study will gain from the understanding of terms, features and concepts. These include those which form the basis of the current business relationships like DDC, Supply Chain, Supply Chain Management and construction supply chain management provided in sections 2.3.1 to 2.3.5

2.3.1 Construction Discords, Disputes and Conflicts (DDC) and the DSD Situation

There are a number of definitions provided for DDC in many fields of endeavour, which help to portray the real situation in which contending parties find themselves. Contentious construction issues which generate construction DDC leading to non-collaborative and adversarial business relationships, could be likened to definitions in Social Psychology, such

as the one given by Heidelberg Institute for International Conflict Research (HIIK, 2005). This definition is evoked, as the clashing of interest (positional differences) on national/group/individual values of some duration and magnitude between at least two parties (organized groups, state, organizations, and individuals) that are determined to pursue their interest and win their cases (Axt, et al., 2006). Mullins (2005, p1053) strengthens this definition by noting that “conflict is present where there is incompatibility of goals arising from opposing behaviours at the individual, group or organizational level”. Additionally, some construction authors also express the fact that DDC comes as a result of the characteristics of project actors’ groupings at different levels of operations, where each project actor in the groupings has particular aims and objectives, which may not bring harmony but conflicts (Murdoch and Hughes, 2008).

Besides, it should be noted that conflict is a complex phenomenon, which may have positive attributes; in most cases is aligned with dysfunctional phenomena like discords, disputes or fighting (Axt et al., 2006). Also, there is a lot of disagreement about the exact notion of the word ‘conflict’ even today. Conflict is one of the most enigmatic and controversial terms, which itself triggers conflicts very often (Axt et al., 2006; Bonacker/Imbusch 2005). These definitions and concepts point to DDC as disagreement caused by incompatibility of goals or incompatible behaviour of DSD actors (parties) or individual DSD actors with desire to win their case or his case by every means possible, generating DDC. Again DDC becomes regular among actors operations as failure or avoidance of business relationships occurs (Murdoch and Hughes, 2008),

2.3.2 Supply Chain (SC)

To understand fully the development of SCIfs, there is the need to define and explain some supply chain (SC) terminologies. SC can be defined as “all activities related to the acceptance of an order from a customer and its fulfilment. In its extended format, it also includes connections with the suppliers, customers and other business partners” (Cole and Kelly, 2011, p388). Also, according to Winch (2002) supply chain can be defined as the coalition of firms in external transaction normally involving a principal contractor or executor. The study considers the SC as generating collaborative, harmonious and cordial business relationship among the different DSD actor groups to work together in developing an effective and efficient SCIfs for clients under a main coordinator.

2.3.3 Supply Chain Management (SCM)

According to Beth et al. (2006), SCM is not all about the best systems and best software. Rather, it is about working talents for the market. For that matter, SCM as construction market grows and becomes more complex, concentrates on or concerns the difficulty of how to get different DSD actor groups to work together to satisfy the clients. In another text, supply chain management is described as “the management of all activities that facilitate the fulfilment of a customer order for a manufactured good to achieve satisfied customers at reasonable cost” (Cole and Kelly, 2011, p388). According to Pryke (2009, p32), this is not so appropriate for the construction industry. Therefore for the industry to benefit from the SCM technique, a construction supply chain “can be regarded as process of strategic management of information flow, activities, tasks and processes involving various networks of organisations and linkages (upstream and downstream) throughout a project life cycle.” This definition concentrates on the upwards and downwards stream of activities and issues in construction project life cycle.

2.3.4 Construction Supply Chain Management (CSCM)

Construction supply chain management is a management process which has Supply Chain Relationships (SCR), Information System Management (ISM) and Strategic Material Management (SMM) as its three main components (Yeo and Ning, 2002). Pryke's (2009) definition offers details that construction supply chain management should be regarded as a process of strategic management of information flow, activities, tasks and processes involving various networks of organisations and linkages (upstream and downstream) throughout a project life cycle. The information flow management here in Pryke's definition involves the main work of the DSD actors to generate and prevent waste of information flow to other construction supply chains and networks in industry as shown in figure 2.1 (Edum-Fotwe et al., 2001). It is the information flow management that requires performance feedback, traditional non adversarial and innovative project information to develop and constitute supply chains of information flow (SCIfs) for project delivery (Anim, 2012; Mensah, 2007; Loo, 2003; Edum-Fotwe et. al. 2001).

2.3.5 Supply Chain of Information Flow (SCIf)

According to Edum-Fotwe et al. (2001), the supply chain of information flow (SCIf) consists of a chain of project documentations, such as drawings, specifications, and contract conditions, bill of quantities, engineering reports, explanations and clarifications which form the basis of all activities for a project delivery. The DSD work of providing SCIfs is for decision-making, which affects planning, executing, controlling and closing of projects (Hatmoko and Scott, 2010; Titus and Bröchner, 2005). Thus, SCIf is a chain of project documentations processes involving DSD practitioners' collaborative working, business relationships and documentations procedures. Therefore, it is a key chain of project documentations which is used to initiate, regulate, instruct, interpret, implement and control project delivery (Edum-Fotwe et al., 2001). The supply chain of information flow (SCIf)

comprises the works of DSD practitioners and contractors which is different from other supply chains such as the flow of materials, labour, plant and equipment including temporary work (Hatmoko and Scott, 2010). Further, the information sharing among actors is seen as key to effective construction supply chain management of the whole projects (Hatmoko and Scott, 2010; Titus and Bröchner, 2005). On the other hand, delays in the information flow slow down decision- making of all the project teams, which is identified as the main cause of delays in project delivery (Chan and Kumaraswamy, 1997). This is because any construction project should be controlled by different SCIf which is unique for the project delivery (Hatmoko and Scott, 2010; Titus and Bröchner, 2005). Invariably, free inflow and outflow of project information among DSD actors in developing and constituting of SCIfs can cause improvement of DSD activities in Ghana.

2.4 Non-collaborative working and Adversarial business relationship issues with other associated challenges

Understanding and accepting issues involved in non-collaborative working and adversarial business relationship are useful in dealing with delays, protecting and preserving objectives and viability of construction projects within cost and timelines; these are issues that will completely destroy all benefits of a project (Ramus and Birchall, 2006). Non-collaborative working can be expressed as human attitudes, behaviours or issues which indicate unwillingness to perform an activity or come together to produce a project or improve a situation with one or several people (Hornby, 2010; Harvard Business Review (HBR), 2006). Alternatively, adversarial business relationship is a type of relationship that leads to discords, disputes and conflicts (DDC) based on valuable issues or objects (Axt et al., 2006). Thus adversarial business relationship is a type of working relationship which involves opposition ideas or views on formal or technical interest or benefits between or among parties or actors (Hornby, 2010; Ramus and Birchall, 2006). Controls and procedural issues

must be understood and identified to prevent complete destruction of project objectives and benefits (Ramus and Birchall, 2006).

2.4.1 Attitudinal behavioural attributes (factors) which account for Non-collaborative working and adversarial business relationships

From a number of relevant literature reviewed, it is evident that some of the non-collaborative working and adversarial business challenges occur as a result of attitudinal and behavioural factors or attributes (Ankrah et al., 2010; Pryke, 2009; Cheung and Rowlinson, 2005). Some humans are capable of withstanding confrontations and related issues like discords and disputes better than others (Cheung and Rowlinson, 2005; Axt et al., 2006). Hence the following section is devoted to creating an understanding of attitudinal behavioural issues.

Mullins (2005; p1051) defines attitudes as "providing a state of readiness or tendency to respond in a particular way. They are learned through life and are embodied within a socialization process". Hammer (2000) also states that attitudes in many situations are explained and scaled as in relationship to behaviours. A "theory of reasoned action" in psychology states that one's beliefs shape one's attitudes (Hammer, 2000; p456). On this basis, one's behaviour can be predicted through the controlling belief and attitude shown by an individual in the socialization process. Thus, there is the need to understand that people's attitudes have no limit. For that matter actors have unlimited inherent attitudes (Al-sweity and Enshassi, 2013; Mullins, 2005). These unlimited inherent attitudes involve learning processes or acquisition of knowledge within a particular socialization process throughout life (Hussin and Omran, 2009; Mullins, 2005). Furthermore, this suggests that it can be argued that the socialization process as it operates in the business relationship situation of activities, has attitudinal behavioural implications or has the potentials to reveal attitudinal

behavioural knowledge (Hussin and Omran, 2009). Such attitudinal behavioural implications have a link with what the various actors refer to as “professionalism”. For instance, the socialization processes occur at each stage of the work: planning, sourcing, making and delivering of activities, to ensure a collaborative or non-collaborative working and business relationship trends (Yeo and Ning, 2002). This also involves what they (actors) have followed or are made to follow in the past i.e. beliefs, values, interests, skills, knowledge, authority and power issues in the various separate practices (Ankrah et al., 2010; Hofstede, 1982). The attitudinal attributes acquired in the socialization processes are revealed in the type of business relationship situations existing among the actors (Mullins, 2005; Hammer, 2000). Although the processes followed in adopting and using attributes may be right or wrong, the way the learning takes place is not very important (Al-sweity and Enshassi, 2013). What is important is whether the attitudinal attributes acquired are central or core attitudes. Core attitudes are highly resistant to change, but peripheral attitudes can change through the acquisition of new information, knowledge or personal experience (Mullins, 2005).

It is difficult to separate attitudes from behaviours since humans at times do not behave according to the truth they believe in or plan to uphold (Mullins, 2005; Hammer, 2000). These varying acts reveal indications that attitudes cannot only be shown in behaviours as attitudinal behavioural attributes, but can as well be expressed as an individual’s thoughts or through feelings, of which the attitudes shown can be predicted as core (central) or peripheral (Mullins, 2005). It is therefore essential in this study to understand that attitudinal attributes that arise in behaviours are termed attitudinal behavioural attributes. These attitudinal behavioural attributes comprise a set of attitudes and behaviours that can be referred to as professionalism (Hammer, 2000), a kind of professionalism suitable or

unsuitable for collaborative business relationship improvement in DSD activities (Hawkins, 2011; Hammer, 2000).

2.4.1.1 Attitudinal behavioural attributes shaping DSD professionalism

Attitudinal behavioural attributes that shape DSD professionalism are a set of attitudes and behaviours which prevent or reduce vulnerability of the individual professional from breaking down business relationships or be entangled in business relationships failure cycle (Hawkins, 2011; Humphries and Wilding, 2004; Hammer, 2000). To avoid such a situation, Meng (2010) introduced relationship improvement factors such as collaboration, trust, communication, commitment, improvement and continuous improvement, marketing skills, alignment of objectives, joint problem solving, risk handling/allocation and procurement into construction supply chain relationships. The relationship improvement factors can be employed at different levels or periods of business relationship among DSD actors such as adversarial, transitional, short-term, medium-term and long-term periods (Meng, 2010; SEI, 2009, 2006; OGC, 2002; Paulk et al., 1993). These relationship improvement factors are attributes serving as vehicle to create a collaborative working and harmonious, cordial business relationship environment for the improvement of DSD activities.

According to Hawkins (2011) and Mullins (2005), there are also attitudes that are linked to thoughts, which are difficult to see or understand. They are latent or hidden attitudes (Axt et al., 2006) which sometimes form part of core or resistant attitudes that can highly disturb the interdependence among the DSD professions (Hawkins, 2011; Axt et al., 2006; Mullins, 2005). The core or central attitudes contribute to non-collaborative and adversarial business relationship or business relationship failure cycle (Humphries and Wilding, 2004). By sharing their core values or beliefs in their respective professions, the DSD actors will

realize that the value of sharing information among the individual professions include exposure of strengths and weaknesses of the sub-SCIfs (Sahin and Robinson, 2002). The literature shows that structures and systems within the socialization process cannot get DSD actors out of non-collaborative working and adversarial business relationship to work together to develop and constitute SCIfs for project delivery (Harvard Business Review, 2006). Attitudinal behavioural changes through change of 'mind set' are necessary- that is for changes in behaviours in the actors (Ankrah et al., 2010; Cheung and Rowlinson, 2005) to prevent or eliminate non-collaborative working and adversarial business relationship or business relationship failure cycle (Humphries and Wilding, 2004). A change of technology, systems and strategies without the change of 'mind set' cannot do the task of changing attitudes and behaviours.

It cannot as well increase the benefits of collaborative business relationship (Harvard Business Review, 2006; Cheung and Rowlinson, 2005). A disturbing aspect, however, is that business relations among many DSD practitioners and contractors suffer stagnation and no change of mind set (Anim, 2012; Cheung and Rowlinson, 2005; Loo, 2003). Thus, there is lack of improvement in business relationship for the improvement of DSD activities (Cheung and Rowlinson, 2005). Wrong attitudinal behaviours cause DDC, which are the root causes of non-collaborative working and adversarial business relationship (Ssegawa-Kaggwa et al., 2013; Jaffar, et. al 2011). The need to identify the attitudinal behavioural knowledge or attributes, required for improvement and continuous improvement in business relationship among DSD actors, which has attracted little research attention, has been observed (Orgen et al., 2011). The kind of attitudinal behavioural knowledge required in construction businesses are essential for an effective and efficient SCIfs development (Hatmoko and Scott, 2010). Subsequently, the way these attitudinal behavioural attributes

affect the construction industry in Ghana and developing countries offer an opportunity towards providing a basis to address the knowledge gap eluding or alluding earlier built environment literature.

2.4.1.2 DSD Structures, systems and attitudinal behavioural challenges in business relationship

As indicated in section 2.4.1.1 structures and systems cannot get DSD actors out of non-collaborative working and adversarial business relationship to work together to produce SCIFs for project delivery (Harvard Business Review, 2006). The attitudinal behavioural change to prevent or eliminate non-collaborative working and adversarial business relationship is essential as technology, systems and strategies do so (Harvard Business Review, 2006). However, a disturbing aspect is that, business relationship among many DSD practitioners and contractors suffer stagnation, - that is lack of improvement in business relationship for the improvement of the DSD activities (Cheung and Rowlinson, 2005). Therefore such weak or wrong attitudinal behavioural attributes lead to discords, disputes and conflicts (DDC), which are the root causes of non-collaborative working and adversarial business relationship (Ssegawa-Kaggwa et al., 2013; Alderman and Ivory, 2007).

The attitudinal behavioural causes is known to create non-collaborative working and adversarial business relationships in the design service delivery (DSD), which have not been investigated even though they have been identified (Orgen et. al. 2011). However, the exact nature or the characteristics of the adversarial business relationship has not been established and is lacking in the literature. According to Cheung and Rowlinson (2005), the problems of adversarial business relationship do not come from contractors only, but also, the client's organization that form an integral part of DSD practitioners. Thus, DSD actor groups in the

construction industry need a 'change of mind set' to trigger business attitudinal behavioural and cultural transformation for improvement and continuous improvement in business relationship in the DSD activities. The kind of change, attitudinal behaviours required in business is essential for an effective and efficient supply chains of information flow (SCIfs) (Hatmoko and Scott, 2010). Behavioural change in developing and constituting SCIfs is identified as a means to achieve free flow of feedback, traditional non adversarial and innovative information for improvement of DSD activities to contractors (Anim, 2012; Hawkins, 2011; Orgen et al. 2011).

2.4.2. Sources and Nature of Construction Discords, Disputes and Conflicts (DDC)

In considering the human factors which lead to non-collaborative working, ontological researchers' viewpoint of the source, nature and categorisation of discords, disputes and conflicts (DDC) put forward two approaches: the subjectivist and the objectivist approaches. The objectivists' approach (Schmid, 1968), look for the origin of conflict in the social and political setting, the structure of society and consider that the goals at stake can be thoroughly compatible. On the other hand, the subjectivist's point of view is basically on the perceived incompatibility of goals and differences (Axt, et al.2006; Mullins, 2005). Axt, et al. (2006) and Deutech (1991) noting that it is incompatible differences which give rise to conflicts and not the objective incompatibility; objective incompatibility is not as essential as the perceived incompatibility. For that matter, other factors which trigger DSD construction DDC are dependent on incompatibility of goals and interests or their perception as incompatible by parties (That is, non-collaborative and adversarial business relationship among DSD practitioners or between them and contractors caused by incompatibility of goals and interests or their perception as incompatible) precipitate DDC (Yiu and Cheung, 2006). However, as Leicht and Jenkins (2010) and Hinde (1997) put it

“Certain attitudinal behavioural propensities including capacity for aggression are common to virtually all humans. That does not mean that they are genetically determined. Humans have a capacity to be both aggressive and altruistic.....the behaviour shown depends on a host of development, experiential, social and circumstantial factors.” As in the record of Collins (2013; 1975), people pursue wealth, power and prestige in all societies and that creates conflicts over these goods. The DSD practitioners and contractors like all humans, desire to have wealth, power and prestige since these are the primary objectives of their engagement in getting involved in design service delivery (DSD) activities.

Hobbes, (1640) another thinker, notes that if any two men desire the same thing which nevertheless they cannot both enjoy, they can become enemies; in the way to achieve their end, which is principally their own conservation and sometimes their delectation only; endeavour to destroy or subdue one another (Fisher-Yoshida, 2005; Ebestein, 2003). DSD practitioners and contractors’ therefore, in an effort to achieve their objectives, get themselves involved in discords, disputes and conflicts (DDC) which end in non-collaborative working and adversarial business relationship due to pursuance of common benefits, incompatibility of objectives, goals, interest or the perceived incompatibility issues. Conclusively, the DSD activities and DDC partly result from developmental, experiential, social and circumstantial factors such as pursuit of wealth, power, and prestige and in some one way or another create opportunistic attitudinal behaviour (Orgen et al., 2012a, Leicht and Jenkins, 2010; Hinde, 1997).

2.4.2.1 Categories of Construction Design Service Delivery Discords, Disputes and Conflicts (DDC)

The categories of construction DDC depend on specification of standard of conflict level and intensities (Jelodar and Yiu, 2012). Broadly, DDC are divided into two: non-violent and violent. Beside, five conflict intensity stages have been identified for both phases of non-violent and violent DDC (Axt, et al., 2006). They range from latent conflict to war, these comprise: latent conflict, manifested conflict, crisis, severe crisis and war (Jelodar and Yiu, 2012; Axt, et al., 2006). However, the very nature of construction DDC which has been ascertained (Orgen et al., 2011) and the fact that there are in existence conflict and dispute resolution methods such as: litigation, arbitration, adjudication, mediation and mini trial, show that the DDC are institutionalized (Axt, et al., 2006). Therefore, DDC are controlled in current construction, for example, traditional procurement practices in project delivery.

They are however, not prevented or reduced or eliminated to allow for an effective collaborative working and appropriate business relationship preservation, improvement and continuous improvement of DSD in the construction industry (Pryke and Smyth, 2006). This is partly due to the fact that these resolutions or settlement methods of DDC are not integrated as part of the delivery processes. Also, DDC are not addressed alongside project delivery (Orgen et al. 2013a). Separate times are arranged or set for the hearing of DDC and the redresses or the awards are all DDC control resolution mechanism (Jelodar and Yiu, 2012; Tazelaar and Snijders, 2010). Moreover, there is also an undeniable fact that there exist high mobility trends in the construction industry, which make it possible for the construction DDC, and for that matter, DDC in the DSD activities, to be kept under control (Jelodar and Yiu, 2012; Axt, et al., 2006). Yet, that does not attest to any prevention or reduction or elimination of DDC in the DSD activities but often disturb DSD practitioners

and contractors (DSD actors), project delivery time, cash flow and the management of the SCIfs and other supply chains and networks in the construction industry (Jelodar and Yiu, 2012; Pryke, 2009). In the light of this useful literature revelation and analysis, the DSD discords/disputes/conflicts (DDC) can be said to exist and can be described as non-violent (Jelodar and Yiu, 2012; Axt, et al., 2006). DDC in DSD activities involve the following phases: latent DDC, manifest DDC (observed DDC) to a large extent and in very isolated cases unexpected crisis DDC occur (Axt, et al., 2006).

2.4.2.2 Interest and Needs

According to Misis (2010) and Vold (1958) humans are by nature social beings who form groups out of sheer interests and needs. In the process of forming groups, DDC generate due to differences in interest leading to non-collaborative working and adversarial business relationship (Misis, 2010). The intentions among the various practitioners/groups/organisations are to form groups or teams to achieve shared interests and needs but the egoistic tendencies associated with attitudes and behaviours take control of the actors attitudinal behaviours, increased in-ward looking, dishonesty, less or no communication, non-commitment, increased competition and lack of concern for others win-win-win situation (Al-sweity and Enshassi, 2013; Pryke, 2009). The situation is exactly congruent with the statement advanced by Williams and McShane (2010); which is also confirmed in the work of Misis (2010), that the interests and needs of groups interact and produce competition over maintaining and/or expending one groups position relative to others in the control of necessary resources (money, time, value- quality, employment- jobs or new projects, education–information and the like). Grounding that the differences in interests among humans are potential sources of DDC, it makes it evident that there exists non-collaborative working and adversarial business relationship among the practitioners and

between them and contractors. The unfortunate aspect is that such attitudinal behavioural factors cause performance to suffer due to lack of collective problem solving, alignment of objectives and interests of business actors (Lee, 2006).

2.4.2.3 Authority, leadership, control, and business relationship failure

Other issues that generate construction discords, disputes and conflicts are location and allocation of leadership, authority and control. As stated in the research of Collins (1975), people dislike being controlled and thus engage in conflict to avoid being controlled. For that matter, among the practitioners, the perceived issue or idea is that, there is no one group of individuals or organisations which is in full of trust for the other. - This results in perceived DDC of latent leadership struggle. Trust that exists is only quasi or partial inter-relationship for sometime or a time to achieve mutual or/some opportunistic benefits of one-off project or the other (Paliszkiewicz, 2011). For instance, mistrust or opportunistic behaviour arises where actors who are not project managers claim to be one (Ahadzie et al., 2014). As such, the situation seems to block a lot of vital inter-personal/inter-organisation activities (Orgen et al., 2012a). This is confirmed by a statement of Mullins (2005, p 1053) noting that “particularly, conflict is behaviour intended to obstruct the achievement of some other person’s goals.” Lack of trust, openness, understanding, commitment, joint problem solving and efforts to foster strong business relationship among DSD practitioners and between them and building contractors (suppliers) are identified as rather poor and adversarial (Laryea, 2010; Anvuur et al, 2006). This therefore is a serious contradiction and attack on business relationship improvement and continuous improvement which need to exist through mutual well-being of building or nurturing cordial and harmonious business relationship (Liiker and Choi, 2006).

Further, failure to improve through the business relationship improvement approach or investing in business relationship continuous improvement for long-term benefits (Liiker and Choi, 2006) is a major contentious issue (Murdoch and Hughes, 2008). Non-collaborative working and adversarial business relationship causing DDC problems block improvement and continuous improvement of DSD and can end in business relationship failure cycle (Murdoch and Hughes, 2008; Humphries and Wilding, 2004). That then prevents essential practitioners and contractors sharing and exchange of feedbacks, traditional and innovative information alien to good business relationship information for improvement of design activities to contractors (Orgen et al., 2013a; Anim, 2012; Loo, 2003).

2.4.2.4 Unfairness Issues and Superior Influences (biases)

It is interesting to note that there is no single procurement process or project delivery approach that can go on without humans. Against that background, one aspect this study seeks for is attitudinal behavioural change from biases (Regan, 2012; Jaffar, et al., 2011). Therefore, research into construction DDC in DSD activities will be very useful to all procurement systems including the traditional procurement practices for project deliveries (Al-sweity and Enshassi, 2013; Cheung and Rowlinson, 2005). More so, as human attitudinal behaviours are complex to be free from biases, in non-collaborative working and adversarial business relationships, fairness is never beyond questioning. In the construction industry, among practitioners and between them and contractors, business relationships show default in that respect (Orgen et al., 2012a; Jaffar, et al., 2011). That is because, as Rousseau (2000), a political thinker records, naturally man is guided by self-interest. In support of this statement, another political thinker Locke (1993) observes that men by nature are biased towards their interests (Al-sweity and Enshassi, 2013; Ebestein, 2003). They are

biased and most often inclined to protect their (practitioners) own and their superiors' or employers' (clients) economic interest, creating a lot of DDC that ends in non-collaborative working and adversarial business relationship arising from latent pain and sour misgivings (Ebestein, 2003).

2.4.3 Cultural Issues and Challenges

The culture and cultural setting in which DSD practitioners, organisations or firms operate have great influence on non-collaborative working and adversarial business relationship situation and impact unpredictably negative pressure on these entities. Culture as Mullins (2005) noted is a general concept which is difficult to define or explain exactly. It is therefore a clear indication that issues and challenges that culture strongly exhibit are many and complex. These issues and challenges evolve from the detailed, established and pervasive context for everything done and thought in organizations, firms or in the societies (Mullins, 2005). Hofstede (1986) in an acceptable research on culture realises that human behaviour is not random but predictable. People carry mental plans and agenda that can be seen indirectly through behaviours shown. The plans and agenda of the DSD actors like all other humans influence their decisions, policies, beliefs and attitudinal behaviours in dealing with all DSD activities. Most especially the first three factors out of four cultural dimensions or factors Hofstede established as power distance, individualism-collectivism avoiding uncertainty and masculinity/femininity clarified the situation (Gouveia and Ros, 2000). The first three factors play critical influential roles in the DSD activities. For instance, in the power distance situation, actors in a supply chain or organisation or firm accept/could accept unequal or unbalanced power and authority as right or legitimate. This situation could exist in some cultural societies or nationalities (Gouveia and Ros, 2000). However, the situation could be different elsewhere. For example, power among the DSD actors in supply chains or

as organizational actors where there is unequally distributed power or authority would not be mentally and morally acceptable in the Ghanaian construction business relationship. For that matter, it would not as well be acceptable among DSD actors in Ghanaian society.

2.4.4 Construction Business Relationship Situation in Ghana

The economy of Ghana, like most other developing countries, which came under foreign control, had its people, management systems and structures of organisations in the various sectors of the economy not entirely free from colonial influence and impact (Laryea et al., 2012). The Ghanaian construction industry (GCI), as one of the economic sectors influenced by colonization, has since independence, followed mostly the traditional procurement system of securing and managing construction contracts (Laryea et al., 2012; Laryea and Mensah, 2010; Anvuur et al., 2006). The (GCI), under this procurement system is typified by excessive delays, poor workmanship/quality and cost overruns (Ameyaw and Oteng-Seifah, 2010).

Many past and current literature have several records showing that the traditional procurement system thrives and encourages harsh or adversarial relationship among construction DSD actors (Jaffer et al., 2011; Pryke, 2009; Bresnen, 2007; Baiden et al. 2006; Naoum, 2003; Bresnen and Marshall, 2002; Egan, 1998; Latham, 1994). This explains the poor project delivery witnessed in the industry over the years. Besides, lessons and experiences of DSD professionals in the use of the traditional procurement system over the years have provided evidence that the system enhances non-collaborative, adversarial business relationships leading to DDC in the GCI (Ahadzie, 2007; Anvuur et al., 2006; Ramus and Birchall, 2006). Such non-collaborative and adversarial business relationship situation in Ghana is not uncommon or entirely different from that of other developing

economies but pose unique and severe challenges (Ahadzie et al., 2014; Ssegawa-Kaggwa et al., 2013; Jaffar et al., 2011; Du Plessisa, 2007; Odusami et al, 2003; Adebayo, 2000). From these what is unknown is the exact nature and/or the characteristics of these non-collaborative working and adversarial business relationship challenges, the degree of impact and its effects on the SCIfs of the DSD activities. It is these knowledge gaps that the study is seeking to contribute using the Ghanaian context.

Additionally, dating back from the colonial time through the independent era, some efforts have been made to change the systems and structures from the adversarial situations to alternative arrangement so as to achieve improvement in project delivery. However, this has not yielded the desired collaborative results (Anim, 2012; Laryea et al., 2012; Laryea, 2010). In Ghana, perhaps the most significant change has been the passage of Act 663 (2003) the implementation of which led to the creation of the position and role of the project manager in the Public Procurement Law (Ahadzie et al., 2012). The law is a comprehensive legislative instrument intended to correct the shortcomings such as the harsh and adversarial relationship inherent in the public procurement system and its associated organizational weaknesses in Ghana (Dza et al., 2013; Ameyaw et al., 2012). Additionally, it is meant to reduce or eliminate problems associated with project delivery processes leading to project failures such as delays. This comes with its negative effects, which have been noticed and sometimes cause common problems like DDC (Owolabi et al., 2014; Fugar and Agyakwah-Baah, 2010; Ramus and Birchall, 2006). Furthermore, project delivery challenges are noted in the procurement audit of Ghana (World Bank, 2003). These include continuous evidence that contracts take lengthy periods to close, due to undue delays, poor coordination and communication structures (Amoah et al., 2011). The interventional efforts of the government have encountered challenges due to the perceived widespread corruption in the

current procurement activities exacerbated by adversarial business relationships, ethnic and social groupings (Ameyaw et al., 2012; Laryea, 2010; Anvuur et al., 2006). These kinds of business situations cause mistrust, construction non-collaborative working and harsh or adversarial business relationships among the DSD actor groups as in the emphatic statement of Laryea (2010, pp 224) “People cannot be trusted.” Thus making construction interdependencies for collaborative working and good business relationships among the DSD actors/other construction workers for high level performance elusive in the industry (Hawkins, 2011; Laryea, 2010; Axt et al., 2006; Mullins, 2005).

The trend of construction business relationship (CBR) in the construction sector of the Ghanaian economy and the level of performance or output clearly shows that there are difficulties arising out of the nature of the public procurement system, which is characterized by DDC and corruption (Ameyaw et al., 2012; Laryea, 2010; Anvuur et al., 2006). Most probably solutions to overcome these CBR challenges, its effects, how the processes and procedures used function in developing and constituting SCIFs and other construction activities have not been realized. Therefore, CBR challenges and its effects do not allow mergers of DSD actor groups’ organisations to be realised and to benefit from consistent collaborative and optimum quality improvement of the DSD activities (Laryea and Mensah, 2010; Cisco Systems, 2008). In view of these business relationship situations, low infrastructural output and demand for construction services, the state of the construction sector of the Ghanaian economy, for some time now, leaves no doubt that performance of the sector of the economy seems to be lacking steady improvement (Laryea et al., 2012; ISSER, 2012; Ameyaw et al., 2012) The unsteady development of the construction sector is worrying because Ameyaw et al. (2012) noted in a study that about 50-70% of the national budget (after personal emoluments) is procurement related. Thus the challenges of non-

collaborative attitudinal behaviours and ineffective procurement practices could cause DDC to continue to rise to disturb relationship quality and subsequently affect the economic growth of the nation (Jelodar and Yiu, 2012; Laryea, 2010; Ahadzie, 2007). Furthermore, these CBR, procurement situation and related challenges could provide some reasons for the unsteady economic annual growth rate targets realized in this subsector of the Ghanaian economy from 2008 to 2012 (ISSER, 2012).

Besides, these notable CBR challenges identified provide evidence that a business relationship failure cycle has subtly set in to produce effects that impede the effective and efficient development of SCIFs for the improvement of DSD activities in Ghana (Laryea et al., 2012; Orgen et al., 2012a; Humphries and Wilding, 2004). Again, these account for the developments which have worsened the overall deficit of hygienic infrastructure provision in Ghana as well as some other developing countries, a situation that contributes very much to the emigration of both highly skilled and semi-skilled professionals to the developed economies (Gibson and McKenzie, 2010). Also evidence is noted in the study of Kana (2009) that the developing economies fail to provide desired facilities and support for their own intelligentsia. This failure causes considerable knowledge flow to the industrialized nations causing serious fiscal costs varying much across the developing world (Gibson and McKenzie, 2010). Further, the ISSER (2012) construction indications shows unsteady economic growth, therefore lack of proper procurement arrangement which is not free of DDC and corruption seems to strengthen the business relationship failure cycle (Jelodar and Yiu, 2012; Ameyaw et al., 2012). A business cycle situation that leads to continuous ineffective and inefficient development of SCIFs for consistent execution of projects to improve physical infrastructural situation and the environment (Laryea et al., 2012; Anvuur et al., 2006; Humphries and Wilding, 2004).

2.4.4.1 Business relationship failure cycle in the Design Service Delivery (DSD in Ghana

The DSD actors (practitioners and contractors) like all human beings value, believe and have the attitudinal behaviours that crave for balance of power in situations in which they operate (Mullins, 2005). Such aspiration of the DSD actors if not met, will lead to non-collaborative working and adversarial business relationship. In many societies like Ghana, there exists several different ethnic groups within the country who cherish personal time, freedom and personal challenges (Gouveia and Ros, 2000). DSD actor groups' operation in freedom with balance of power is the mission and vision of the people (actors), that inspire them, than in groups or collectivism that provide protection for unquestioning loyalty (Bredillet, 2009). With such cultural background, the DSD actors are leaning to the individualists' stance or pole that assess and accept the independence and personal autonomy of the DSD actors rather than the collectivist stance or pole which look for and value what the organization can offer like training, physical condition and environment where ties between members are strong (Bredillet, 2009). This gives evidence of DSD actors' cultural background, coming from a society in which members do depend on strong cultural ties.

The DSD actors have a nature that shows several traces of non-collaborative working and adversarial business relationship which do not allow integration of DSD activities for project execution (Gouveia and Ros, 2000; Hofstede, 1986). Hofstede (1986) posits that uncertainty avoidance factor is a culture dimension that needs a lot of investigation. However, according to Pryke (2009) the DSD actors seem to consider uncertainty as a tool that has the potential to cause non-collaborative working and adversarial business relationship which can destroy

completely the win-win-win situation for long-term benefit. It can be realized that for a long period of DSD activities in Ghana, for instance the traditional procurement method as has been the practice for procuring building works until the reforms of Act 2003, (Act, 663) increases monopoly of the environment in favour of some actors. This situation give rise to DSD monopoly of professional environment (represented in first 'top' box in figure 2.2) where there is dominance of one firm over the others creating lose-win-lose, lose-lose-win and lose-lose-lose which traps actors in limited choices as indicated in figure 2.2 (Pryke, 2009; Humphries and Wilding, 2004). Such situations increase individualism encouraging professional autonomy of little concern for others with the culture of harsh or adversarial business relationships (Pryke, 2009)

In the public procurement Act, 663, the position and role of project manager (PM) has for the first time been established legally (Ahadzie et. al., 2012). However, the situation has not as yet provided certainty and desire for project managers in the project delivery to manage the procurement in a trusted manner to reduce/avoid the harsh or adversarial business relationships (Paliszkiewicz, 2011). For that matter, the uncertainty avoidance Hofstede (1982) puts forward has not been fully realized due to seemingly strong structure and system causing business relationship cultural failure cycle (Humphries and Wilding, 2004). Non-collaborative working and adversarial business relationship are undoubtedly grounded in the three cultural factors; which contribute to cyclic failure in business relationship (Humphries and Wilding, 2004; Hofstede, 1986).

Design Service Delivery (DSD) in developing countries like Ghana keeps on in non-collaborative working, harsh and adversarial business relationship conditions (Laryea, 2010; Anvuur et al, 2006). Despite all efforts in the past towards achieving cordial, harmonious

business relationship and collaborative businesses, still non-adversarial business culture elude the DSD actors (Hawkins, 2011; Tazelaar and Snijders, 2010; Murdoch and Hughes, 2008). Thus, the situation of continuous non-collaborative and adversarial relationships prevent effective use of critical relationship improvement factors such as trust, alignment of objectives, joint problem solving, communication and others (Meng, 2010; Kadefors, 2004). Further, the ineffective use of the critical relationship improvement factors disturbs business relationships improvement for effective and efficient development of SCIFs which will improve DSD activities for better and steady economic growth of the construction sector of the economy (Meng, 2010).

Non-collaborative working and adversarial business relationship culture causes for instance, construction traditional procurement route and processes to suffer from poor working procedures and practices (Laryea, 2010; Anvuur et al, 2006). These issues then block useful performance feedbacks, traditional non-adversarial methods/review and innovative information for the improvement of the DSD activities (Orgen et al., 2012a). Also, the denial of vital information causes DSD actors constituting the supply chains of information flow (SCIFs) to experience difficulties in communication. It then paves ways for non-collaborative working and harsh or adversarial business relationship. These situations produce similar results of DSD opportunistic attitudinal behaviours of apathy or neglect of collaboration where actors focus on personal objectives as (moving clockwise as represented in the second box) in the DSD business relationship failure cycle in figure 2.2 below (Humphries and Wilding, 2004). It will then create poor or weak supply chain business relationship management difficulties resulting in lack of construction mergers and joint ventures of local firms and companies to take advantage of the Ghanaian construction market, for major government contracts (Laryea, 2010).

This situation is buttressed by the individualistic cultural background of the DSD actors as in section 2.4.3 which holds back any corporate or collective efforts and allows the Ghanaian construction industry (GCI) to some great extent to be dominated and captured by large scale foreign firms or companies (Laryea, 2010). It is of no doubt that no robust sustainable business relationship improvement strategy is being pursued for the improvement and continuous improvement of DSD activities (Hawkins, 2011; Laryea, 2010; Murdoch and Hughes, 2008).

For that matter, the non-collaborative working and adversarial business relationship situation is developing gradually a worse hidden cyclic failure trend in the DSD activities (Tazelaar and Snijders, 2010; Humphries and Wilding, 2004). This gives rise to DSD monopoly of professional environment mentioned earlier which leaves the DSD actors with limited choices as in figure 2.2. An environment that has less concern for other DSD actors, becomes predominant and there is serious lack of trust in management for the improvement of the DSD activities (Paliszkiewicz, 2011; Pryke, 2009). This kind of situation then continues to give rise to opportunism and bounded rationality (represented in the third box) where DSD actors do the minimum they can and get away with, not responsible to any audit unit or checks since the DSD actors are not legally bound. Therefore, these working attitudes and behaviours cause delay, increase cost and often result in DDC (Owolabi et al., 2014; Fugar and Agyakwah-Baah, 2010; Ramus and Birchall, 2006). The situation further leads to DSD business myopia and flow of limited information (represented in fourth box) lacking long-term plan for major work but gives rise to a lot of DDC which allow the setting in of a whole business relationship failure cycle (Humphries and Wilding, 2004). These seriously impede development of any effective and efficient SCIFs development and disturb

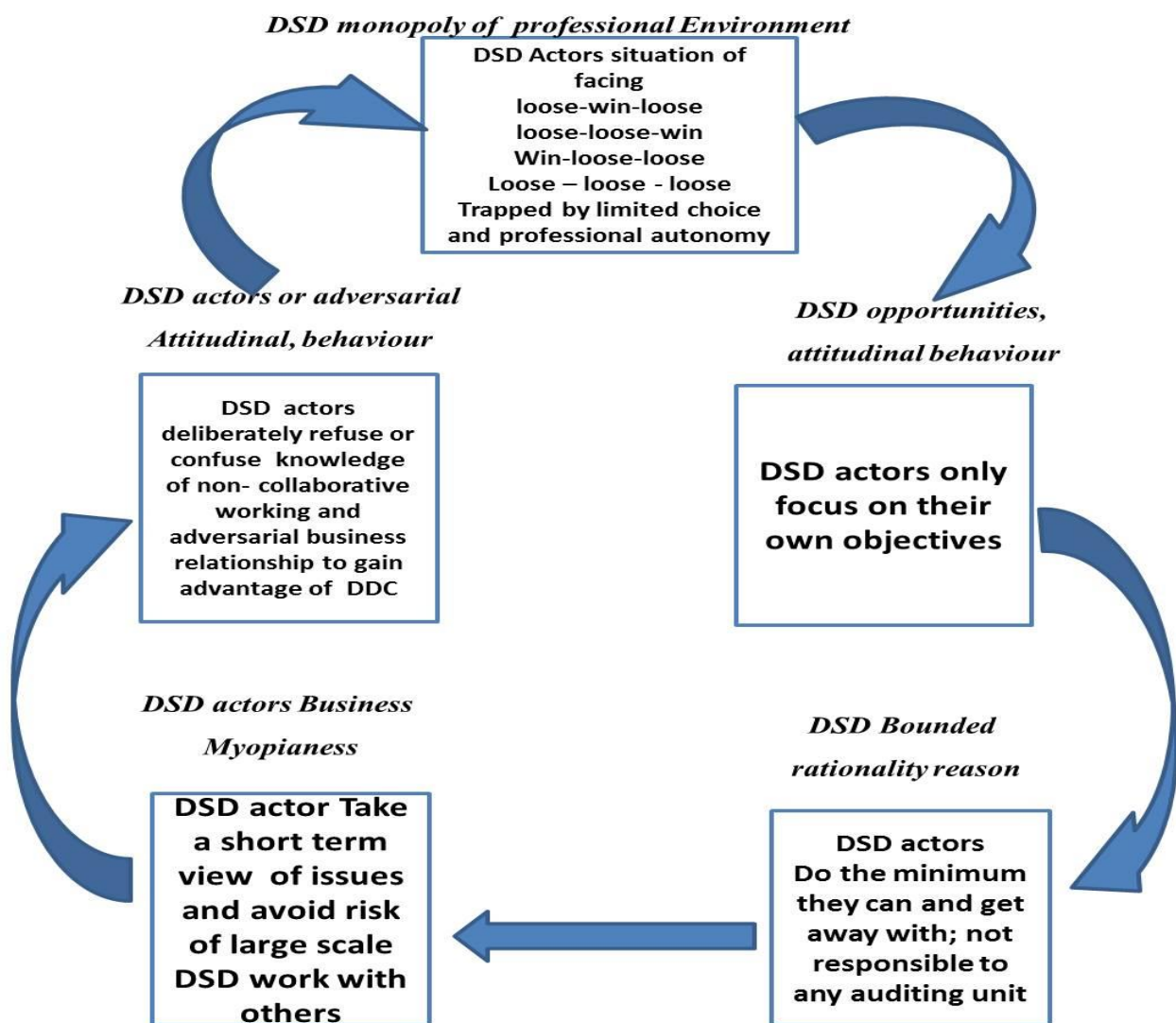
DSD business relationship management improvement as shown figure 2.2. The issues concerning adversarial relationships (represented in fifth box) of the figure 2.2 and others such as DSD actors' opportunistic attitudinal behaviours cause divisions among the actors. Divisions among DSD actors increase fragmentation at work and harsh or adversarial business relationship which create DDC in projects delivery to the advantage of some actors who gain in the short-term from such adverse situations as they disturb long-term benefit of collaborative efforts (Jaffar, et al., 2011; Ramus and Birchall, 2006 Cheung and Rowlinson, 2005).

The fragmented operations of the sub-SCIfs (individual professional works) are DDC prone among the various professional members which strengthens individualism (Gouveia and Ros, 2000; Hofstede, 1986). These professional members include the project manager (PM), the architect (Arc), the quantity surveyor (QS), the services engineer (Ser- Eng.), the structural engineer (St Eng.), the planner (PI), the geomatic engineer (Geo-Eng) and the geotechnical engineer (Geotech-Eng.). Such roles if not properly collaborated lead to poorly articulated, incomplete and uncoordinated drawings and other project documentation (Orgen et al., 2011; Laryea, 2010; Anvuur et al, 2006).

These contentious issues develop into DDC causing non-collaborative working and adversarial business relationship as common features show, for example, in the traditional procurement system used in Ghana a lot of DDC features are experienced. The features then make long-term improvement and continuous improvement of DSD activities extremely difficult which lead to delay, poor quality projects, increased cost, and waste in the construction project deliveries (Orgen et al., 2011; 2012a; Liker and Choi, 2006). Based on these insights, there is

a quest for a robust improvement in collaborative business relationship culture for the improvement of DSD activities in Ghana. Further as part of realising the improvement, developing proposals for improving this culture, is needed to establish and understand the nature and characteristics of this adversarial relationship which is currently lacking in the literature.

EXISTING ADVERSARIAL BUSINESS RELATIONSHIP IN DSD SYSTEM



DSD BUSINESS RELATIONSHIP FAILURE CYCLE

(Adapted from Williamson, 1975 & Thunpheries' Et Al, 2004)

Figure 2 2. DSD Business Relationship Failure Cycle situation in Ghana

2.4.4.2 Effect of Construction Business Relationship (CBR) on Design Service Delivery (DSD) in Ghana

In the current CBR situation in Ghana, DSD actors are observed to have a lot of relationship instability which cause discords, disputes and conflicts (DDC) leading to non-collaborative and harsh or adversarial relationship, which have various effects on the improvement of DSD activities (Laryea, 2010; Anvuur et al, 2006; Proenca and de Castro, 2005). Such CBR challenges or problems which cause delays in developing and constituting SCIFs slow down decision-making of all the project teams and this situation is identified as the main cause of delays in projects deliveries (Ramus and Birchall, 2006; Sahin and Robinson, 2002; Chan and Kumaraswamy, 1997). Besides, as these problems are potential sources of DDC, they further create relationship instability cycle which lead to continuous delays and subsequent destruction of all project objectives or abandonment of projects (Owolabi et al., 2014; Jaffar, et al., 2011;Fugar and Agyakwah-Baah, 2010; Ramus and Birchall, 2006; Proenc,a and de Castro, 2005).

As built environment professionals in a developing country, DSD practitioners, including contractors, face further CBR challenges emanating from uncertainties of weak economies which do not encourage building of effective relationships or developing stable relationships (Hawkins, 2011; Proenc,a and de Castro, 2005).The challenges become pronounced by also the highly fragmented characteristics of the construction industry and low levels of trust existing among the actors as reiterated in several literature (Jiang, et al., 2012; Pryke, 2009;

Bresnen, 2007; Baiden et al. 2006; Naoum, 2003; Bresnen and Marshall, 2002; Egan, 1998; Latham, 1994). These kinds of situations and relatively short-term project duration coupled with limited projects available increase the aggressive desire to procure contract causing harsh or adversarial business relations which tends to push aside the need for a DSD collaborative businesses (Anim, 2012; Hawkins, 2011).

The scale of CBR effects in developing SCIFs elude DSD actors in favour of seeking more contract opportunities (Hawkins, 2011). Such an elusive situation has increasingly covered the loss of sight of the threats business relationship failures cycle pose to the developmental efforts of seeking mergers in developing and constituting SCIFs (Hawkins, 2011). These make the elimination or reduction of adversarial business relationship a mirage, disturbing improvement of the DSD activities (Jiang, et al., 2012; Hawkins, 2011). For instance, as DSD actors become aggressively desirous to win and gain from contract, the intention for harmonious, cordial business relationships among DSD actors to produce dynamics in the DSD collaborative businesses is usually constrained (Anim, 2012; Hawkins, 2011). These are illustrated in the statement of Pryke (2009) supported by Skitmore and Smyth (2007) who report that non-collaborative behavioural culture and adversarial business relationship in some developed economies like the UK is characterized by cost cutting of tender figures or projects cost. While this is also common in Ghana and other developing countries, the harsh economic, political, socio-cultural and environmental conditions of many developing countries make the degree and transparency associated with contracts or tender prices very blurred indeed.

Additionally, in Ghana, the situation of CBR in the most common traditional system of procuring contracts where design is separated from production causing divisions among

DSD actors with some clients requirements/decisions failing to appear in tender documents leading to variations in the construction phase (Laryea, 2010; Anvuur et al., 2006). Besides, CBR challenges like poor communication cause the SCIFs to be characterized sometimes as inconsistent and lacking coherence with law and best practices (Hatmoko and Scott, 2010; Public Procurement Authority, PPA, 2010b; Chan et al. 2004; Latham, 1994). It is in similar view that Odusami et al. (2003) of Nigeria indicate that it is not uncommon to observe in the Nigerian construction industry uncoordinated supply chain of information flow for DSD activities. These problems occur partly as a result of lack of proper allocation and location of authority of control among DSD practitioners for the improvement of the DSD activities (Orgen et al., 2012a; 2011).

The problems are compounded by the fact that a research carried out into causes of cost overrun, indicates that five out of eight problems identified are design management related (Odusami et al., 2003). The problems which are not different from some of CBR issues in Ghana, include non-compliance of design with planning or statutory requirements, incomplete design at the time of going to tender, lack of co-ordination, ambiguity of risk allocation and inadequacy of management control (Anim, 2012; Anvuur et al., 2006; Odusami et al., 2003). These problems keep surfacing because no evidence is found to show that the DSD actors consider CBR as critical collective ethos and persona for effective and efficient development of SCIFs to improve the DSD activities (Hawkins, 2011). On the contrary, what is realized frequently is that who is best placed to lead the project team or the DSD practitioners is a major source of controversy bleeding DDC often ending in non-cooperation and adversarial business relationship amongst the DSD practitioners (Orgen et al., 2012a; 2011). These occurrences are common especially where actors who are not project managers claim to be (Ahadzie et al., 2014). In Ghana, the enactment of the Public

Procurement Act 2003, Act 663, in which recognition is now given to the title Project manager (PM) is very striking in the annals of procurement practices in Ghana (Ahadzie et al., 2014). Hitherto the articles of agreement mentioned the architect for especially building works and engineer for civil engineering works (Ahadzie et al., 2014). However, a lot of collaborative work still rests on the shoulders of both the DSD actors and clients, that is government to change the existing CBR which cause the non-collaborative and harsh or adversarial nature of the traditional approaches responsible for poor managerial and administrative fragmented practices associated with projects (Anim, 2012; Hawkins, 2011). For the CBR to be trustingly or adversarially oriented is no doubt too simple a view as both strategies co-exist, but the profound worry is that the latter can destroy completely all project objectives or the improvement of the DSD activities (Jiang, et al., 2012; Ramus and Birchall, 2006). In this sense, the separation of managerial functions from other DSD activities is necessary for appropriate CBR ethos among the DSD actors with which the architects and engineers have to focus on design issues rather than effective management of the overall construction processes and procedures. All these are contentious issues that mostly develop into harsh DDC situations creating adversarial business relationships among DSD practitioners and mostly between them and building contractors in Ghana (Ssegawa-Kaggwa et. al., 2013; Orgen et al., 2011). The literature has shown some evidence of issues that cause non-collaborative working and adversarial business relationships situations among DSD actors (DSD practitioners and contractors), indeed, they are well known and documented. However, many of what is known are simple qualitative information as there is lack of detailed empirical description of the real CBR situation. The CBR situation has not gained from concerted efforts to investigate the effects of CBR on the DSD activities and in the large sense on the construction subsector of the economy. This area of the study makes

use of especially qualitative and quantitative analytical methods to provide detailed description of the current CBR situation and its effect on DSD activities.

2.4.5. Influence of Engineering and Technical issues on DSD actors Business Relationship and DDC conditions, levels and intensities.

Furthermore, to continue the study other areas worth considering in the non-collaborative working and adversarial business relationship situations involve understanding and interpretations of constructions engineering designs as part of the DSD activities (Jaffar et al., 2011). The understanding of engineering and technical issues often needs consensus from the actors information flow which in some cases is difficult to obtain and can completely distort project objectives (Ramus and Birchall, 2006). The difficulty in reaching consensus on engineering and technical matters is sometimes due to uncertainties in various activities, wrong interpretations provided or disagreements arising as a result of lack of understanding of factual data and unacceptable details (Jaffar et al., 2011; Smith, 2007). These situations generate in most cases adversarial business relationship problems leading to potential DDC conditions of various levels and intensities which delay, increase cost and affect quality to disturb improvement in project delivery (Yiu and Cheung, 2006; Axt et al., 2006).

2.4.5.1 Uncertainty in project delivery and Engineering challenges and other implications on project outcome

There are a number of technical issues which contribute to non-collaborative working and adversarial business relationships. These technical issues, including uncertainty in project delivery, engineering clarifications, interpretations and explanations, have several implications on project outcome (Jaffar et al., 2011). Uncertainty confronts every project

delivery including DSD activities (Smith, 2007; Clements and Gido, 2006). According to Smith (2007), uncertainty is normally termed as lack of potential to accurately estimate the probability of failure. Also, it is noted that uncertainty has various degrees or likelihood of causing failure. This is largely dependent on a combination of several factors including assumptions made, estimates of resources and their availability for any DSD activities (Clements and Gido, 2006). These factors and the fast changing world cause much confusion and uncertainty of various degrees that can have different adverse consequences on the outcome of projects (Smith, 2007; Clements and Gido, 2006). Consequently, uncertainty in project delivery creates different levels of uncertain environments, which pose different challenges to DSD organisations and also distinguish between them (Smith, 2007). These occurrences expose the technical competence or incompetence and other weaknesses of the DSD actors depending on how they operate to overcome or fail in the environmental uncertainty (Jaffar et al., 2011; Smith, 2007). Uncertainty in project delivery has the potential to produce unexpected DDC that can have the capacity to distort effective and efficient development of the SCIIs. Further, uncertainty in project delivery has the capacity to threaten or sometimes destroy completely the understanding of mutual benefits through win-win-win (concern for others) situation among DSD actors (Pryke, 2009). Thus, uncertainty in project delivery disallows harmonious, cordial business relationship to thrive for the improvement of DSD activities (Jaffar et al., 2011).

Engineering clarifications, interpretations and explanations of the SCIIs sometimes become adversarial instead of being collaborative and building cordial, harmonious business relationship with all project participants such as DSD actors (Jaffar et al., 2011; Pryke, 2009; Clements and Gido, 2006; Yiu and Cheung, 2006; Axt et al., 2006). Such engineering clarifications, interpretations and explanations are supposed to facilitate clear understanding

of all details and complexities in project delivery (Clements and Gido, 2006). These involve understanding of project objectives, expectations such as standards, policies, processes, procedures used during DSD actors and clients interface activities of negotiations for fees and other benefits (Smyth and Fitch, 2009). Again, they also include the allocated duties and responsibilities of individuals which will encourage collaborative business relationship in developing SCIFs through relationship improvement factors (Meng, 2010). However, these engineering clarifications, interpretations and explanations also involve the law, conditions of contract and related issues, generating DDC and ending in adversarial business relationships (Procurement Authority, PPA, 2010a). Additionally, the details of these engineering issues are not being achieved or properly addressed (Jaffar et al., 2011; Yiu and Cheung, 2006). Therefore, there are difficulties in merging or achieving collaborative relationship culture to make DSD activities continuously result-oriented in the Ghanaian construction industry (Anim, 2012; Orgen et al., 2012a; Laryea, 2010; Clements and Gido, 2006).

2.4.6 Unrealistic expectations and demands from clients

Technical issues also involve unrealistic expectations and demands from clients as well as poor, individual decision-making in the delivery processes (Jaffar et al., 2011; Ebestein, 2003). These issues may involve cost, payment of interest on delayed payment as well as valuable commodities or assets in the project delivery that DSD actors can contest for (Axt et al., 2006). However, the most serious concern is the loss of face and its aftermath effects of preventing or reducing future award of DSD contracts (Jaffar et. al, 2011). This happens where the delivery processes slip into project failure such as delays, with its negative effects caused by common problems (Owolabi et al., 2014; Fugar and Agyakwah-Baah, 2010).

Furthermore, the levels, persistence and reluctance of these situations strengthen the occurrence of DDC (Yiu and Cheung, 2006; Axt et al., 2006). For instance, the uncertainty in DSD activities arise when there is a difference between the information flow expected and that which is available to be used by DSD professionals to develop and constitute the SCIfs (Jaffar et. al., 2011; Hatmoko and Scott, 2010). Similarly, engineering clarifications, interpretations and explanations create several differences among DSD actors (Jaffar et al., 2011). They sometimes become grievous, blocking useful communication, performance feedback and innovative information required for developing and constituting effective and efficient SCIfs (Axt et al., 2006; Yiu and Cheung, 2006). Such situations often cause DDC among the DSD actors which make DSD and project delivery suffer (Axt et al., 2006; Yiu and Cheung, 2006). There are situations where clients' designs expectations are too high and technically unrealistic in realizing the project delivery in terms of cost, expertise, scale and time (Jaffar et al., 2011). Another problem is the natural differences in interest among humans, the nature of the laws, contract conditions and interpretation of the same document in the construction industry which are also fertile determinants for DDC (Ebestein, 2003). Situations such as contractors' demands that need preparation of document or supporting instructions, prompt clarification or some different interpretation may delay unduly in the hands of DSD practitioners (Jaffar et al., 2011). In DSD activities, the same laws or contract conditions are differently interpreted by different people (PPA, 2010a; Orgen et al., 2011) and the interpretation given by DSD practitioners at times end in DDC.

2.4.7 Laws, Contract Conditions and Interpretations

The natural differences in interest among humans, the nature of the laws, contract conditions and interpretation of the same document in the construction industry are also fertile determinants for DDC (Ebestein, 2003). As noted by Locke in Ebestein (2003), if all men

are guided by pure reasoning, they would see the same laws. Unfortunately, that is in doubt in current procurement practices. In the DSD activities, the same laws or contract conditions are differently interpreted by different people (Case no 8, PPA, 2009; Orgen et al., 2011) and the interpretation given by DSD practitioners at times end in DDC. Marx, an influential social thinker of the 19th century noted this and expressed that view which was confirmed by Cullen and Agnew (2006); Williams and McShane (2010). Misis (2010) asserted that the law is used as a mechanism by which the middle or upper class maintain their dominance over the lower classes. To be precise, the law is issued as a tool to protect the economic interests and holdings of the bourgeoisie, as well as to prevent the lower classes from gaining access to financial resources.

By observation, association and congruence of that knowledge in the construction industry, it seems most contractual clauses for claims such as fluctuations, variations, extensions of time, loss and/or expense due to matters affecting progress of work in construction projects delivery are adopted to favour the superiors (clients). Further, unfair or opportunistic assessments occur as in business relationship failure cycle as in figure 2.2, offer similar grounds concerning interim valuations, retention as well as charges of liquidated ascertained damages (Ramus and Birchall, 2006; Humphries and Wilding, 2004). They are established mostly to serve clients' interest and needs. These issues raise DDC anytime one of the parties (contractor or sub-contractor) feels cheated and over-controlled in such dealings (Orgen et al., 2012a; Ramus and Birchall, 2006). Also, bid securities- guarantees and bonds, which are often requested result in the increase of contract sums and insolvency or improper risk allocation and location. These bid securities producing favorable consequences for the economic benefits to superiors (clients) are seen as one-sided protection and adversarial (Yiu and Cheung, 2006; Axt et al., 2006). Such experiences are

seen between superiors- clients or clients' representative in a clients' representative/contractors relationships or contractors in a contractors/subcontractors relationships as contract participants (Ramus and Birchall, 2006).

This superiors/subordinates relationship is identified as a potential source of creating non-collaborative and adversarial business relationship among actors. DSD practitioners, who occupy the key node (position) in the supply chain and networks figure 2.1 are responsible for the development of the construction supply chain of information flow (Pryke, 2009). These practitioners who initiate, regulate, instruct, interpret, implement, control and use these contractual clauses for the benefit of clients or parties must do so professionally with transparency and fairness. When they fail to do so all levels of conflicts are possible (Jelodar and Yiu, 2012). Similarly, the same DSD practitioners need to steer the different procurement processes in the execution of projects. Besides, in the execution of projects, DSD practitioners have contractual obligation to represent their superiors-clients as agents or consultants and seek improvement of DSD activities. These demand a robust business relationship management improvement among the practitioners- the producers and the building contractors- the suppliers to realize an effective and efficient SCIfs for successful project delivery (Liiker and Choi, 2006). These contract administrative processes and procedures are undoubtedly in some cases flouted on invoking tensions that develop and give rise to non-collaborative and adversarial business relationship (Yiu and Cheung, 2006)

2.4.8 Influence of Valuable items or issues on DDC and their origin in the DSD activities.

A number of issues which contribute to DDC are associated with valuable items (Axt et al., 2006). The theories and origins of DDC show some fundamental reasons for persistence and

reluctance of non-collaborative working and adversarial business relationship in DSD activities (Axt et al., 2006; Yiu and Cheung, 2006) Such a situation strengthens the dynamics, levels, intensities and effects of DDC on DSD activities. In all, detection of DDC in the improvement of DSD activities is essential (Orgen et al., 2011; Axt et al., 2006). Proper detection of DDC can assist in noticing the nature and characteristics of the non-collaborative working and adversarial business relationships and the influence they can have on DSD activities.

2.4.8.1 The Origins of DDC in the DSD activities

Further, as in section 2.4.2.1 conflicts among DSD actors occur sometimes due to their economic interests and that of clients. In this sense, construction DDC arises frequently over items or issues which are considered valuable. As stated in Dahrendorf et al. (2006, 1959), Fisher (2000) conflict must be over something viewed consensually as valuable. Therefore, the question posed in the work of Axt, et al. (2006) is: what is/are the commodity or commodities the parties in conflict argue for? The sociologist Deutsch (1973) provides answers by distinguishing among five basic issues over which conflict can arise namely: control over resources, preferences and nuisances, beliefs, values, or the nature of the relationship.

In the construction industry and by the foregone distinction of issues of conflicts, it is obvious that a limited number of projects, time-bound projects/consequences such as: liquidated ascertained damages, quality/cost/value of projects, delay in payment and failure to pay interest on payments delayed. These incoherence, uncoordinated, inconsistent, poorly articulated design (Odusami et al., 2003) interpretation of contract conditions, law and

documentation result in many claims for variations. These then create a fertile environment for corruption and greed, which naturally evoke DDC (Ameyaw et. al., 2013; Axt, et al., 2006; Yiu, and Cheung, 2006). In the statement of Dahrendorf et al. (2006) and Coser (1974), greedy institutions create superimposed and unrealistic conflicts. This kind of conflict is due to capitalism, which Al-sweity and Enshassi, (2013); Dahrendorf et al. (2006) and Bonger (1916) believe is the cause of crime due to its tendency to promote a system based on selfishness and greed. These logically urge on the practice of promoting delays, corruption, harsh or adversarial business relationships and non-collaborative working, which lead to DSD business relationship failure cycle (Owolabi et al., 2014; Ameyaw et. al., 2013; Fugar and Agyakwah-Baah, 2010; Anvuur et al., 2006) as in figure 2.2 of section 2.4.4.1. Such selfishness manifests itself in competition among individuals/organisations as in construction bidding processes. Therefore, as noted by Pryke (2009) the results of these selfish tendencies lead to an instinct of avoiding the achievements and benefits which win-win-win situation offers. Still pursuing the issue, such selfish attitudinal behaviours require changes, through a change of ‘mind set’ for long term mutual achievement and benefits (Cheung and Rowlinson, 2005). Subsequently, one of the cardinal points of this research, which is developing a win-win-win situation (concern for others) among the DSD actors to improve the DSD activities (Pryke, 2009) is very much the focus.

2.4.8.2 Dynamics, Levels, Intensities and their Effects on DSD discords, disputes and Conflicts (DDC)

In a further argument to strengthen the basis of the adversarial issues, there is the need to consider the dynamics of DDC, which are the changes in courses and stages after the start of the DDC. The usual trend of DDC is that it passes through certain intensity scale with a series of phases such as the beginning, the developmental and the end phases (Jelodar and

Yiu, 2012; Axt, et al., 2006; Yiu and Cheung, 2006). It is a kind of development that produces DDC in phases (initial), contributing to the persistence of non-collaborative working and adversarial business relationship. DDC is concerned with attitudinal behavioural traits, so it can only be prevented or reduced when there is a 'change of mind set' within the actors and shown between/among the DSD actors through business relationship management (RM) concepts, frameworks and models (Cheung and Rowlinson, 2005). That aside, the intensities of DDC occurs with strength or degree of impact which can cause continuous adversarial business relationship (Jelodar and Yiu, 2012; Yiu and Cheung, 2006).

The developing DDC produces different levels of changes and intensities, once issues that cause the DDC have erupted. In situations where different levels of change and intensities occur they also contribute to the persistence of the DDC. Actually it is the dynamics, the intensities and the persistence of the DDC that disturb or destroy collaborative working, business relationship management and preservation of business relationship improvement and continuous improvement in DSD activities for project delivery (Jelodar and Yiu, 2012; Yiu, and Cheung, 2006; Axt, et al., 2006). From observation, such persistence of DDC block or deny DSD activities of useful feedback, non-adversarial traditional and innovative information for its improvement (Cheung, 2011). Also, it is worth noting that the dynamics and intensities of DDC phases depend essentially on variables such as the level of incompatibility or the level of perceived disagreement or incompatibility which impacts positively on the escalating nature of the DDC (Cheung, 2011; Axt et al., 2006). Such escalations keep worsening the non-collaborative working and adversarial business relationship and for that matter, blocking improvement and continuous improvement of the DSD activities to contractors (Brahm, 2003).

The DSD discords, disputes and conflicts (DDC) are non-violent to a very large extent because DSD practitioners and contractors do not use force against each other or against contractors, but communication to resolve issues (Cheung, 2011; Axt, et al., 2006). However, that fact does not deny the existence of subtle DDC (non-violent DDC) as manifested in differences of opinions, views, interests and competitions (Jelodar and Yiu, 2012). Brahm's (2003) framework in figure 2.3 also explains violent escalation of DDC coming from non-violent phases of DDC (Axt, et al, 2006). What can precipitate is the construction of DSD activities. DDC might have the following phases: latent DDC, observed DDC, escalation DDC, stalemate (lose-lose), de-escalation/resolution of DDC, settlement of DDC and post DDC as shown in figure 2.3. This is developed in line with Brahm's (2003) framework as produced in work of Axt, et al. (2006). According to Sandole (1998) and confirmed by Axt, et al. (2006), non-violent DDC consists of pre-manifest DDC process (latent DDC) and manifest DDC process (observed and escalation DDC which hardly gets to the threshold of violent-crisis DDC, but may reach the level of economic or goodwill sanctions as in Figure 2.3.

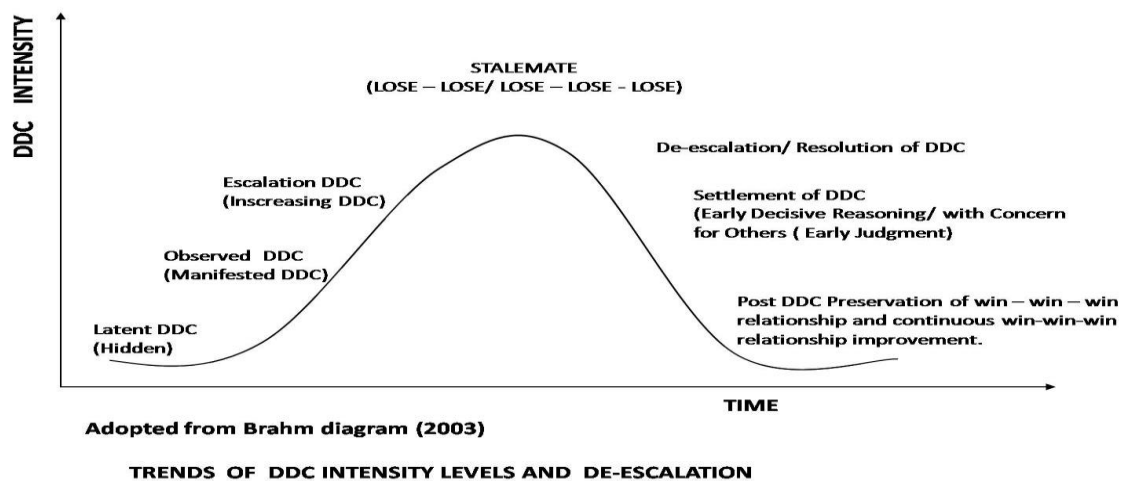


Figure 2 3 Trend of DDC Intensity Levels and De-escalation

2.4.8.3 Effect of reluctance in Non-collaborative working and Adversarial business relationship.

Resolution of any DDC in DSD activities should be quick and decisive, based on the fact that if the DDC is allowed to develop from latent DDC level through observed, escalating levels and to the stalemate (lose-lose) level as in figure 2.3, the non-collaborative and adversarial business relationship may worsen or may get into crisis level (Cheung, 2011; Axt et al., 2006). The lose-lose level, is full of mistrust, non-communication, selfishness, inward looking (Jelodar and Yiu, 2012; Pryke, 2009) and possibly abandonment of DSD work. Also, at the lose-lose level, contractors may win projects under such a keen competition with a heavy price cut or produce a badly under-estimated tender price. This will make the contractors deliver very poor quality service, trying to recover loss or will have to complete projects with deficit balances or be left with only sufficient to cover overheads without profits (Ramus and Birchall, 2006). Besides, contractors at times have problems with payments of loans and therefore make construction activities less attractive to the financial institutions ((Regan, 2012). Indeed, under those circumstances contractors may win contract alright, but will be worse off than the contractors who lost. Due to non-collaborative and adversarial business relationship struggles rooted in the industry and for that matter in DSD activities business relationship situation continue to be harsh (Laryea, 2010; Yiu, and Cheung, 2006).

On the right hand side of the curve in figure 2.3, are de-escalation/resolution of DDC followed by settlement of DDC through early decisive reasoning with concern for others (Early project integrated DDC hearing and judgment), which seems to be the best option (Axt, et al.2006). This is to be used to manage, eliminate or control business relationship DDC for continuous improvement of collaborative business relationship at the post DDC

level which ends the construction of the DSD curve (Axt, et al.2006). Early decisive reasoning approach identifies and develops a project delivery incorporated settlement procedure as suggested guidelines in the appendix A (Cheung, 2011; Yiu and Cheung, 2006). Settlement of DDC in DSD work, through early decisive reasoning, seems most appropriate rather than the three-model typology of conflicts put forward by Rapoport (1960) which will in addition gain from Cheung (2011) as given below. Also, the six phases of conflict dynamic trajectory which Alker, Gur and Rupesinghe (2001) put together and supported by Axt, et al. (2006), are more suitable for armed conflicts, which are beyond the threshold of construction DDC issues which are most settled through communication (Jelodar and Yiu, 2012; Cheung, 2011). The six phases of conflict dynamic trajectory are concerned with force arrangement of resolving conflicts.

Rapoport (1960) has it that the following summary points can be used for settlement of DDC:

Debates (involve attempts to convince and convert the opponent)

Games (involve attempts to outwit the opponent)

Fight (involve the attempts to harm or destroy the opponent)

These methods of settlement by the interpretations offered carry various implications. The first, debate, seeks the approval of the parties, but game is more of finding a way to have advantage. Finally, it is more of trying to settle using physical strength and power to overcome (Cheung, 2011).Construction DSD activities and business relationship improvement and continuous improvement from the literature cannot be developed on the basis of the last two, namely games and fights as evidently noted (Axt, et al., 2006). As these last two are contrary to the basic principles and concepts of business relationship

management revealed in the study of Meang (2010), Pryke (2009) and Cheung and Rowlinson (2005).

2.4.8.4 Detection of DDC in the DSD activities

It is relevant at this point to know and understand some useful ways of detecting discords, disputes and conflicts (DDC) (Yiu, and Cheung, 2006). They can be seen with the aid of the existence of some visible signs. These show by noticing certain positional difference or interest opposition between or among two or more DSD practitioners or between DSD practitioners and contractors over certain claims, commodities or issues for authority/leadership or for time, cost, price and quality (Jelodar and Yiu, 2012). Beside these conditions, DDC exists but the parties on the construction of SCIfs are not pursuing overt strategy to achieve their goals. However, at least one actor/party has to have positional differences articulated in some form of demands and the other actor/party has to be aware of such demands (Axt et al., 2006). On that basis, construction latent DDC (pre-manifest DDC process) is defined as a state of development of a DDC where one or more SCIf actors (parties) question existing values, issues or objectives that are of relevance to DSD activities (Jelodar and Yiu, 2012; Axt et al., 2006; Yiu and Cheung, 2006). Construction latent DDC must carry identifiable and observable signs in order to be recognized and noticed as such; in a sense, these positional differences and the clashing interests in a latent DDC must be articulated as demands or claims (Cheung, 2011; Axt et al., 2006; Ramus and Birchall, 2006). This is because construction manifest DDC is a stage where tensions are presented but are expressed in ways and means that are below or not close to the thresholds of violence. Adversarial relationship can assume increasing levels. That is, its intensity can be heightened and sporadic force used or it may become violent. Then construction DDC has escalated beyond the threshold of non-violent DDC to crisis DDC, which from the literature, hardly happen (Jelodar and Yiu, 2012; Yiu and Cheung, 2006; Axt et al., 2006). Besides, the

differences between latent and manifest DDC are dependent on the level of ‘communicative interaction’ between/among the parties/participants (Jelodar and Yiu, 2012; Cheung, 2011).

2.5 Summary

Non-collaborative working and adversarial business relationship have been noticed among the DSD actor groups (DSD practitioners and Contractors being the DSD users) within the Ghanaian construction industry (Jelodar and Yiu, 2012; Laryea, 2010; Anvuur et al, 2006; Axt, et al., 2006). These situations are due to DDC, generating from incompatible issues among actors that have the potential to create disagreement and tension identified to be common with virtually all human beings (Leicht and Jenkins, 2010; Hinde, 1997). The study again reveal that the incompatibility can be changing to cause escalation in the DDC levels to destroy all project objectives or abandonment of construction projects (Axt, et al., 2006; Ramus and Birchall, 2006; Brahm, 2003). These non-collaborative and adversarial business relationship situations also become grievous in the events of wrong or doubtful interpretation of contract conditions, law and documentation resulting in lots of claims for variations (Jelodar and Yiu, 2012; Ramus and Birchall, 2006; Yiu, and Cheung, 2006). Further, the study shows that the adversarial business relationship arise and provide environment for corruption and greed, which naturally evoke DDC (Ameyaw et. al., 2013; Axt, et al., 2006; Yiu, and Cheung, 2006). The aggregation of these situations has been identified and found to disturb the effectiveness and efficiency of SCIfs, which is found to be different from the supply chains used for the tangible resources such as materials, labour and plants. Besides, cultural issues revealing individualism and affiliations seem to have influence on the development of SCIfs in a cordial, harmonious business relationship (Anim, 2012; Meng, 2010; Smyth and Fitch, 2009). The models, concepts and issues to be considered in cordial harmonious business relationship for collaborative working follow.

CHAPTER THREE

LITERATURE REVIEW - II

Business Relationship Management issues for Collaborative Working, Cordial and Harmonious Relationship

3.1 Chapter Outline

This literature review chapter considers business relationship management issues involving models, frameworks and concepts relevant for collaborative working and cordial harmonious relationships required to overcome the non-collaborative working and adversarial business relationship situations. These include: change of ‘mind sets’, scor, triple concern models and MSAF framework. Further, the chapter covers the nature of expected collaborative working and cordial harmonious business relationship required for the DSD improvement and continuous improvement strategies. These strategies involve processes, procedures, critical relationship improvement factors, interactive elements and

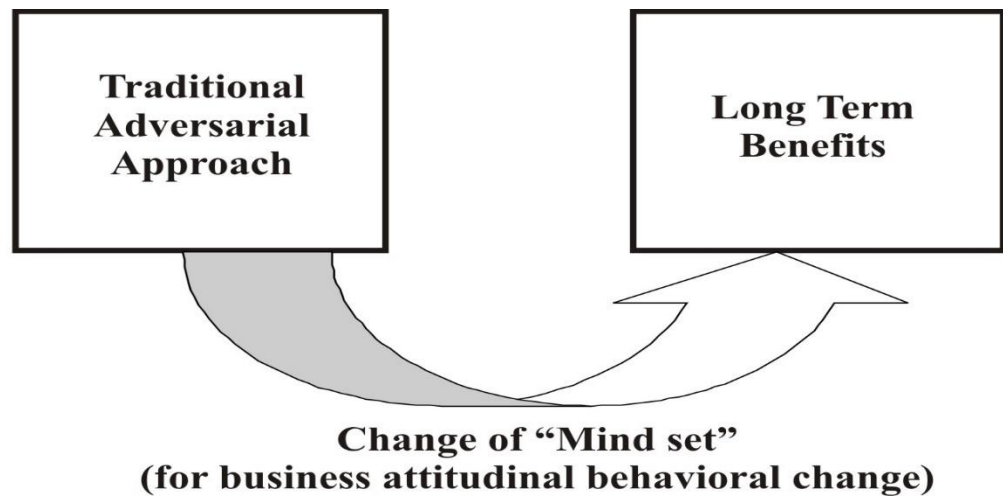
their relevance in developing the supply chain of information flow (chain of project documentation) concepts. In this chapter also, SCIFs identified in the study as chains of project documentations have been confirmed; as unique bonds of supply chains among the construction supply chains and networks

3.2 Construction Supply chains relationships issues, concepts, frameworks and models for collaborative working

Supply chain relationships (SCR) concepts are among the three components of the supply chain management identified in the research as a useful guide for collaborative working and business relationship management (BRM) integration (Meng, 2010; Yeo and Ning, 2002). SCR is an aspect of the construction supply chain management which can strengthen BRM to engender an effective and efficient investigation of some developed models and concepts (Meng, 2010; Yeo and Ning, 2002).

3.2.1 Change of ‘mind sets’ of the DSD actors

Review of collaborative business relationship models and concepts is carried out to enable an in-depth study of the business relationship maturity levels of DSD practitioners and contractors (DSD actors). The review starts with a change of ‘mind sets’ model. The model illustrates why it is necessary for DSD actor groups or organizations to have a change of ‘mind sets’ from adversarial culture approach towards long-term benefits shown in the model in figure 3.1 (Cheung and Rowlinson, 2005).



Adopted from (Cheung and Rowlinson, 2005)

Figure 3.1 Change of Mindset model

Again in the model shown in figure 3.1, the traditional adversarial approach exists with other harsh or non-collaborative working situations. The conditions of the adversarial approach seen among the DSD actor groups is not changing the ineffective way of developing and constituting the SCIfs. Therefore, figure 3.1 is illustrating the challenges faced by the DSD actor groups whether they should indeed have a ‘change of mind set’ to seek appropriate collaborative working conditions. The conditions that will produce cordial, harmonious business relationship for the realization of long-term benefits for all the different actor groups. Also, the process for the required conditions will involve how to assess and analyse business relationship issues, concepts, frameworks and models. Such frameworks and models include for example, the Maturity Systematic Assessment Framework (MSAF), which is one of the frameworks for business relationship improvements, offering a summary of six of the relationship improvement factors (Meng, 2010). These relationship factors include trust, alignment of objectives, problem solving, development of continuous improvement, commitment, procurement and risk handling/allocation (Meng, 2010)

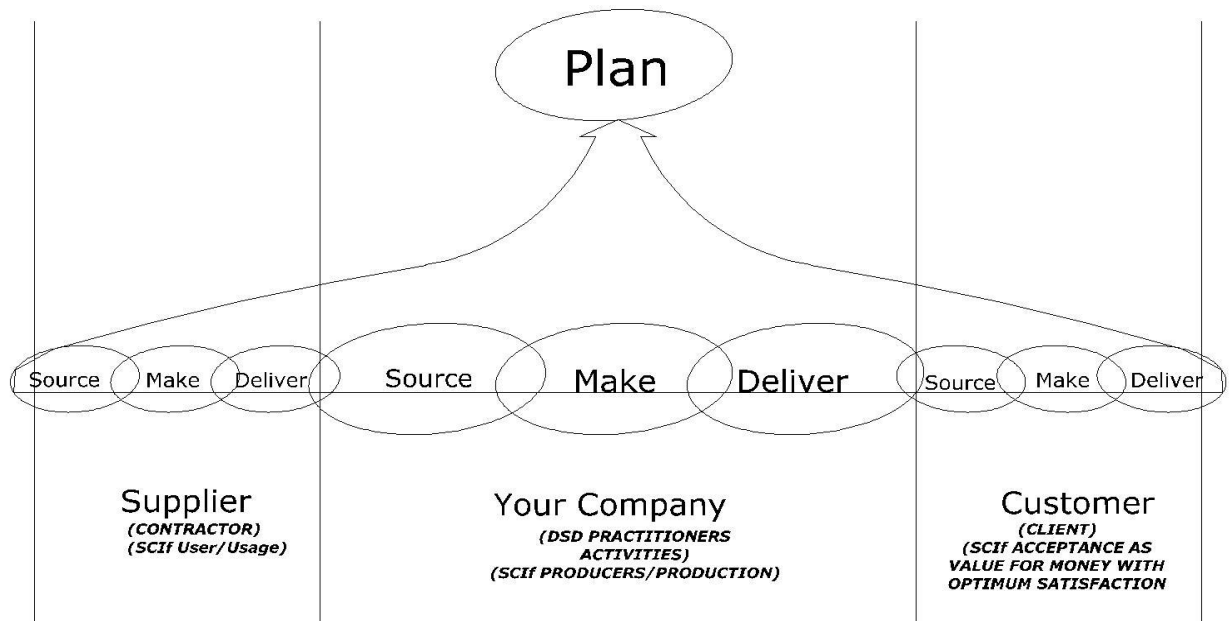
This MSAF framework produces some form of relationship improvement factors, which can transform or influence business relationship for the appropriate transformation of the DSD actors' behaviours. Besides, the framework presents the BRM concept as a process which can contribute to a change of 'mind set', culture, and attitudinal behaviours as human-centred approach relevant for collaborative working and long-term benefits required (Cheung and Rowlinson, 2005; Meng, 2010). Further, searching integrating BRM concepts in the construction supply chain management (CSCM) enables those concepts to be aligned in supply chain forms for a credible check of their preciseness with the SCOR model (a model that Supply Chain Council UK accepts as reference for other chains) and link it to the SCIfs (Yeo and Ning, 2002).

3.2.2 Supply Chain Operational Reference (SCOR) model for collaborative issues

The Supply Chain Operational Reference (SCOR) model as mentioned in figure 3.2 describes the business activities associated with all phases involved in the SCIfs - chain of project documentations, which DSD practitioners produce to satisfy demands of clients (Yeo and Ning, 2002). Concerning issues of collaborative working and business relationship development, it is a step- by-step approach of which the SCOR offers systematic stages that actors developing and constituting the SCIfs and the SCIfs can benefit from (Yeo and Ning, 2002).

The SCOR model in figure 3.2 suggests that in every SCIf operations the Plan-Source-Make- Deliver building blocks should be there as a common set of definition, to show the nature of the supply chains used for the procurement of the building work as to whether it is complete or incomplete, simple or complex (Yeo and Ning, 2002). It is then possible for the

DSD activities in producing a chain of documentation to be relationally assessed as the supply chain of information flow (SCIf). With the SCOR, its preciseness and appropriateness for project delivery will not be in doubt or compromised. Also, it shows that with each stage Plan-Source-Make-Deliver, there is the need to ensure collaborative working and good business relationship. Thus, the attitudinal behaviours of the DSD practitioners and their SCIfs work can be placed in proper collaborative business relationship perspective or context. Proper SCIfs response and fitness into the plan-source-make-deliver in Figure 3.2 offer a clear and effective scope for collaborative working and business relationship management study involving DSD practitioners' SCIfs activities in producing the chain of project documentations for contractors (Yeo and Ning, 2002).



SCOR MODEL

SOURCE. Adopted from (Yeo and Ning, 2002)

Figure 3.2 Scor Model

That will enable the collaborative working, business relationship situation and improvement amongst the DSD practitioners and between them and the building contractors to be investigated, assessed, accepted or rejected for the project delivery (Yeo and Ning, 2002).



Such study is possible among the construction supply chains and networks, which provide specific separate points (nodes) or tiers (positions for the DSD actors- practitioners and contractors in the supply chains and network). The actors are on separate nodes (which are positions occupied by practitioners and contractors on the supply chains and networks distinguishing the two actor groups) for collaborative working and business relationship for DSD activities (Pryke, 2009). Those nodes or tiers show where in the network the collaborative business relationship management investigation was concentrated and the specific DSD actors involved (Pryke, 2009). The positions of the actors indicate the kind of business relationship or association existing between or among the actors on the supply chain and networks.

Further, the nodes are connected by business linkages which entail knowledge transfer, information exchange, directions, financial transactions and business relationships (Pryke, 2009). According to Pryke and Smyth (2006) business relationship existing among the nine DSD actors is transitory and the flows are iterative (it involves forming different SCIf for different projects). The transitory and iterative supply chain of information flow (SCIf) formed among the construction supply chain networks allows the developing and constituting of unique chain for every project delivery (Orgen et al., 2013a). It then stretches and strengthens the fact that some aspects of the collaborative working and business relationships can be based on some common interests of achieving effective and

efficient SCIfs for the benefit of all the DSD actors concerned (Cheung and Rowlinson, 2005; Pryke, 2009).

3.2.3 Triple Concern Model for collaborative working issues

Pryke's (2009) triple concern model shows how actors can work together with concern for each other to realize win-win-win (best situation/concern for others) as indicated in figure 3.3. An in-depth examination of the alternative cases of A, B, C & D in the model for collaborative working and proper business relationship shows that the win-win-win situation is preferred as the best situation. The Pryke's (2009) triple concern model summary considers that, for instance, the DSD actors constituting an SCIf should show concern for the interest of each other actor in the supply chain if trust, joint problem solving and alignment objectives can be realized in business relationships (Orgen et al., 2011). Another importance of the model in business relationship management (BRM) for an effective and efficient SCIf is to regulate the generic cultural concept of win-win-win (we all win) among the DSD actors for example, traditional procurement practices in project delivery.

Triple Concern Model		Concern for other's interest		
		Low	High	Very High
Concern for own interest	Low	A Evasion (We both lose)	B Powerlessness (I lose, you win)	
	High	C Rivalry (I win, you lose)	D Compromise (We both win a bit and lose a bit)	
	Very High			
<u>FOCUS ON THE DSD ACTORS AND CLIENT'S CONCERNS</u>				

TRIPLE CONCERN MODEL

SOURCE. (Pryke, 2009)

Figure 3.3 Triple Concern Model

That involves developing collaborative working and business relationships changes which embrace DSD cultural transformation.

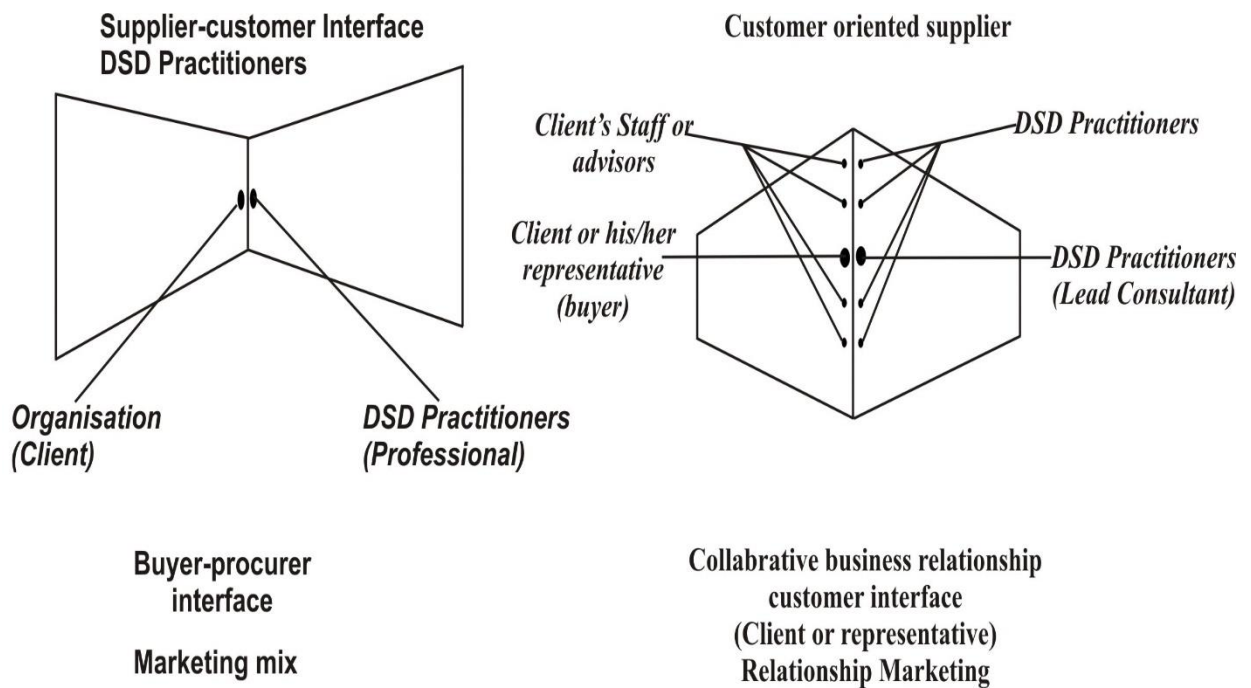
There is the need to continue to examine collaborative cultural identity of win-win-win situation as shown in figure 3.3. Pryke (2009) notes that collaborative working and business relationship cultural changes are possible to achieve social/collective capital and investment for the DSD actors. Also, the changes require experience, integrity and concern for each other's interest, which are necessary to promote collaborative working and business relationship interface activities (Smyth and Fitch, 2009). Such activities will come from both producers (DSD practitioners) and the users (contractors) of the SCIFs in exchanging

feedback, traditional non-adversarial and innovative information to gain great increase in performance (Pryke, 2009).

The four cases offered evasion, powerlessness, rivalry and compromise in figure 3.3 are with some adversarial relationship elements which will not achieve the high form of collaborative working among the actors. Indeed, this study is looking at a situation where there can be prevention or complete preservation of collaborative working and cordial harmonious construction business relationship without DDC (Ramus and Birchall, 2006) Win-win-win relationship and concern for all is the most preferred situation. This situation can be realized among DSD practitioners (clients' organizational members) and between them and building contractors, which can be properly classified and measured based on the maturity periods (Meng, 2010).

3.2.4 Collaborative working, business relationship and the maturity periods issues

Attitudinal and behavioural changes for collaborative working and business relationship of the actors need a lot of insights and a period of time to mature and move to the next level for subsequent development (Meng, 2010). The periods include traditional (adversarial), short term and long-term in accordance with relationships dimensions for improvement in DSD negotiation activities as in figure 3.4. In the negotiations two marketing situation are observed which involve the marketing mix and relationship marketing shown in figure 3.4. The two marketing situations are associated with the maturity period for collaborative working and proper business relationship during an interface of negotiation activities to agree on fees for the SCIFs and projects execution.



SUPPLIER-CUSTOMER INTERFACE (NEGOTIATION)
 Adopted from (Suryth and Fitch, 2009)

Figure 3.4 Supplier - Customer Interface (Negotiation)

According to Smyth and Fitch (2009); Cheung and Rowlinson (2005) a diagnosis of the maturity periods for the DSD collaborative working and business relationship study points to the need to use a facilitator (coordinator) to coordinate the DSD interface activities among the practitioners (suppliers) and between them and the client (customer) as in figure 3.4. The situation will broaden the business activities, particularly in negotiation and marketing of construction design service products at the interface periods for strong collaborative working and cordial harmonious business relationship. For instance, in the traditional procurement practices, it will then unlike the previous conditions where only architects or a few DSD practitioners (professionals) meet the client for DSD business negotiations for fees or prices as in the case of the marketing mix will change. The arrangement for fees (payment) will not be so in the relationship marketing as in figure 3.4

(Meng, 2010; Smyth and Fitch, 2009). In the relationship market case in this study, there will in each maturity period be a broad professional representation for negotiation and marketing of DSD design products as in figure 3.4 (Smyth and Fitch, 2009). It will then help the DSD actors to grow in confidence for collaborative business relationship from one maturity level to another in trust of each other (Paliszkiewicz, 2011; Meng, 2010) and reduce or eliminate adversarial cases arising from business negotiations (Meng, 2010; Cheung and Rowlinson, 2005). An effective use of a facilitator (Cheung and Rowlinson, 2005) working within a human agency (agreed group appointed for negotiation) such as DSD organization(s) for proper negotiation and marketing will transform the adversarial working culture as expected. These conditions of negotiations will foster required cordial harmonious business relationship culture among the DSD actors (Paliszkiewicz, 2011; Meng, 2010).

The agency (appointed group) will as well at the interface help to achieve the right business relationships by asserting that expenses are needed to be made on critical events basically known as the moments of truth- that is time and cash are to be expected to be used to set good standards, policies, processes, and procedures during DSD interface activities (Smyth and Fitch, 2009). Meetings of personnel –suppliers (DSD actors) and customers (client or its representative) from the two entities as might occur at the interface activities in figure 3.4 need transparency for growth in collaborative business relationship management of the DSD issues such as professional fees, claims and order negotiations (Smyth and Fitch, 2009). The moment of truth in the interface negotiations and marketing DSD activities by DSD actors to the clients are possible in the relationship marketing as in figure 3.4. In that situation, DSD actors will present a broader united front with trust, joint objectives and other factors in negotiation for appropriate and sustainable terms of design service work for

effective and efficient SCIfs development ((Meng, 2010). These negotiations and marketing strategies can further be properly strengthened through the use of all critical business relationship improvement factors to develop an effective and efficient supply chains of information flow (Meng, 2010) as explained in section 3.2.5 below.

3.2.5 Critical business relationship improvement factors and the supply chain of information flow actors

Rosseau et al (1998) define trust as a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or attitudinal behaviour of another. Linked to this definition is what Smyth and Edkins (2007) have to say, in project context: Trust is a disposition and attitude concerning the willingness to rely upon the actions of or be vulnerable towards another actor, under circumstances of contractual, business (working) or social obligations with the potential for collaboration. Other important factors to strengthen business relationship negotiations and activities are confidence (Smyth, and Edkins, 2007) loyalty (Smyth and Fitch, 2009), communication, commitment, alignment of objectives, and joint problem solving (Greenwood and Wu, 2012; Meng, 2010).

These factors will have to be achieved in each project execution through an appropriate application of business relationship management (BRM) and the supply chain relationship (SCR) concepts; not neglecting the appropriate marketing relationships of the most extensive and comprehensive work of Gummesson (2001). Those works knocked down the gauntlet to challenge and change the marketing mix as given by Borden (1964), the so-called 4Ps: product, place, promotion and price (McCarthy, 1964) and its parameters considered as most beneficial to collaborative activities. This is because failures in relationship arise as the concept of the 4Ps looks at how to package whatever services or activities/items to customers as product, its price, promotion and market place are planned and strategized to

overcome the same of another similar product offered by other competitors (Harris and McCaffer, 2013; Cole and Kelly, 2011; Calvert et al., 2003; McCarthy, 1964). These marketing competitions often lead to non-collaborative culture and adversarial business relationships, which are better managed and prevented by the thirty relationships -30Rs (Gummesson, 2001; Gronroos, 2000). According to Smyth and Fitch (2009), a substitution of a minimum of thirty relationships (30Rs) subdivided into four groups as: i. Classic Market Relationships ii. Related supply chain management delivery channel iii. Mega Relationships and iv. Nano Relationships offers the best relationships to reduce adversarial situations. These marketing relationships offer great collaborative opportunity and potential to contribute to DSD actors interface in business relationship activities for effective and efficient SCIFs to achieve improvement of DSD activities (Cole and Kelly, 2011; Gummesson, 2001) as in figure 3.4 in section 3.2.4.

3.2.6 Business relationship management (BRM) concepts and Ghanaian DSD actors' attitudinal behavioural issues

Business relationship management (BRM) derives its development from relationship marketing (Smyth, 2008; Ford et al. 2003; Gummesson, 2001; Gronroos, 2000). The business relationship management concept is a paradigm shift from adversarial behaviour towards more collaborative practices which have their conceptual origins in relational contracting (Smyth and Fitch, 2009). Thus, from the issues raised in the problem statement, the individual DSD practitioners, contractors and the DSD organizations in the construction industry in Ghana need attitudinal behavioural change (Orgen et al., 2011; Cheung and Rowlinson, 2005). They have to develop a culture that willingly accepts criticisms, objective confrontation for holistic change of 'mind set' as in Figure 3.1 in section 3.2.1 towards a

win-win-win situation (concern for others) to achieve collaborative working relationship (Pryke, 2009). That is in a way to transform for instance, the traditional adversarial procurement practices of win-lose or one off project culture to allow for the improvement of DSD activities (Orgen et al., 2011; Cheung and Rowlinson, 2005).

In the developing countries, like Ghana, most often, project procurement follows the traditional procurement practice with its adversarial business relationship trends with least resistance. This is due to the difficulty for most humans to voluntarily accept change through objective confrontation and criticism (Cheung and Rowlinson, 2005). In spite of the fact that some old practices are barriers to the development of collaborative working culture and non-adversarial business relationship, the gaining DSD actor or actors in their old practices, almost always block the change towards development of non-adversarial situation of win-win-win business relationship cultural practices (Pryke, 2009; Smyth and Fitch, 2009; Humphries and Wilding, 2004). A change from traditional adversarial practices through a change of 'mind set' for long-term benefits, which business relationship management (BRM) concept ensures will not be wrong in the improvement of the DSD activities (Orgen et al., 2011; Smyth and Fitch, 2009; Cheung and Rowlinson, 2005). In that sense, in Ghana, for collaborative working and business relationship management (BRM), the attitudinal behavioural aspects of design service delivery actors require changes in addition to the systems and strategies adopted for successes in all project(s) execution. This will supplement and preserve essential project management structures, systems or strategies that will not be a barrier to collaborative working culture and non-adversarial relationship in Ghanaian construction industry (Orgen et al., 2011). Thus, the BRM embraces systems and strategies that are essential for effective execution of project(s).

Uttermost attention is given to attitudinal behaviours of the actors in business relationships that can lead to collaborative working culture which will bring reduction or elimination of discords, disputes, conflicts and improve DSD performance (Gummesson, 2001). In that sense, any DSD attitudinal behavioural practices that generate non-collaborative working and adversarial relationship need to be studied and information made available (Axt et al., 2006).

From the relevant literature search, such practices and situations need to change from adversarial relationship culture to a transformational one among the DSD practitioners and between them and contractors in the Ghanaian construction industry (Orgen et al., 2012a; 2012b; Smyth and Fitch, 2009). The adversarial cultural change through proper and systematic BRM will produce win-win-win (concern for others) situation for all parties (Pryke, 2009) – that is Ghanaian construction DSD actors showing concern for others in the field of work will develop the appropriate business relationships that will generate value for money in project execution (Orgen et al., 2012b; Pryke, 2009).

The procurement type in which the design service delivery operates also influences collaborative working and business relationships with different problems (Davis et al., 2006; Turina et al. 2008). For instance, the most common procurement system used in Ghana is the case where design is separated from the construction -the traditional procurement system (Davis et al., 2006). The industry seems to prefer and accept this traditional procurement system rather than any other procurement system or innovative changes or reformation/transformation (Anvuur et al, 2006). Yet, it is the weaknesses of the persisting adversarial contracting approach, full of non-collaborative working and adversarial

relationships that have consumed the good manners and concern for others among DSD actors in producing effective and efficient SCIfs work to contractors (Pryke, 2009; Anvuur et al, 2006). On the other hand, if early contractor selection procurement forms are considered, the strategy already aligns itself with advice and cooperation from contractors to improve the DSD (Alhassan, 2012; Walker and Lloyd-Walker, 2012). It is the loss of collaborative working culture that BRM study seeks to find the appropriate business relationships from the thirty relationships (30Rs) (Gummesson, 2001), which will develop an attitudinal behavioural preference for collaborative working among DSD actors. That apart, the systems and processes that evolve from the relational contracting come from the structure which is useful and comparable for Ghanaian DSD market of verbal or written business relationship agreements (Gummesson, 2001). These arrangements or agreements are to realize collaborative working and business relationship for effective and efficient development of SCIfs in DSD market (Orgen et al., 2013a).

Notably, a positive market atmosphere in which context is resultant upon structure embraced by the DSD actors rather than agency and thus show that the general management have a passive or reactive role in the project execution (Smyth and Edkins, 2007; Orgen et al., 2011). In this regard, partnering and alliancing, for example, can be used for some change towards collaborative working and non-adversarial relationship for the DSD activities in the construction industry in Ghana. The DSD activities are discords, disputes and conflicts prone, to a large extent (Orgen et al., 2012a). Therefore, BRM is an approach which thrives by building the right business relationship and breaking down barriers which need to be investigated for the right relationships improvement and continuous improvement attributes and agreements among the DSD actors to develop BRM improvement proposals. BRM is viewed differently by different individuals and organizations but it can produce effective

and efficient SCIFs for any project delivery systems and agreement (Cheung and Rowlinson, 2005). Additionally, the role of BRM is not “mates’ rates” approach; “you are my mate, you have to give me the variation or contract”, it does not work like that (Cheung and Rowlinson, 2005). Again, Cheung and Rowlinson (2005) notice that it is a misconception. Rather, BRM is to proactively manage a project in order to maximize progress and quality while minimising discords, disputes and conflicts among project actors (Orgen et al., 2011; Cheung and Rowlinson, 2005). The BRM in Ghanaian construction industry including the DSD activities will make it free from political, economic, cultural, social, religious or ethnic or any other affiliations. It will rather help the industry to strive toward non-aligned contracting agreements or business relationship structures for win-win-win (concern for others) and not win-lose situation (Pryke, 2009). That is why in Ghana, the DSD practitioners and contractors (DSD actors) who are knowledgeable and can accept confrontation on business relationship shortcomings, errors, and omissions with understanding from feedback are aimed at; in management of the necessary business relationship changes (Cheung and Rowlinson, 2005). This transformation can be possible through change of the ‘mind set’ for effective and efficient SCIFs for the improvement and continuous improvement of DSD activities (Cheung and Rowlinson, 2005).

3.3 Summary

The literature of collaborative and good business relationship management culture provides relevant information which has brought to the fore the essential models and concepts concerning the processes and procedures available to transform the non-collaborative working and adversarial business relationship. This information includes models and concepts of change of ‘mind set’ in which the DSD actors face the challenge of whether there is indeed the need to follow the ideas represented in the model for the required

transformation and gain from the associated long-term benefits. Further the appropriate processes for assessing the complete or incomplete nature and standardising supply chains are fully illustrated using Supply Chain Operational Reference (SCOR) model for the purpose of fitness of the supply chain of information flow (SCIfs) collaboration. Additionally, this aspect of the literature review of the study aim at DSD actors' collaborative working and cordial business relationship that integrate concern for other actors' or parties' interest as the triple concern model presents. In ending this chapter two marketing situation are observed to be convenient for the payment of the SCIfs products and excusion fees or awards negotiations. To prevent or reduce the controversial issues or disagreements which often raise a lot of questions and tensions that lead to non-collaborative and adversarial business relationship in developing and constituting the SCIfs. The relationship marketing type of negotiation is preferred to the marketing mix type. The multi-theory theorisations and the theoretical and conceptual frameworks developed for understanding of the business relationship situations among the DSD actor groups follow.

CHAPTER FOUR

Theoretical and Conceptual Frameworks

4.1 Chapter Outline

This part of the study comprises the theoretical framework developed through a review of multi-theory such as the action theory, the system theory, and its extension of system thinking and rethinking. The chapter continues with the development of conceptual framework involving the design concepts, the theories and collaborative working which derive their bases from DSD business relationship success cycle. The conclusion presents the collaborative working and business relationships issues used in developing the improvement assessment conceptual framework (IACF) and three-stage DSD improvement conceptual framework (ICF)

4.2 Theoretical Framework

This theoretical framework involves the use of relevant theories in theorisations to explain the research problem, guide and seek information from both literature and field study to provide a robust response to the research aim, questions and objectives. Furthermore, the theoretical framework provides focus and character for the study well ahead of the field research, data collection, analysis of the results and discussions. Besides the section concentrates on using the literature reviewed concerning the topic and aims as well as combining review of relevant theories which offer understanding of concepts and issues essential for the development of the appropriate framework needed in the qualitative study and its conclusions (Baxter and Jack, 2008; Hsieh and Shannon, 2005; Jugdev, 2004).

4.2.1 Multi-theory for the DSD Assessment and Improvement Frameworks

The supply chain of information flow involving business relationship management study captures the inputs of critical relationship improvement factors such as trust, problem solving, communication, alignment of objectives and others (Meng, 2010; Kadefors, 2004) in the framework for collaborative DSD activities. The framework for collaborative working has indicative illustrations of the critical relationship improvement factors. The factors are to improve construction design service works by DSD actors who employ factors that will have behavioural change to overcome the adversarial business relationship problems. Such problems result in discords, disputes and conflicts (DDC) encountered often in the supply chains of information flow (SCIFs) in the DSD activities (Laryea, 2010; Anvuur et al, 2006).

The business relationship improvement framework is hinged on integrated supply chain relationship management (SCRM). The focus at this stage of the research is on business relationship specifically to overcome DDC and ‘professional autonomy without ‘we-intention’ (joint goal or goals in working together with others) in the DSD in Ghana. For instance, the action of using the traditional procurement method in project delivery with project manager as lead consultant as introduced in the Public Procurement Act 2003 (Act 663) is to improve project co-ordinating situation. However, the action of selecting such a procurement method is not achieving the intended results (Anvuur et al, 2006). The study is also a guide to the DSD activities for an effective collaborative project delivery processes, carried out cordially and harmoniously without or less DDC to get value for money (Orgen et al. 2013a). Similar examples are discussed in the theorization study for the initial conceptual framework.

This section considers relevant theories for the study and the application of theorisations that will bring the required understanding that underpin the research. These include the use of the Action theory, System theory, thinking and rethinking processes identified as pertinent for the development of the framework.

4.2.2 Action Theory (AT)

Action Theory has been most useful in many research activities including the Social Dimension of Action Theory (Tuomela, 1991). This social dimension of action concerns social action' or 'collective action' where the action taken involves group 'decision or intention' satisfying people they represent. Further, the AT is used in contraction and minimal change – in dynamic logic, evolution- reasoning and logic (Varzinczak, 2008a; 2008b). Other which have also benefited from the theory include: a Conceptual basis of social science (Seebass, 2008); Experimental Contributions to Collective Action Theory (Coleman and Ostrom, 2009). Besides, the Action Theory with its term ascription (contributing) criteria has widely been used in different research fields producing meaningful theorization. This includes examples like Action Theory Change (Varzinczak, 2010); Formulation of Complex of Action Theory (Nagao and Nielsen, 2012) and many others. The aspect of AT required in the study includes the efforts of Tuomela (1991) and explanations as provided in Seebass (2008) and Coleman and Ostrom (2009) which indicates that AT is intention driven.

Action is commonly defined as a species of behaviour in the following way or manner, involving a number of issues. For instance the behaviour of a DSD actor constitutes an action if and only if it is associated with an intention (intention driven) causing the behaviour into a means or situation for some end (Allwood, 1995; Von Wright, 1971). Such

theoretical explanations for Action Theory (AT) features prominently at the core of theories about what ‘thinking beings do’. For the concept of action in the study, ‘events’ for example, that can constitute action such as citing or selecting a procurement method, is a straightward action covered under the above definition (Orgen et al., 2013a; Coleman and Ostrom, 2009). On the other hand, however, ‘assessing DSD improvement or business relationship improvement for the improvement of DSD activities cannot be covered by such definition (Orgen et al. 2013a; Seebass, 2008).

This is because the events of action in assessing DSD improvement or improving DSD activities will demand other action term ascription criteria. Therefore, considering the definition of Seebass (2008) on comments of Tuomela’s ‘social action’ or ‘collective action’ which state that action is suitably made up of species of behaviour which is meant to cover body movements including physical, conventional or other consequences, Seebass (2008) continues by adding that an action involves man such as ‘DSD actor of his behaviour’, implying an action does not just happen ‘against the will’ of man. Action for that matter is behaviour willingly performed or exhibited. In comparison, Seebass (2008) added weight to the listed action term ascription criteria of Allwood (1995) given as: i) intention of action ii) form and convention iii) results and causal consequences iv) context.

DSD actors’ action thus is behaviour willingly performed or exhibited, the act-rational (rational act) may be carried out individually or in a group (Seebass, 2008). The act-rational performed or exhibited by an individual or group will involve all the ascription criteria above in either a single action or a series of actions or in an action chain involving groups or actions taken in a business activity. Therefore, performing the chain of action at stake such as ‘assessing DSD improvement or constructing the business relationship framework for the

improvement of DSD activities', involves DSD actors which comprise DSD practitioners and contractors. These DSD actions would involve all the action term ascription criteria.

The action term ascription criteria, be it social or business consist of both I-intention of an action, weaker than the other, we-intention which is explained further to imply that a separate action of DSD individual is not comparable to the joint action of a DSD individuals in a group (Tuomela, 1991; Seebass, 2008). The joint goal depending on 'we thinking' or effort concern we-intention. For example is to assess DSD improvement together or to improve DSD activities by making SCIf effective and efficient. These concern with act-relational intentions which produce a full-blown stronger 'we-sense'—shared intention to achieve quality SCIf for increased benefits (Seebass, 2008; Coleman and Ostrom, 2009). The DSD activities involving all DSD actors are by far stronger (due to aggregate active power of the group) than the I-intention DSD actor producing weaker 'I-sense' involving a single person such as the architect's or QS's SCIf product for DSD activity (Seebass, 2008). Further argument explains that the we-intentions or we-intents of DSD actors are stronger if and only if they are based on a central fact of joint goal of the DSD actors, will yield greater result or effect than the single I-intention or I-intent (Tuomela, 1991; Coleman and Ostrom, 2009). This kind of act-rational is required, be it social or business. We-intentions or individualistic I-intention is part of the 'context' of action stated in the fourth term ascription criteria.

For a full-blown intentional joint action to yield the intended results or causal effect as stated in the third criteria (results and causal consequences); the we-intention should be without exemption for the expected high or optimum performance benefits (Coleman and Ostrom, 2009; Roeser, 2005; Tuomela, 1991). If there are DSD exceptions, no matter whether one or

two exceptions in the group, the we-intention will yield higher improvement in any works procurement than the I-intention. Such a joint goal by the building professional DSD actors (DSD practitioners and contractor) all together expressing similar we-intentions, we-sense, 'wills intentions' will yield by far higher results or effects than the I-intention, I-sense and 'I-will intention' of the separate DSD practitioner's professional goal (Coleman and Ostrom, 2009; Roeser, 2005; Tuomela, 1991). By these effects, we-intentions will then help the DSD actors to achieve a win-win-win condition in any works procurement delivery such as traditional procurement practices and early contractor selection instead of I-intention, that yields the lose-win-lose or lose-lose-lose results (Pryke, 2009), provided the DSD actors will 'willingly' or with 'freedom of will' have a change of 'mind set' to work together (Cheung and Rowlinson, 2005), to allow the information flow to improve effectiveness and efficiency of SCIf for the improvement of DSD activities. The free exchange of such information is internally motivated by the active power of the DSD actors or agents (Seebass, 2008; Roeser, 2005; Tuomela, 1991). Externally, it is initiated by a facilitator through brainstorming, workshops, seminars, forums and meetings. That facilitation is felicity criteria (success criteria) that make an action successful. Felicity criteria differ from definitional and operational criteria in that they do not define the identity of an action. They are rather additional criteria of which the action must be met in order to be felicitous (Coleman and Ostrom, 2009; Allwood et al, 1995).

4.2.3 System Theory (ST)

System Theory (ST) is an interdisciplinary theory about every system in nature, in society and in many scientific domains as well as a framework with which we can investigate phenomena in a holistic manner (Mele, et. al., 2010; Capra, 1997). A system from a multi-disciplinary point of view is defined as an entity which is a coherent whole (Mele, et. al.,

2010; Ng, Maull and Yip, 2009) with perceived boundaries around it in order to distinguish internal and external elements such as clients, sub-contractors and construction suppliers activities outside the DSD entities, performing specific design service functions in the construction industry. It also identifies input and output connected to and emerging from the entity. On that basis, Mele et al., (2010) states that ST is a theoretical perspective which analyses a phenomenon seen as a whole i.e. DSD activity and not simply the sum of elementary parts, as in the case of individual professionals in SCIfs works (sub-SCIfs see improvement assessment conceptual framework (IACF) in Figure 4.3) or separate works of project manager (PM), architect (Arc), quantity surveyor (QS), services engineer (Ser Eng), structural engineer (St Eng), geomatic engineer (Geo Eng), geotechnical engineer (Geotech Eng), planner (Pl) and contractor' works from their separate outfits. For that matter, depending on that latest definition, the focus of the ST will be on the DSD activity's interactions and business relationships between the DSD professional parts or works of individual professions developing and constituting a SCIf (sub-SCIfs) works, that is seeking to understand the DSD component parts (the different SCIfs in the entire entity) to make it a single DSD entity, organization with functions and outcomes. By that focus, the application of ST implies a culture of dialogue between holism and reductionism or individualism (Gouveia and Ros, 2000; Hofstede, 1982).

Further, probing of the ST in connection with dialogue between holism such as DSD activity and reductionism which involves Sub-SCIfs (works of the single professions) show credence of Aristotle's Holism claim that knowledge is derived from the understanding of the whole and not that of the single parts. It is not the single parts which are put together for the project delivery but the complete supply chain of information flow (SCIf)- chain of project documentations that is used for the delivery, of which every single construction project has a

unique one (Orgen et. al., 2013a). In researching into this historic statement, however, two situations are uncovered. One, according to Pickel (2007) there are nearly as many system theories as system theorists (researchers) such as Bogdanov, (1922) and (1980) von Bertalanffy (1968); Lazlo (1996); Meadows (2008) and Mele et al. (2010). Next, the ‘system theory’ that was known in the 1970s for example, Laszlo 1972 which claimed to resolve all particular problems without empirical research or serious theorizing was old holism which has been discredited; because it emphasized stasis at the expense of change (Pickel, 2007).

The DSD activities are looking for improvement, therefore changes are needed and can never depend on the old stasis holism. Also, the ST in looking at systems can consider a system as a unit of analysis made up of many parts or structures like the DSD activity (Mele, et. al., 2010; Parsons, 1965,). The old stasis holism aspect of ST is in contrast with the major focus of this research study to improve DSD activities which is hinged on the transformation of attitudinal behaviours of the DSD actors based on ‘change of mind set’ for collaborative working (Cheung and Rowlinson, 2005). For that matter, a novel approach to inject other theories or extensions of ST are essential in the assembling of a robust multi-theory for the theorizations and insights for an effective and efficient SCIfs to improve the DSD activities (Orgen et. al., 2013a; Mele, et. al., 2010).

4.2.4 Closed/Open systems and System Thinking/Rethinking

In considering further the multi-theory development, closed and open systems are probed. A system is said to be closed if it does not interact with its environment, the supra-systems and the sub-systems (Barile, 2008). If a system is closed then no materials enter or leave it that involves the fact that there are no inputs and outputs, as stated by the Institute for the Study

of Nature (ISN) (ISN, 2009). A closed system therefore does not interact with its environment, the supra-systems and the sub-systems. It is easy to turn from an open system to a closed system but not vice versa (ISN, 2009). These are the basic reasons why the DSD framework and concepts to change DSD activities from partially or closed systems as identified seem difficult. These issues then create situations which make a series of actions become essential to change DSD system for the development of the SCIfs (Orgen et. al., 2012b; 2013a).

To change to a more open or free interactive open system for the improvement of DSD activities in developing and constituting effective SCIfs seems complicated. On the other hand, a system is open when it allows inflow and outflow of materials to change its compositions or components (ISN, 2009). According to Barile (2006; 2008) the system interacts with supra-systems and sub-systems for actual transformation and thus, it is made to function as an interactive system. That refers to the study of how actions by a system cause changes in behaviours which are understood by the system itself in terms of feedback and traditional non adversarial activities, allowing the adaptation of the system to new conditions (Orgen et. al., 2013a; Mele, et. al., 2010). A supra-system is better organized as a function which influences the system. The DSD sub-systems which are the works of individual professions constituting sub-SCIfs that make up the main various SCIf works which need to be directed and managed by the DSD system in order to contribute to SCIfs' finality (Mele, et. al., 2010; ISN, 2009). The above fact draws into the research another important aspect of the ST, which is "system thinking", contributing to the indicative illustration of DSD activity modeling of DSD system's finality.

System thinking comes from the shift in attention from the separate parts of a system to the whole. It is also thinking about how things interact with one another (Mele, et. al., 2010;

Jackson, 2003; Weinberg, 2001; Bartlett, 2001; Checkland, 1997). This occurs when the integrated and interacting situations of a phenomena reveal that the properties of single parts such as Project Managers (PM), Architects (Arc), Quantity Surveyors (QS), Services Engineers (SerEng), Civil/Structural Engineers (C/St Eng), Geometric Engineers (Geo Eng), Geotechnical Engineers (GeotechEng) and Planners (PI) and contractor distinctly as 'I's, or they can be in absolute union, which by similar activities the form of system elements such as sub-SCIfs or DSD actors work are rationally connected (Mele, et al., 2010). The core problem of system thinking revolves around causation and reductionism (Pickel, 2007). Moreover, the system method of thinking assists companies or firms to become learning organizations (Mele, et. al., 2010). In that respect, a robust multi-theory for the theorization and insight into processes and procedures in constructing IACF in Figure 4.3 engage actors in a learning system, to improve it and assess the system. Therefore, theorization and processes in IACF in Figure 4.3 are for assessment of DSD improvement and continuous improvement of the DSD activities, through rigorous application of the system theory, thinking and also some aspects of the rethinking system theory (RST) (Orgen et. al., 2013a).

4.2.5 Rethinking system theory (RST)

The rethinking system theory (RST) as examined by Pickel (2007) is a systemic paradigm (systemic thinking) also known as 'systemism'. This systemic thinking which is the rethinking system theory (RST) used for DSD activities is the alternative to both individualism and holism (Pickel, 2007; Bunge 1979a; Sztopka 1979). This also has strong cultural connection that complicates the free interactive attitudinal behaviours of the SCIfs to function openly as open sub-systems for the entire DSD 'systemism' (Orgen et al., 2013a; Gouveia and Ros, 2000). In the extension of the ST, the rethinking system theory is a robust attempt to overcome the hold Niklas Luhmann's systems theory has had on systems thinking

in the past two decades (Pickel, 2007). That is, to produce a new course of wider thoughts in rethinking of the concepts of social system-‘systemism’. The idealist concepts discussed above are accepted in these new wider thoughts as real and causally efficacious. They are taken as an integral part of the rethinking process where each system takes all other systems as its environment, an ontological position that allows greater flexibility in the conceptualization of systems, than that based on the parts to whole distinction (Pickel, 2007; 2004). In this regard, a system cannot be defined only by the set of elements and their relations to an environment since there is the need for the inclusion of the actual processes that make the system a system which in the complex real-world is the self-organisation.

According to the research of Bunge (2004), ‘systemism’ is like holism. The difference is that ‘systemism’ encourages analysis of wholes into their constituents and as a results is never in harmony with intuitionist epistemology inherent in holism. Therefore, the DSD practitioners and contractor (DSD actors) are to be treated as the producers and users of social whole entity such as DSD activities (Orgen et al., 2013a; 2012b). In this regard, what then is a system? “It is a complex object whose parts or components are held together by bonds of some kind” (Pickel, 2007, p.401). Such a theory in concrete systems they are materials such as SCIfs- chains of project documentations for construction projects execution which holds the actors together (Orgen et al., 2013a). For that matter, in constructing DSD improvement assessment conceptual framework (IACF) in Figure 4.3 and improvement conceptual framework (ICF) in Figure 4.4 made use of DSD components, structures, mechanism and environments (Pickel, 2007). Most importantly, the DSD actors’ framework is a central part of DSD human social system which plays a central role in the mechanism that will make the DSD activity system work to produce the indicative/illustration of the DSD activities IACF and ICF respectively (Orgen et al., 2013a)

4.3 Developing Conceptual Frameworks

This area of the study involves the assembling of relevant concepts from the non-collaborative, adversarial business relationship and also collaborative information and theoretical framework issues in the literature for the development of assessment and improvement frameworks. The frameworks are constructed as the response of literature to the challenges identified by the aim, research questions and objectives. The improvement assessment conceptual framework developed presented illustrative/indicative assessment of non-collaborative, adversarial business relationship as well as collaborative maturity levels of the DSD activities. Again, the improvement conceptual framework developed in three-stages offers pre-conditions, processes and details of how to improve the SCIFs in cordial business relationships. These indeed bring to the fore available attributes which help to put together robust guidelines from the literature to develop IACF in Figure 4.3 and ICF in Figure 4.4. Besides these frameworks provide bases and guidance for the improvement proposals developed in chapter eight for the improvement of the DSD activities.

Further, the literature revealed pre-conditions that cause collaborative, non-collaborative working and adversarial business relationship relevant for the construction of frameworks which embraced essential attitudinal behavioural and technical attributes for improvement of the DSD activities. The frameworks developed present theoretical and conceptual understanding of the expected transformation as outlined in the design that follow.

4.3.1 Design of the improvement assessment and improvement conceptual frameworks for the improvement of DSD activities:

- Behavioural measures provide researchers with a vast number of options making it possible to select the behaviour(s) that seems to be best for defining and measuring the constructs (Gravetter and Forzano, 2006).
- A researcher usually develops a specific task in which performance is theoretically dependent on the constructs being measured (Gravetter and Forzano 2006).
Therefore from the literature reviewed it shows that conceptually:
- Achieving improvements in DSD activities demand an effective and efficient supply chain of information flow (SCIf) – chain of project documentations (Orgen et al., 2012b, 2011; Edum-Fotwe et al., 2001).
- To achieve effectiveness and efficiency in SCIf is dependent on the successful introduction of exchange of performance feedbacks, traditional non-adversarial methods/review and innovative information (Anim, 2012; Loo, 2003)
- To achieve exchange of performance feedbacks, traditional non adversarial methods/review and innovative information demand high level collaborative working and business relationship improvement and continuous improvement (Anim, 2012; Miles and Trott, 2011; Ibrahim et al., 2011, Ankrah et al., 2010; Loo, 2003).
- To achieve business relationship improvement and continuous improvement calls for the effective application of critical business relationship improvement factors ie trust, alignment of objectives, communication, joint problem solving etc. (Miles and Trott, 2011; Meng, 2010; Ankrah et al., 2010; Pryke, 2009; Kadefors, 2004).

- To achieve effectiveness and efficiency in the use of critical business relationship improvement factors depend on the business relationship success cycle (Orgen et al., 2013a; Pryke, 2009; Humphries and Wilding, 2004).

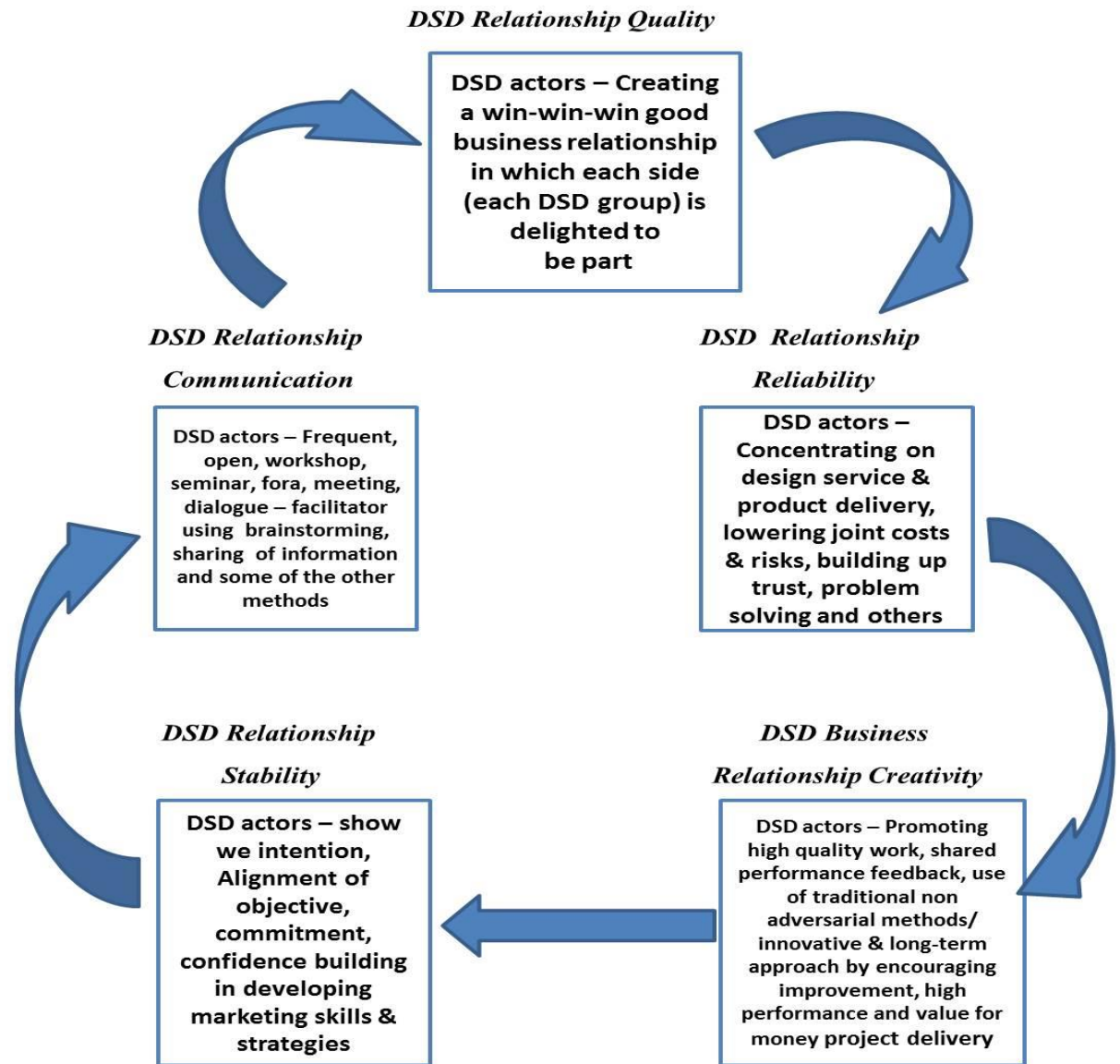
4.3.2 The Collaborative Working and Business Relationship Improvement (BRI)

From both the non-collaborative and collaborative literature study, there exist direct and inverse relationships among the constructs or attributes which can cause business relationship success cycle, BRSC (Miles and Trott, 2011; Pryke, 2009; Humphries and Wilding, 2004). The success cycle depends on effective use of the critical relationship factors essential for improvement or non-improvement if the failure issues illustrated in Figure 2.2 section 2.4.4.1 overcome the success of DSD activities (Miles and Trott, 2011; Meng, 2010; Pryke, 2009; Humphries and Wilding, 2004). However, the attitudinal behavioural attributes in Figure 4.1 are expected to contribute to the DSD improvement and continuous improvement and achieve success. This is possible drawing on system thinking and rethinking to achieve effective and efficient SCIFs for such improvement and continuous improvement of the DSD activities. It is to allow and develop the DSD system of SCIFs to be interactive to produce input and output to feed the DSD to function as a system based on systemic thinking and rethinking (Orgen et. al., 2013a). Through that, the 3-stage DSD improvement conceptual framework is produced. The concepts show that it is constructed and grounded on the fact that BRI plays a central role in improvement of the DSD activities.

Successfully incorporating BRI through adaptation of DSD business relationship reliability depending on trust in producing lower joint cost and risks among the SCIFs are very basic and essential for DSD improvement concepts to yield any required targeted response for continuous improvement (Meng, 2010). The business relationship success cycle situation

will also engineer DSD business relationship creativity which will allow innovative information flow. It is also for high performance through joint problem solving to ensure a continuous cycle of improvement as shown in Figure 4.1 (Humphries and Wilding, 2004).

EXPECTED COLLABORATIVE BUSINESS RELATIONSHIP IN DSD SYSTEM



DSD BUSINESS RELATIONSHIP SUCCESS CYCLE

(Adapted from Williamson, 1975 & Thunpheries' Et Al, 2004)

Figure 4.1 DSD Business Relationship Success Cycle

Focusing on business relationship management of DSD will demand DSD business relationship stability which BRSC offers for a very effective and efficient SCIFs (DSD sub-systems) in the development of the conceptual framework through alignment of objective and confident-building as in BRSC (Humphries and Wilding, 2004). In a similar manner, the DSD business relationship communication and DSD business relationship quality will also positively and fully affect the effectiveness and efficiency of SCIFs for the improvement and continuous improvement of the whole DSD system finally (Humphries and Wilding, 2004). As required in system thinking and rethinking, these kinds of business relationship improvement stages of the BRSC shown in Figure 4.1 are linked to very critical issues of professional autonomy of the DSD actors and why and how the autonomy of the DSD practitioners varies with the procurement method used (Orgen et al., 2013a; Miles and Trott, 2011; Pryke, 2009; Humphries and Wilding, 2004).

The relationship system in Figure 4.1 shows that the DSD relationship quality or level have effect on the kind of relationship reliability to be achieved between or among parties in the construction business. Besides, in a situation of right quality and reliable relationship, there is promotion of appropriate creativity. Such creativity as shown in Figure 4.1 can result in stable relationships which improve communication for more feedback for effective and efficient development of SCIFs for the improvement of DSD activities. Surely, the relationship system described in Figure 4.1 varies depending upon project conditions. This relationship situation cause every procurement system to come with different degrees of business relationship for the DSD actors of a defined identity (unique to the work at hand) for construction project delivery (Turina et al. 2008). Some instances like traditional procurement do not involve contractors at the design stage, which is otherwise different from the case of early contractor selection for instance (Walker and Lloyd-Walker, 2012;

Davis et al., 2006). Proper management of collaborative working and business relationship improvement are on how effective collaborative working among the DSD actors can be carried out to achieve win-win-win benefits (Pryke, 2009). This is critical for all procurement which clients and other stakeholders cannot ignore (Humphries and Wilding, 2004). Indeed, these situations must no longer be left uncontrolled and unmanaged. Therefore, a procurement system which will embrace all inputs with wide and in-depth insights for developing and constituting effective and efficient SCIFs must be pursued vigorously (Orgen et al., 2012a). This should be linked to the business relationship success cycle for the improvement of the DSD activities (Orgen et al., 2013a; Humphries and Wilding, 2004).

4.3.3 Collaborative business relationship management conceptual framework

The literature on collaborative business relationship models and concepts reviewed such as change of ‘mind set’, use of critical relationship improvement factors and maturity periods have the possible potential attributes and facts for a collaborative business relationship conceptual framework (Miles and Trott, 2011; Meng, 2010; Pryke, 2009 Paulk et al, 1993). The framework also uses abstractions from the understanding of managing DDC through maintenance of business relationships, action and system theory and thinking (Mele, et. al., 2010; Seebass, 2008; Roeser, 2005; Tuomela, 1991). Therefore, sections 2.6.1 to 2.6.5 provide a starting point for considering the critical details of the literature reviewed to develop collaborative business relationship conceptual framework for effective and efficient SCIFs to improve DSD activities.

4.3.4 Brief Background

Relevant empirical concepts from the non-collaborative and adversarial relationship literature show that the traditional procurement system is characterized by a lot of DDC

issues such as mistrust, poor communication, unco-ordinated and harsh situations in developing countries like Ghana (Ahadzie et al., 2012; Laryea, 2010; Anvuur et al., 2006). In this traditional procurement system in Ghana, the position and role of Project Manager (PM) has for the first time been mentioned and recognized in Public Procurement Act 2003, (Act, 663), (Ahadzie et al., 2012). The recognition of PM in the procurement is to improve the Ghana Government Conditions of Contract (GGCC, 2003) and provide better contractual relationship. However, the functions, authority and powers of PM are not clearly defined. This obviously allows a situation where one DSD practitioner (professional) plays a double role (where actors double as project manager and architect or quantity surveyors; is to assume two equally difficult professional responsibilities) which lead to conflict of interest or professional conflicts in the design service delivery (DSD). Additionally, an example is in the traditional procurement system, when a consultant (DSD practitioners' firm) is appointed, the lead consultant naturally or automatically assumes or occupies the PM position (Davis et al., 2006).

Also, as responsibility has corresponding benefits, the other actors who cannot have double responsibilities may have ill-feeling against the other. In the light of this, as the two or more actors cannot occupy the same position, though they all desire to have it, they tend to struggle for it (Ebestein, 2003). Such a harsh or adversarial situation therefore generates or causes DDC due to dislocation and wrong assumption of business leadership, authority and power (Orgen et al., 2013a; Laryea, 2010). These situations leave discontentment and professionals' struggle, leading to ineffective and inefficient development of the SCIFs. Therefore, the Action Theory used seeks to explain and illustrate the non-collaborative and adversarial relationship for a systematic solution in the flow chart for business relationship improvement (Seebass, 2008; Roeser, 2005; Tuomela, 1991).

4.3.4.1 Flow chart for Business Relationship maturity improvement

Figure 4.2 is a flow chart which presents the main bases for the construction of the conceptual assessment framework in Figure 4.3. The situation (conditions and pre-conditions) for the development figures are that, first, the DSD have actors (referred to in theory of action as agents or players) and they comprise two key groups: DSD practitioners (sub-agents of DSD actors) and contractors (sub-agents of DSD actors) (Orgen et al., 2013a; Allwood, 1995). Second, the key function of DSD practitioners (producers of SCIfs) is to produce and sustain a supply chains of information flow (SCIfs), manage, interpret, control and respond to issues affecting its operations since the entire project objectives depend on it (Hatmoko and Scott, 2010; Titus and Bröchner, 2005).. On the other hand, the key function of the contractors in SCIfs is to execute projects in accordance with the SCIfs – chains of project documentations produced (Alhassan, 2012; Walker and Lloyd-Walker, 2012; Hatmoko and Scott, 2010; Titus and Bröchner, 2005). Third, there are non-collaborative working and adversarial business relationship in DSD activities and also among the DSD actors which are caused by discords, disputes and conflicts (DDC). These conditions and pre-conditions are barriers to the free flow of project performance feedback, traditional non-adversarial and innovative information on the SCIfs, which make the SCIfs ineffective and inefficient to improve DSD activities (Orgen et al., 2013a). Subsequently, the construction of the action oriented conceptual framework is confronted with two basic business relationship improvement and continuous improvement problems:

- i. Business relationship improvement and continuous improvement problems involving DDC exist among the DSD practitioners (producers of SCIFs) blocking, sharing and exchanging freely performance feedbacks and other information- horizontal/lateral relationship problems (Cole and Kelly, 2011; Mullins, 2005).
- ii. Business relationship improvement and continuous improvement problems reveal DDC predominantly between the contractors (executors of SCIFs) and the DSD practitioners (producers of SCIFs) blocking sharing and exchanging performance feedback and other information- vertical relationship problems (Cole and Kelly, 2011; Mullins, 2005).

Therefore, the intended action required is to improve horizontal/lateral and vertical business relationships to achieve an intended result of optimum free flow of performance feedback, traditional non-adversarial and innovative information (Mullins, 2005). That is to produce an intended lasting effect of improvement and continuous improvement in the DSD activities (Orgen et al., 2011) see Figure 4.2. Further, it is to secure a permanent business relationship management processes and procedures in frameworks for future improvement and continuous improvement of DSD activities. This situation requires business relationship improvement file/policy or proposal for every project. (Cole and Kelly, 2011). That is to ensure that the DSD actors agree on the structures, strategies and time for the facilitator's work before commencement of projects to engender useful business relationship improvement strategies for the improvement and continuous improvement of the DSD activities. The main purpose of the action-oriented theorisation in building the conceptual framework is to identify the preconditions/conditions (problems) in the study; which need collective action (processes/procedures necessary for transformation, including change of 'mind set' and application of the critical improvement

factors). Again, after the identification of the problems and the needed collective series of actions and processes noticed, these then yielded the expected results or outcome as in figure 4.2.

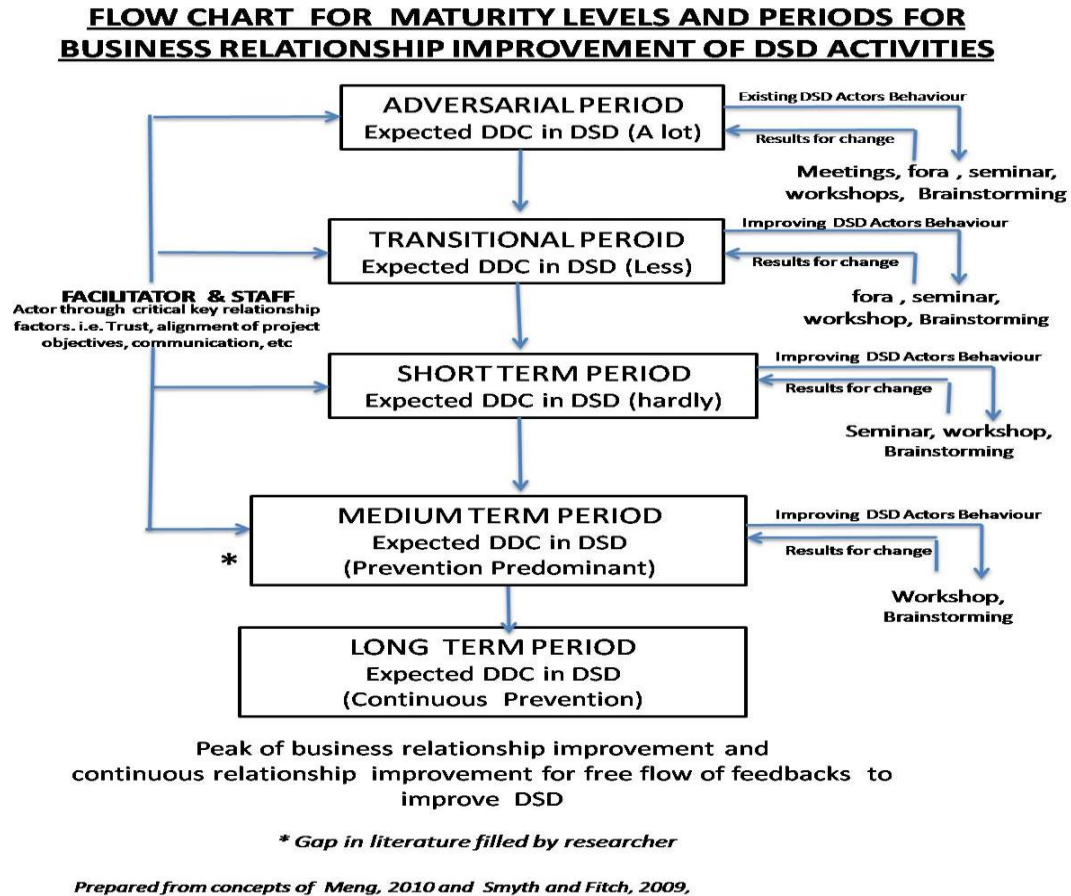


Figure 4.2 Maturity levels and Periods for Business Relationship improvement of DSD activities

To apply these is to examine and question how to improve the DSD activities for project execution. Therefore the critical research issues to be addressed for the improvement of DSD activities in project execution are:

How to deliver an effective and efficient SCIfs to contractors (sub-agents of DSD actors).

Also, how DDC which causes non-collaborative working, adversarial business relationship and subsequently disturbing information flow for developing SCIfs and the improvement of

DSD activities can be prevented as in Figure 4.2. Both issues are preconditions (problems) of DDC which cause non-collaborative working and adversarial relationship are identified according to the action theory (AT) concepts (Seebass, 2008; Roeser, 2005 Tuomela, 1991). The DDC situation at each maturity period is noted with its consequences for all the five periods in Figure 4.2. Within the five periods, the DSD actor groups will gradually be improved from the adversarial period to the transitional period through change of 'mind set' to the other maturity period until they reach the final attitudinal behavioural level at the long-term period as indicated in Figure 4.2 (Cheung and Rowlinson, 2005). That apart, the horizontal arrow lines from left of the figure 4.2 dropping in information from the facilitator and staff at each maturity period to influence change of adversarial situation to reduce or prevent DDC gradually from period to period.

The adversarial situation is gradually changed by employing the critical relationship improvement factors as shown in Figure 4.2 (Pryke, 2009; Cheung and Rowlinson, 2005). This requires a series of actions (action chain – chains of actions at each maturity period are necessary) to change the complex attitudinal behaviour of the DSD actors (Seebass, 2008; Roeser, 2005; Tuomela, 1991). Furthermore, the double horizontal arrow lines on the right of the Figure 4.2 move the behavioural level situation from and to the maturity periods for improvement. The top arrow lines take the DSD actor adversarial behavioural level of each period to meetings, fora, seminars, workshops for transformation as shown in Figure 4.2. The results of the behavioural level changes from meetings, fora, seminars, workshops are sent to the maturity periods for the improvement of its activities to attain a higher behavioural level (Cheung and Rowlinson, 2005). These attitudinal behavioural level of changes from period to period are necessary to be employed in the construction of the framework and for the expected attitudinal behavioural changes. This expected attitudinal

behavioural changes demand a strong urge to apply the frameworks for the ‘anticipated or expected changes to occur’ for the improvement of the DSD activities. Those urges or drives come in two ways i. internally, motivated by DSD actors’ (agents’) realization and identification of benefits in business relationship improvement and continuous improvement ii. the guide of the facilitator at workshops, seminars, fora and meetings records brainstorming and discussions as in figure 4.2 (see for example, Meng, 2010; Ankrah et al., 2010; Pryke, 2009; Cheung and Rowlinson, 2005) Such steps are to overcome DDC by using the business relationship improvement critical factors i.e. trust, alignment of objectives, problem solving, commitment and others as indicated in figure 4.2 (see for example, Meng, 2010; Ankrah et al., 2010; Cheung and Rowlinson, 2005) The facilitator’s efforts are considered in AT as success criteria (felicity criteria) which are essential criteria for the functioning of the framework (Seebass, 2008; Roeser, 2005; Allwood et al, 1995).

4.4 Conceptual Frameworks

Two main frameworks have been developed for the improvement and continuous improvement of the DSD activities. The frameworks are improvement assessment conceptual framework and improvement conceptual framework. The improvement assessment conceptual framework developed is in two parts: illustrative improvement assessment part and indicative improvement part. The two parts complement each other’s assessment processes in order to provide detailed understanding in the study of the characteristics of the non-collaborative, adversarial business relationship and the collaborative situation among the DSD actors in developing SCIFs in developing countries such as Ghana. The illustrative and indicative assessment processes complement each other such that, whilst the illustrative part of the framework analysis business relationship circumstances surrounding the development of SCIFs in improvement of DSD activities and

categorizing them; the indicative part of the framework ranks the categorizations in accordance with maturity periods. That is, the indicative part positions or places the business relationship categories in a corresponding maturity periods with regards to effective and efficient SCIFs developed and constituted. The improvement conceptual framework is developed to show the characteristics and the nature the non-collaborative, adversarial business relationships, the processes to follow to achieve collaborative working for effective and efficient development of the SCIFs through improvement of business relationship.

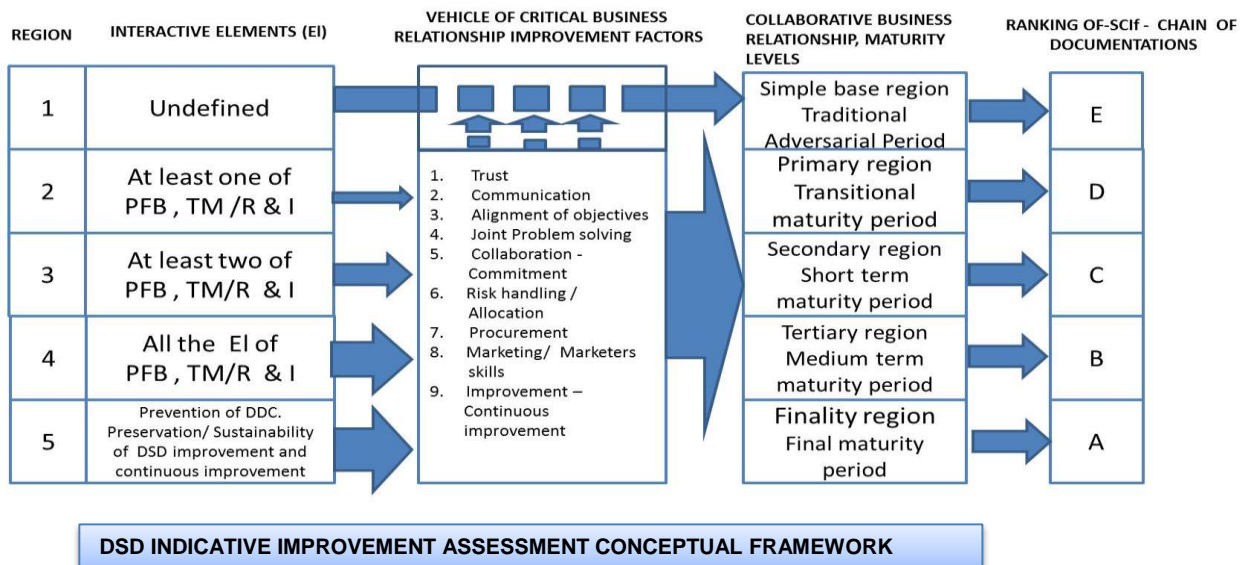
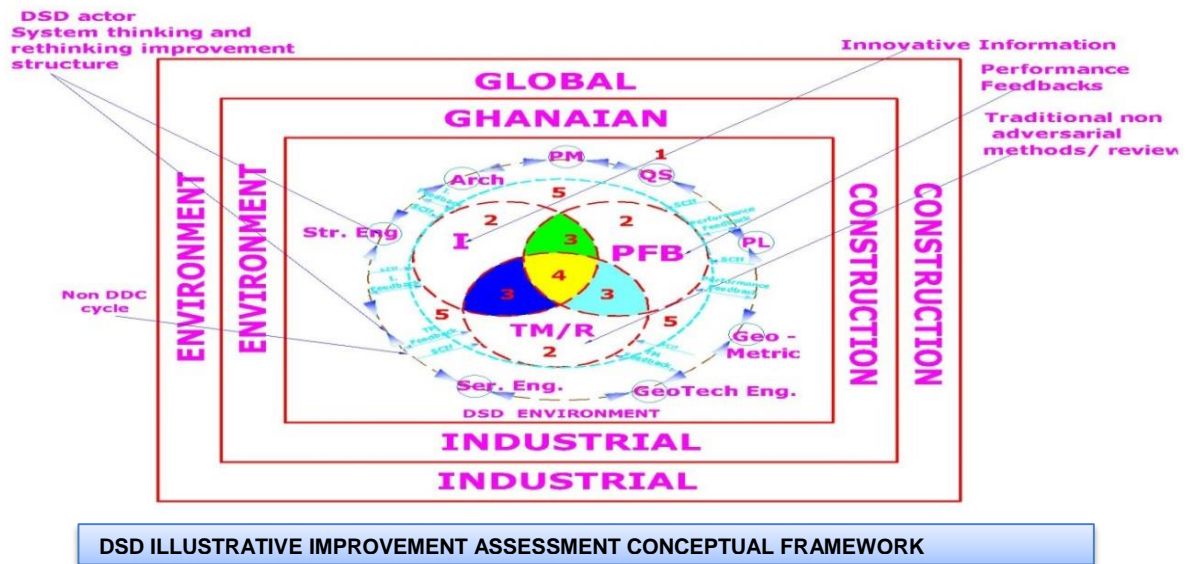
4.4.1 DSD improvement assessment conceptual framework (IACF) and improvement conceptual framework (ICF) for collaborative business relationship management

The relevant non-collaborative adversarial and collaborative business relationships literature including theories reviewed in this study are used to construct conceptual frameworks for collaborative improvement assessment of responses from any group and improvement of the DSD activities respectively. Both frameworks shown in Figure 4.3 and Figure 4.4 respectively have evolved from the relevant non-collaborative adversarial and collaborative business relationships literature.

The two figures are to provide firm initial understanding of the provisions in the literature. The figures have also been developed in line with the topic, aim and multi-theorisation of action oriented system theory thinking and rethinking processes. These together provide guidelines as pre-conditions and conditions (presets) drawn from the study of literature for the rest of the research and the methods to be used in the next chapters (Hsieh and Shannon, 2005; Taylor-powell and Remer, 2003). The simple base region is traditionally non-collaborative, harsh and adversarial in nature with undefined interactive information elements. That region is level 1, where there is little or no exchange or sharing of performance feedback (PFB), traditional non-adversarial methods/review (TM/R) and

innovative information (I) to produce effective and efficient SCIfs and improve DSD system, with corresponding rating as in the DSD indicative assessment of framework (Anim, 2012; Loo, 2003).

4.4.2 Improvement assessment for onceptual framework for DSD activities



Source: Orgen et al. (2013a & b)

Legend: PFB –performance feedback, TN/R – traditional non-adversarial/review
I - Innovative information, EI – element

Figure 4.3. DSD Illustrative and indicative Assessment Conceptual Framework

The simple base region seems to be more a closed system than an open system (Mele, et al., 2010). Also, the illustrative framework has four other levels within the remaining four regions. Those levels can be used alongside level 1 of the simple base region (traditional adversarial period). Those are used to determine in terms of exchange or sharing of performance feedback, traditional non adversarial methods/review and innovative information where a particular construction company or firm or respondent will be placed. The DSD practitioners' ability in terms of exchange or sharing interactive information elements such as performance feedback will also be determined. It will then offer useful premises to investigate and assess why there is improvement or no improvement based on the kind of information flowing from (SCIf) cycle of DSD practitioners to contractor/organization and vice versa. Also, the primary region (transitional maturity period) is of three open subsystems making up level 2 in the framework. Each of the open subsystems in level 2 offers one piece of improvement interactive information element only. The secondary region (short-term maturity period) has three open subsystems making up level 3 (SEI, 2009, 2006; OGC, 2002; Paulk et al, 1993).

Each of the open sub-systems in level 3 offers two pieces of improvement interactive information elements only. In addition, the illustrative/indicative framework presents a tertiary region (medium-term maturity period) with only one open subsystem making up level 4. The open sub-system in level 4 offers three pieces of improvement interactive information elements only. Finally, the improvement and continuous improvement region

(long-term maturity period) embraces all the open sub-systems as level 5. That consists of the primary, secondary and tertiary regions making up level 5 for the finality region of the framework (Orgen et al., 2013a). The five different levels discussed make the DSD system complete. Level 5 is essential in the preservation, stabilization and sustenance of improvement and continuous improvement of the DSD in the long-term maturity period (SEI, 2009; 2006; OGC, 2002; Paulk et al, 1993). It is also for the prevention of DDC through effective use of the critical business relationship improvement factors. In each of those five levels there is at least an exchange and sharing of one of the following pieces of information: performance feedback, traditional non-adversarial methods/review and innovative information from SCIf cycle bond of the mechanisms that make the DSD system a system involving the contractor.

A strong business relationship cycle is developed between the practitioners and the contractor using the system theory, thinking and rethinking principles as in the illustrative assessment of model (Orgen et al., 2013a; Pickel, 2007). The effectiveness and efficiency of the SCIf cycle bond is based on voluntary giving up of some professional autonomy by the DSD actors; for a hybrid procurement process of a strong SCIf cycle, through effective use of the critical business relationship improvement factors as shown in the DSD indicative assessment of framework (Meng, 2010; Pickel, 2007). The DSD illustrative/indicative model is developed based on the literature, research aim, objectives and key questions to assess improvement performance of the participants (Orgen et al., 2013a)

4.4.2.1 Construction of illustrative/indicative assessment framework

From the understanding gained from relevant literature review, there is the need for interface interaction among the DSD practitioners. Also, it is essential to have regular sustainable

interactions between the DSD practitioners and contractors in order to incorporate their previous experiences in developing the SCIfs (Edum-Fotwe et al. 2001). Furthermore, a multi-theoretical approach which is composed of action-oriented system theory, thinking and rethinking offers a lot of different facts and ideas for the development of the framework (Pickel, 2007; 2004). Initially, detailed groupings of business relationship management issues of similar and dissimilar facts and ideas are gathered from non-collaborative, harsh or adversarial business relationship literature.

The issues assembled from both the literature and theories mentioned in the multi-theoretical approach that will assist in the assessment are tabulated (Mullins, 2005). Several rearrangements of groupings of the relevant literature facts and ideas occurred. A critical comparison of the collaborative working and business relationship issues with the action oriented system theory, thinking and rethinking ensued (Pickel, 2007). Further, rearrangement reveals five (5) groupings with linkages that can assist in answering the objectives of the study after data collection as indicated in the framework. The five (5) groupings of the collaborative business relationship issues that will bring effectiveness and efficiency in SCIf are assigned five letters of the alphabet: E, D, C, B and A. to rank the levels of collaboration in each region. The alphabet E is the lowest and A the highest of the rankings as shown in the DSD indicative framework. The main summary in developing the illustrative/indicative framework involves the use of the environment, the structure, the components and the mechanism which make the DSD system work as a system (Pickel, 2007; 2004). From the literature search, it becomes apparent that the environments for DSD are three: global, Ghanaian and DSD sub-systems (Mele et al., 2010). The structure has been identified to be the DSD actors and the components were their respective professions or professional services. It has also been realised that the mechanism that would make the DSD

system function as a system is the SCIf bond- (chain of documentations). Therefore the model has been developed in line with the principles of action -oriented system theory, thinking and rethinking - external and internal flow from all other subsystems that make up a particular system whole ((Pickel, 2007, 2004; Mullins, 2005). There are two parts of the framework; illustrative and indicative. The indicative complements the illustrative by way of offering explanations as to how collaborative business relationship working for improvement of DSD activities would be assessed (Orgen et al, 2013a).

Categorising a particular construction company or firm or respondent depends on what business relationships maturity it exhibits in an inter-professional working arena in developing the SCIfs. The professional maturity level concerns willingness to share information drawn from the global, Ghanaian and DSD sub-systems environments for the improvement of a particular DSD system (Pickel, 2007). It also includes information sharing among the DSD actors on the non-DDC cycle as in the DSD illustrative framework. Besides, DSD illustrative framework is developed based on system thinking and rethinking for a strong SCIfs cycle bond (Pickel, 2007). For proper functioning of the bond among the various DSD practitioners, it is constructed to function as a single chain structure in a DSD system (Cheung and Rowlinson, 2005). To achieve the proper function of SCIf bond with all the actors including the contractor requires a mechanism that makes all the DSD actors use and allow free flow or share of all the interactive elements equally among the DSD actors in the DSD system (Mele et al., 2010). This involves giving up some amount of professional autonomy in business relationships for inter-professional collaborative work. The focus is on inter-professional collaborative work in a strong professional cooperative league with the contractor for his inputs in developing the SCIfs and not “class mate or any other mate” system of work (Orgen et. al., 2011; Cheung and Rowlinson, 2005). In the

collaborative work the critical business relationship improvement factors (CBRI_f) in the DSD indicative framework, are used for the development of the SCIfs. Again, one should not overlook business relationships in the procurement used including marketing skills, relationships and strategies of DSD actors. The number of critical business relationship improvement factors shown in the indicative framework that are used enhance the openness of the DSD system, depending on the type of procurement and collaborative working in any particular region and corresponding to the maturity period (Orgen et al., 2011; Cheung and Rowlinson, 2005). Therefore, to allow for the use of more interactive elements, a particular region is constructed based on an openness of the DSD system (Mele et al., 2010).

The three broken arrows pointing upwards to the longest horizontal broken arrow in the framework is to show that unimaginably few CBRI_fs are sometimes used in creating the traditional adversarial period project delivery condition. Contrary to that situation, to move from a lower region where the unimaginable few CBRI_fs are used; like region 1, downwards to higher regions like 2, 3, 4 and end in the highest region 5 requires continuous openness of the system (see figure 4.3). In that sense, the kind of rankings assigned to a period is based on openness of the region to interactive elements and the maturity level of the DSD actors of the DSD system. (Orgen et. al., 2011; Meng, 2010; Cheung and Rowlinson, 2005). Also, the number of inflow and outflow of interactive elements for the development' of the SCIf bond at the interface of DSD practitioners on the non-DDC cycle and the contractor's position in DSD environment is essential. The contractor's position in relation to all other circles and intersections from region 1 to 5 as sub-areas in the illustrative model indicates his level of maturity and contributions to DSD practitioners in constituting the SCIfs. Therefore, the parts are holistically constructed together for the transformation of the structure (DSD

actors) and the components (DSD professions or professional services) (Edum-Fotwe et al. 2001; Orgen et al., 2011). In addition, it is to achieve a collaborative business relationship to develop an effective and efficient SCIfs bond for the improvement of the DSD system as a whole (Mele et al., 2010). Research interviews involve the study of issues concerning the different actors practicing, developing and constituting the supply chains of information flow. The actors are purposively targeted for an in-depth analysis. The analysis covers their collaborative working and business relationships in the fieldwork. Efforts are made to uncover more variables of interest. As Baxter and Jack (2008); Hsieh and Shannon (2005) put forward that the research approach used should show appropriateness to the research purpose and that the research questions under consideration and these are the major focus in developing the framework.

4.4.3 Improvement conceptual framework (ICF) for DSD activities

The improvement conceptual framework is developed in three clear stages: i. business relationship and information generation, ii. Information processing and distribution and iii. Information usage and improvement of SCIfs (chain of documentations) Orgen et al., 2013a). Details have been explained in the conceptual framework as shown in figure 4.4

4.4.3.1 Stage 1 Improving Existing Business Relationship and Information Generation

Stage 1 of the DSD improvement conceptual framework as shown in Figure 4.4 is constructed with a focus on business relationship improvement (BRI) for the generation of information (Orgen et al., 2011; Edum-Fotwe et al., 2001). The preconditions or conditions that necessitate that chain of actions are that in the DSD system whole, for example under the traditional procurement system the DSD practitioners (sub-DSD actors) and contractor (sub-DSD actor) have autonomy to practise their professions. However, people dislike being

controlled and thus engage in conflict to avoid being controlled as it is with DSD actors (Orgen et al, 2013a; Collins, 1975). Each consulting DSD practitioner wishes to keep his professional autonomy and monopoly of his profession and expertise. Those conditions encourage DDC among DSD actors where the artificial closed system of sub-SCIfs with DDC is produced. This gives rise to non-collaborative working and adversarial business relationship syndrome of business failure cycle (Humphries and Wilding, 2004) with an apparent failure in business relationship between the DSD practitioners and the contractor shown in broken lines at the extreme left in initial conceptual framework. (Orgen et al., 2013a).

The DSD practitioners' professional autonomy in producing sub-SCIfs seems to have strong linkage with the procurement method used. From the literature, the traditional procurement practices for instance, seriously foster adversarial conditions that breed non-collaborative working of failure business relationship among the DSD actors (Laryea, 2010; Axt, et al., 2006; Anvuur et al., 2006). For that matter, the encouragement of BRI calls for a hybrid procurement method which will allow or encourage BRI to flourish properly among DSD actors to voluntarily relinquish some of their professional autonomy and monopoly for the useful development of BRI based on critical relationship improvement factors: trust, problem solving, alignment of objective and others as in the conceptual framework shown in Figure 4.4 (Meng, 2010).. Also, there will be proper flourishing of BRI which encourages promotion and motivation of the active power of DSD actors to plan, programme and achieve a full-blown joint business goal coupled with we-intentions for the success of the DSD system whole (Mele et al., 2010; Seebass 2008; Tuomela, 1991). Additionally, the facilitators' workshops, fora, seminars and meetings through brainstorming would produce proper interactions and the free flow of performance feedback, traditional non adversarial

and innovative information (Cheung and Rowlinson, 2005). That information then flows to the information processing stage 2 developing towards an open system of thinking and rethinking as in the conceptual framework as shown in Figure 4.4 to achieve effective and efficient SCIf bond to improve DSD system whole finality (Pickel, 2007)..

4.4.3.2 Stage 2-Information Processing and Distribution unit of the conceptual framework

stage 2 of the conceptual framework is developed for information processing and distribution, which greatly involves the DSD mechanism and processes in which the SCIf bond works to make DSD system a system (Pickel, 2007). The improvement of the DSD systemism, demands that information processing should involve all information from all systems and sub-systems within the DSD entity and from those systems that form the external global and Ghanaian environments as indicated in the improvements assessment conceptual framework in Figure 4.3, for filtration and fractional filtering before distribution (Pickel, 2007). A proper filtration- sieve deals with all elements and issues that prevent the full development of the supply chain relationship management. It will deal with for example DDC prone issues, non-critical business relationship factors and general elements or issues which fan non-collaborative working and adversarial business relationship which block improvement of the DSD system whole (Axt, et al., 2006; Humphries and Wilding, 2004). Those filtration and fractional filtration make use of the performance feedback sheets for optimum success recording, sorting and updating of information in Appendix A (Orgen et al, 2013a). Details of fractional filtration concerning grouping of information into two categories should be in line with respective professions (Orgen et. al., 2011; Edum-Fotwe et al. 2001). The type of information such as performance feedbacks, traditional non-adversarial method/review and innovation, which are based on the DSD structure and components numbered in stage 2 and recycling of information which seems irrelevant

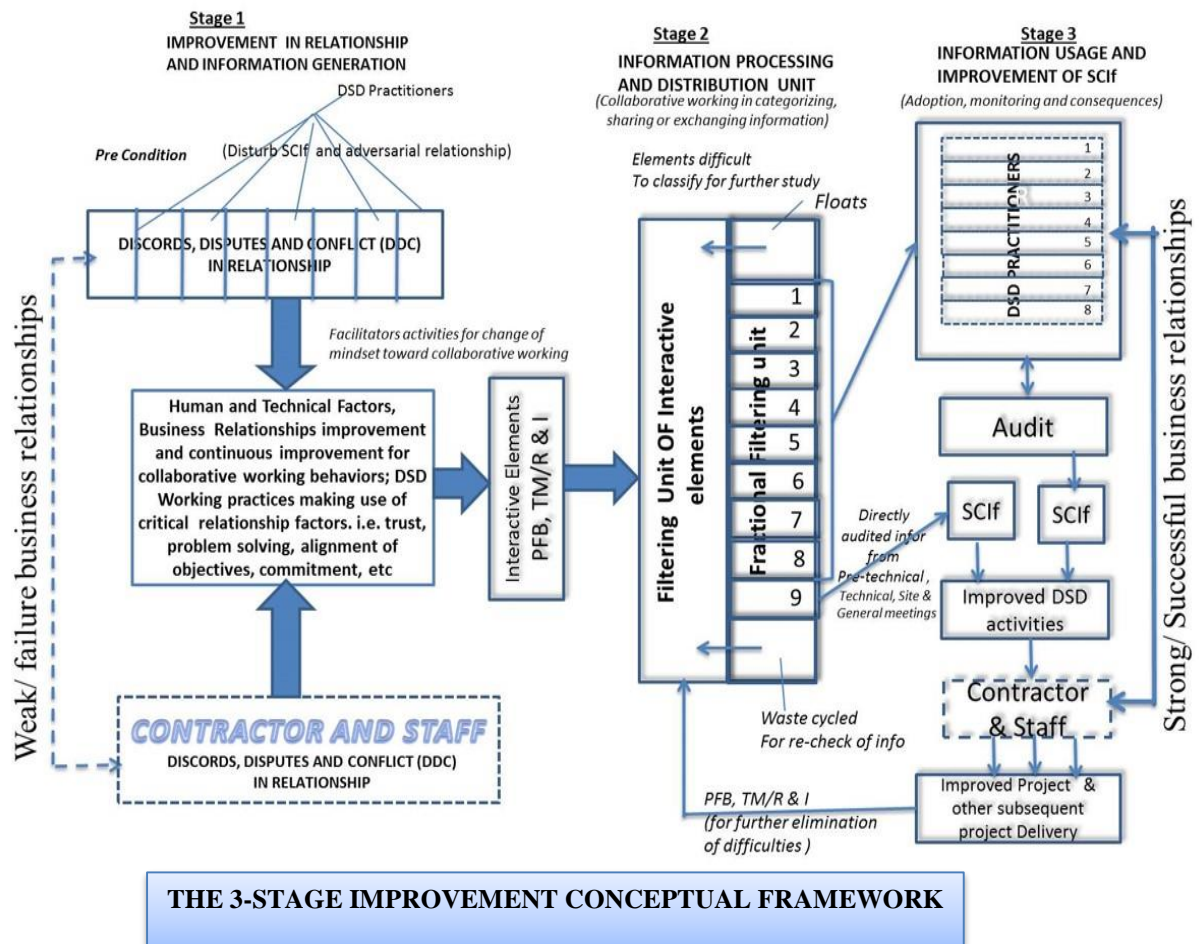
during processing or difficult to interpret or group or classify as waste (Orgen et al, 2012b; Pickel, 2007). Indeed, such wastage needs special attention, reasoning, experience and tactfulness through thinking and rethinking of the processes to make boundaries of the sub-SCIf and SCIf permeable systems to allow re-filtration of managing the waste to obtain maximum effective and efficient use of the interaction and information flow before application or absorption of the facts (Orgen et al, 2013a).

4.4.3.3 Stage 3:- Improvement of SCIf for the Improvement of DSD system

For the construction of the final stage of the 3-stage conceptual framework, the finality of framework is based on action-oriented system theory, thinking and rethinking which draw its developmental strength from DSD we-intention, we-goal or joint goal (Orgen et al, 2013a; Pickel, 2007). Besides, it involves an open system of permeable boundaries of DSD practitioners and contractor's/organisation contributing to achieve an effective and efficient SCIf in all processes of the DSD systems (Mele et al., 2010). That involves 'the DSD systems' mechanism, structure, components and environments in which SCIfs develop into required finality for fair and impartial benefit for all the DSD actors (Pickel, 2007; 2004).

The results of an effective and efficient SCIf optimum or finality level comes through proper interaction, effective exchange and free sharing of fractionally filtered performance feedback, traditional non-adversarial and innovative information abstracted from records of workshops, seminars, fora, meetings and from DSD feedback sheets see Appendix A (Orgen et al, 2013a; Cheung and Rowlinson, 2005). That information is applied and absorbed in two separate channels, direct to the contractor after fractional filtration of information from DSD actors and through the SCIfs after absorption of the applied information and auditing

projects (Hatmoko and Scott, 2010; Titus and Bröchner, 2005). Also, the application and adoption of the information arise on the basis that a hybrid procurement approach,



Three-stage DSD Improvement conceptual framework

Source: Orgen et al (2013a)

Figure 4.4. The 3-Stage DSD Improvement conceptual framework

with full application of relationship management concepts that involve strong/success business relationship bond between the DSD practitioners and contractor should occur to hold the transformation as indicated on the right end of the conceptual framework shown in Figure 4.4 (Pickel, 2007; Humphries and Wilding, 2004). That bond of success business

relationship should be developed and sustained with optimum relaxation of DSD actors' professional autonomy (Humphries and Wilding, 2004).

It is in the light of those issues that the improvement of DSD entity activities would directly and continuously improve the DSD projects. This is to realize fair and impartial benefits for all the DSD actors. Further, it is noted that the improvement of the DSD will effectively occur after a controlled DSD actors' audit of the total quality output of the systemic (systemism) information used in the development of the SCIfs (Hatmoko and Scott, 2010; Titus and Bröchner, 2005). Moreover, it is necessary to find out constantly whether they are applied systematically in project delivery as in the improvement conceptual framework shown in Figure 4.4 to the design stages as appropriate (Orgen et al, 2013a; Pickel, 2007). On the basis of that multi-theory reasoning, the basic DSD improvement and continuous improvements are bound to succeed.

4.4.4 The Way Forward

The conceptual frameworks developed provide the theoretical bases to assess and also offer improvement to the DSD activities and for that matter to improve the SCIfs. However, as noted earlier while the adversarial business relationship are not in doubt in the construction industry, the nature and characteristics of the relationship and how they impact on the SCIfs are not clearly known. Therefore, using the Ghanaian context, the lessons learnt in developing these frameworks will be used to establish and understand the nature of the adversarial relationships, the effects on the SCIfs and how the frameworks can be used to offer improvements.

4.5 Summary

Harsh adversarial relationships have been found to exist among the DSD actors (DSD practitioners and contractors being the DSD users) within the Ghanaian construction industry (Orgen et al., 2013a; 2011; Laryea, 2010; Anvuur et al, 2006) in view of DDC being a common phenomenon with virtually all human beings (Leicht and Jenkins, 2010; Hinde, 1997). On the SCIFs, this has been identified and found out to be different from the supply chains of tangible resources such as materials, labour and plants. It has been perceived that the DSD practitioners fail to freely share feedback information non-adversarial traditional information and innovative information to enable the contractors receive effective and efficient SCIFs developed in cordial harmonious business relationship.

In developing improvement conceptual framework (ICF) to ensure understanding of how business relationship improvement and continuous improvement by Action Theory (AT) will be achieved to reduce or eliminate or prevent non-collaborative working and adversarial relationship (Allwood, 1995; Von Wright, 1971). Additionally, how system theory, thinking and rethinking theories (Jugdev, 2004; Harriss, 1998; Seymour et al, 1997) can appropriately be applied to achieve improvement in the DSD activities. Also critical relationship improvement factors have been identified as presets to play significant role in the business relationship improvement process.

A DSD Indicative Improvement assessment conceptual framework (IACF) and 3-stage DSD improvement Conceptual framework (ICF) have been developed to enhance understanding, management of improvement and continuous improvement of business

relationship among and between DSD actors to ultimately improve DSD activities in Ghana. The former specifies relationship improvement factors that feed into ranked maturity levels that serve as indicators for the business relationship improvement whilst the latter prescribes three stages through which a business relationship can grow from weak/failure to strong/successful cycles. The frameworks provide the bases to establish the nature of the adversarial business relationships, the effects on SCIFs and how they can be used to offer improvement. The next chapter now discusses the research methods for achieving these.

CHAPTER FIVE

RESEARCH METHODOLOGY

5.1 Chapter Outline

The aspect of literature reviewed on the business relationship issues among the design service delivery (DSD) actors in a developing country like Ghana confirmed the non-collaborative working and adversarial relationships. The confirmation of these aspects of business relationships are in line with the relevant literature reviewed in this study, concerning three important business relationships. These include, the non-collaborative working, adversarial business relationships (chapter two) and collaborative business relationship issues (chapter three), which are for effective and efficient supply chain of information flow (SCI_f) to improve DSD activities.

This chapter continued by considering among others the main research question of why non-collaborative working and adversarial relationships continue among the DSD actors. It also looked at how DSD activities could be improved in collaborative working and achieve cordial, harmonious business relationships for effective and efficient development of SCI_fs. These involved looking at the bases, effects and characteristics of the business relationship situations on the DSD activities as well as the nature of the existing SCI_fs. Further, it was also concerned with how the processes and procedures used in developing SCI_fs function and the attitudinal behavioural and technical reasons for the non-collaborative adversarial business relationships. Again it considered improvement of knowledge to be gathered from both literature and field for the development of proposals to improve the DSD activities. However, as the characteristics of the adversarial business relationships and the effects on the SCI_fs are not clearly understood to enable appropriate management response to be

applied, this chapter addressed the research philosophy used in tackling the research questions.

5.2 Research Process

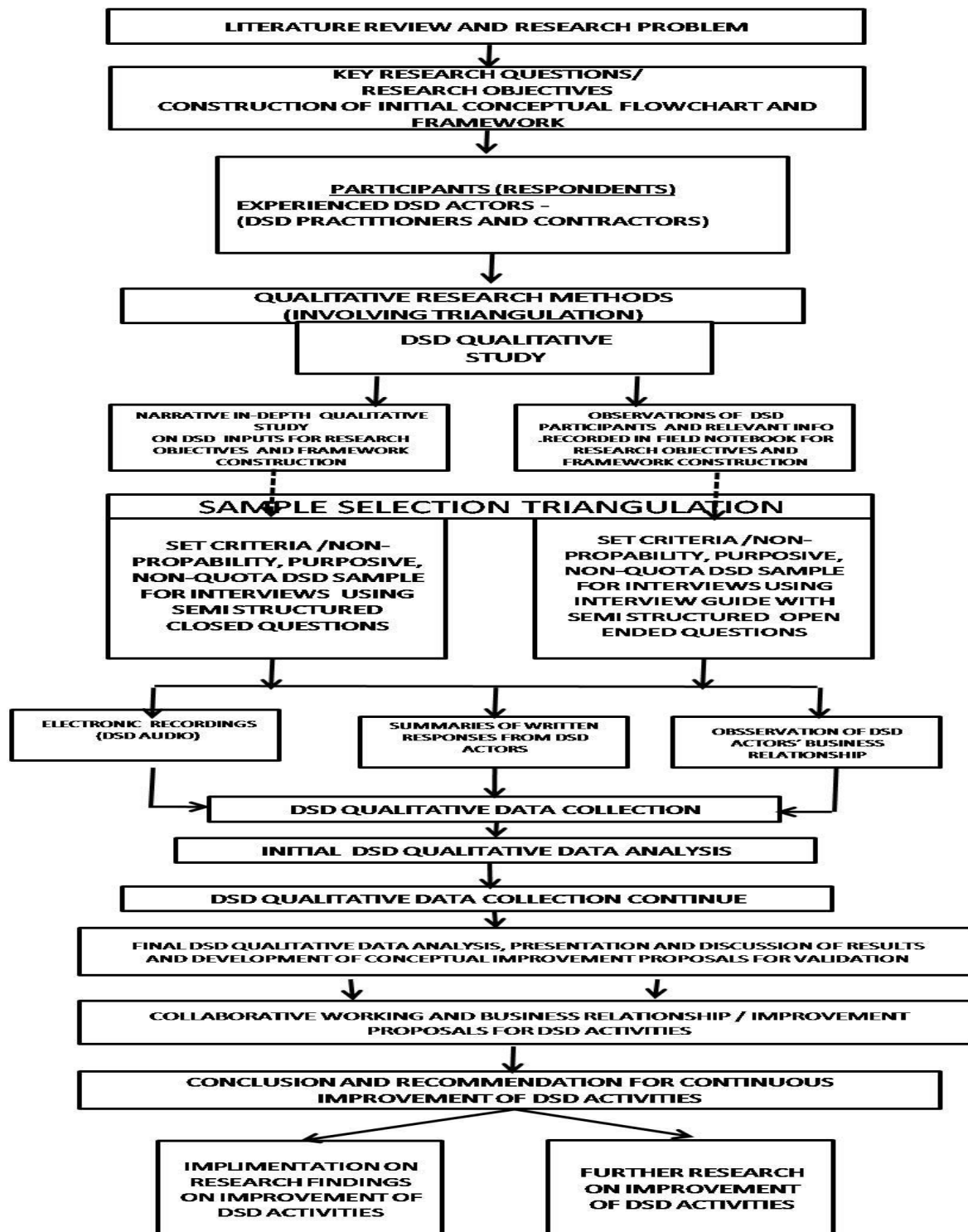
In the execution of the qualitative research study on the improvements of DSD activities in a developing country like Ghana, the research process provided basis for the fieldwork that followed. Srivastava and Thomson (2009) recorded that qualitative research was an inquiry (official investigation) process of understanding based on distinct and methodological traditions of inquiry that explored social or human problem. To proceed through the stages, first an extensive desk-based study which made use of library materials, including primary (relevant refereed journal, conference proceedings, technical reports) and secondary literature sources such as relevant textbooks were carried out (Naoum, 2004). A further review of relevant thesis and catalogues to shape and confirm the choice of a topic including the development of research aim, objectives and key questions for the study was carried out. Further, theory and previous studies by researchers were rigorously reviewed to be sure of what theories have been applied in the previous similar studies.

Literature reviewed as shown in Figure 5.1 enabled the selection of appropriate theories to provide the foundation, direction, guidance and understanding for the DSD research. The improvement assessment conceptual and improvement framework in chapter four were constructed through the desk based study and confirmed robustly by the qualitative approaches used at the various stages of the fieldwork research (Orgen et al, 2013a; 2012b). The literature based improvement assessment conceptual framework (IACF) and improvement conceptual framework (ICF) were used for assessment of the attributes in

seeking further responses for the research aim and objectives to complete the main proposals for the improvement of DSD activities.

The literature also guided the shaping of the research problem identified. The research problem was followed by the key research questions, respondents (participants) and the research type being qualitative in nature as in Figure 5.1. The details of the qualitative study included research interviews descriptive (narratives)/observations using questionnaires with close-ended questions and an interview guide of open ended questions as in Figure 5.1. The data collection was conducted in two stages, each stage was followed by analysis to fast track all issues necessary to provide original and credible information.

It was a kind of in-depth research which allowed the researcher to develop a complex holistic picture of the non-collaborative and business relationship problem (phenomenon) investigated, analyse words, report detailed views of the participants as conducted or identified in their natural setting. The other research stages in the Figure 5.1 guided the work that followed, though the qualitative research data involved words and observations, not numbers. It was essential to follow a systematic approach, creativity and discipline at all stages of the work (Taylor-Powel and Renner, 2003). Additionally, however, this was to obtain attributes and select the critical ones to construct the DSD improvement proposals for continuous improvement which is essential. These were obtained by adopting a summative content analysis and the Pareto analysis approaches. After the analysis, the presentation of findings were made, followed by the conclusions and recommendations



(Source: Adapted from Fellows and Liu, 2003)

RESEARCH PROCESS PATH FOR THE IMPROVEMENT OF DSD ACTIVITIES

Figure 5.1 Research Process Path for the improvement of DSD activities

In effect, Figure 5.1 presented the stages of the research strategies and processes derived from the desk-based study for the field research (Fellows and Liu, 2003). Efforts had been made in finding out whether similar research study had not been conducted (Fellows and Liu, 2003), before the formulation of the key research questions used for Research Process Path for the Improvement of DSD activities

5.3 Research Approach

Research philosophy is an important aspect of the research task that guided the researcher's inquiry into the improvement of the DSD study. This involved philosophical assumptions such as epistemological, ontological and axiological issues which showed a logical path of the research implicitly or explicitly (Pathirage et al, 2005). That apart, those philosophical stances assisted in clarifying the research design; they enabled the researcher to identify the research designs which were useful and the ones which were not for a study. Most importantly the philosophical issues served as a guide in identifying and forming research design outside the past experience of the researcher (Easterby-Smith et al, 2002). Also, the research philosophy stands tall for the quality of the research, as a key factor in the research design (Easterby-Smith et al, 2003)

5.3.1 Epistemological considerations

The epistemological stance following the interpretivism approach where knowledge of reality, including the domain of human action result in social construction of issues is appropriate and provides research philosophy and grounds for qualitative study of this kind (Guest, et al., 2012 Smith et al. 2009: Walsham, 1993). Further, Easterby-Smith et al. (2003), notes that there are two continuums. One of the continuums is vertical and the other horizontal as shown in Figure 5.2 concerning epistemological and ontological assumptions respectively expressing philosophical issues at their extreme ends (Guest, et al., 2012). The

epistemological assumption which is represented on the vertical continuum, has at its extreme top positivism and extreme bottom social constructivism (interpretivism). The latter view is identified as being appropriate for this study. Such an epistemological stance in research where interpretivism is followed dissociates the non- collaborative working, adversarial business relationship and the improvement of the DSD activities study from positivism, which offers clearly contrasting views of the epistemological paradigm on the vertical continuum.

Furthermore, at the extreme top end of the vertical continuum, the positivists think that the world lives on externally factual issues which can be proved. For that matter, its characteristics or properties should be measured objectively without the observer's influence on the observed views or issues studied (Comte, 1853). On the contrary, the bottom end of this same vertical continuum as shown in Figure 5.2 is the social constructivism philosophical thinking that reality is not objective embedded, which is socially constructed and provided by the people (Smith et al. 2009; Easterby-Smith et al., 2003). These people comprise such actors like the DSD actors who are fully aware of what they desire, purposeful, knowledgeable in their world or world of practice and interpret what happens in their world of work (Pathirage et. al, 2005). In this sense, the approach followed is more interested in finding and interpreting deeper meaning in discourse that is represented in a collection of personal narratives or observed behaviors and activities. (Bryman, 2004; Fitzgerald and Howcroft, 1998).

5.3.2 Ontological Considerations

The horizontal continuum which represents the second important philosophical assumption is the ontological stance or paradigm. At the extreme left end of this continuum is the realist point of view and on the extreme right end is the idealist point of view about the nature of

reality or the world. Again the business relationships and the improvement of the DSD activities research study have to lean towards principles such as whether the external world is of pre-determined nature and structured or not. It is in this sense that the two contrasting views of realism (Easterby-Smith et al., 2002) and idealism (Gummesson, 1991) offer this study philosophical issues of ontological assumptions.

The realist point of view is characterized with the normal experience that the external reality has a predetermined nature and is structured (Sexton, 2004). However, the idealist points of view agrees that what accounts for the truth from the perspective of different observers varies from place to place and time to time (Pathirage et al, 2005; Colins 1983). These two research philosophical assumptions of realism and idealism offer the opportunity to select the latter as an appropriate assumption for the business relationships study and development of proposals to improve DSD activities. The philosophical assumptions cause the research area to be energized by considering its aims, key research questions and objectives on these philosophical grounds. These assumptions guide the research study as described below:

5.3.3 Philosophical Position of this Research

In the light of the insight and new ideas or facts the study sought to achieve through the discussion, this research adopted the idealist position on the ontological stance, where it is assumed that truth is not the same everywhere (Sexton, 2004). The idealist position in the study is found to be issues which have to be under studied like attitudes, behaviours and relationships within and among the DSD actors which can be hidden or is hidden (Gummesson, 1991). Thus the epistemological stance of social constructivism (interpretivist) is adopted in line with a belief that understanding and interpretation result

from the researcher's own frame of reference. Bryman (2004) indicates this in Figure 5.2. This is the subjective interpretation of the perceptions, opinions or views of the observed or subject. Apart from the two philosophical assumptions discussed, it is essentially important to subject the study of business relationship management (BRM) for the improvement of the DSD activities to be positioned well on the axiological philosophical assumptions (Pathirage et. al, 2005). Associating the BRM proposals development to axiological philosophical stance allowed the axiological characteristics of the study. This final research philosophy which is a diagonally arranged, considers whether the study is in reality what it claims to entail or is value free at the extreme top end or value laden on extreme bottom end. Therefore, the axiological philosophy brings on board value free or neutral ideas to examine what is studied and how it is studied and whether it is determined by objective means. On the other hands whether it is value driven or value-laden research, the choice of what is studied and how it is studied is determined by human belief and experience (Easterby-Smith, 2003) which provide the diagonal arrangement of the research approaches as shown in Figure 5.2. These philosophical positions discussed come together as one block of philosophical assumptions and knowledge which offers possible basis for the selection of the appropriate research approach for the improvement of the DSD activities study (Pathirage et. al, 2005). Therefore, after carefully considering the aim, key research questions and objectives of the study and given that these were aimed at establishing an understanding of the nature and characteristics of the adversarial relationship bordering on complex business relationship and interactions, the qualitative paradigm was chosen. For these reasons the study concentrated on complex DDC issues that direct and control business relationship attitudinal behaviours of the DSD actors.

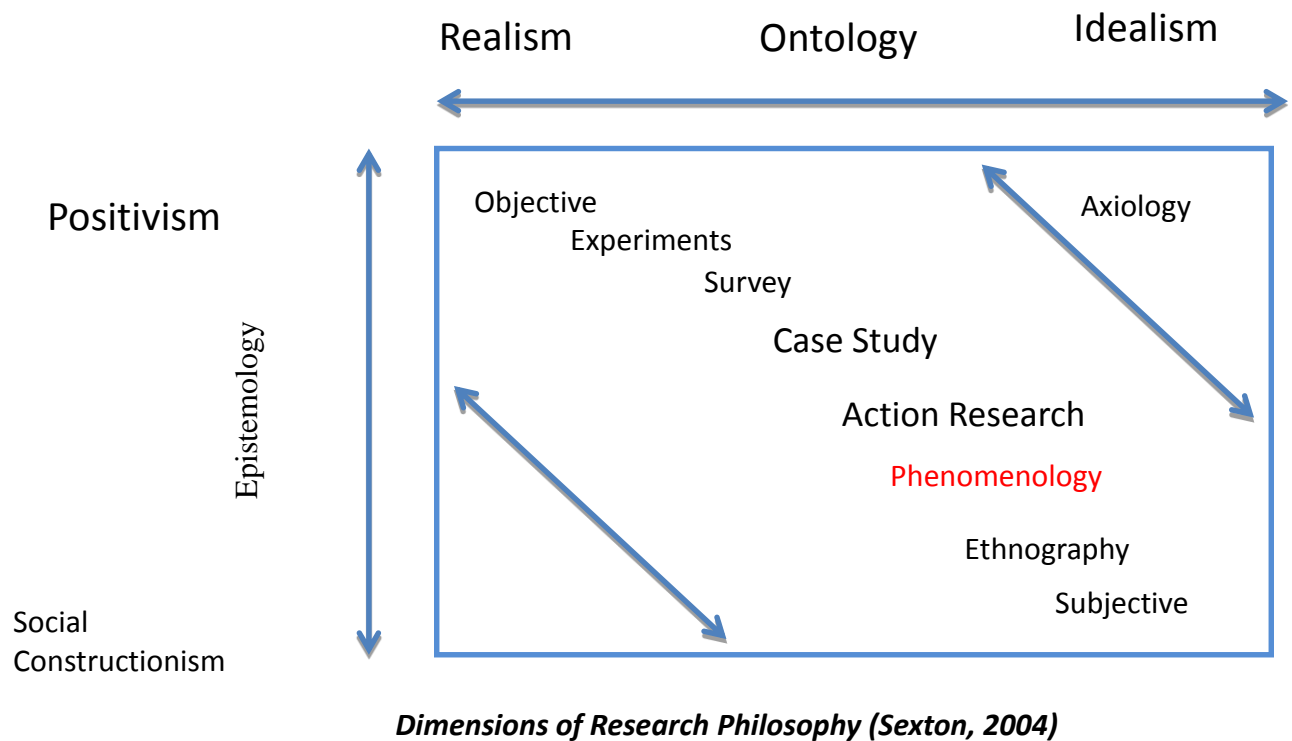


Figure 5.2 Dimensions of Research Philosophy

Also the attitudinal behavioural change, reasons, learning and knowledge required by the DSD actors through change of ‘mind set’ for exchange and sharing of information to improve DSD activities, is an investigation in real life setting. That is, the interviewer carried out face-to-face interviews with participants in their actual working offices. For that matter, the study is somewhat more context specific, which calls for concentration on in-depth study on small samples under no environmental restriction.

5.3.4 Research strategy

Basically, research strategy is of two clear research areas. They are quantitative and qualitative strategies (Leedy and Ormrod, 2005; Naoum, 2004; Fellows and Liu, 2003).

5.3.5 Broad Research Strategies under Research Design

In section 5.3.4, the two broad research strategies of quantitative and qualitative approaches are considered to offer a clear scope of strategies available to carry out the study. Based on

the understanding gained from the study of research methods, the qualitative approach is chosen as the appropriate option for this research. The section continued by outlining the features of the qualitative strategy of looking at “whys” and “hows” and to gather information on human behaviour, opinions, experiences etc., which are difficult to obtain using quantitative method. These make the qualitative suitable method for the data collection and analysis. Methodologies used are discussed one after the other in sections 5.4, 5.5 and 5.6. Research design concerns the arrangements or structure used to direct the techniques for collecting and also analysing the data. Therefore, it is within these arrangements of the framework that the methods of the research are positioned. According to Yin (2003) it is through that that the researcher can link empirical data to conclusions in sequential order to the initial research questions of the research undertaken. The research area of the construction design service delivery and similar entities have unstructured variables (Fellow and Liu, 2003). Notwithstanding this, issues need to be tackled through adoption of specific design that can address the situation by the researcher to show commitment to:

- ❖ make generalization to cover larger groups of population than those used in the in study,
- ❖ acquire knowledge and understanding of behaviours and what the behaviours imply or represents in that particular social setting,
- ❖ find out and record the normal or ordinary linkage existing between constructs of the research,
- ❖ have a period in the setting to gain first-hand information and feel of social phenomena and the relationships holding them together or putting them apart.

Various research explanations and contributions are offered by Fellows and Liu (2003), Yin (2003), Naoum (2004) and Gravetter and Forzano (2006). Evidence exist as in figure 5.3 that experiment, survey, case study, action research, phenomenology and ethnography designs are popular research designs used in some construction management and social science investigations. However, considering the topic, aim, research questions and objectives the phenomenology approach to the qualitative inquiry is appropait option for the study (Gravetter and Forzano 2006; Leedy and Ormrod, 2005; Sexton, 2004).

5.3.6 Research approach adopted

The phenomenology in qualitative inquiry offered appropriate option for this research undertaken. It focuses on individual experiences, beliefs, perceptions as text and are used as proxy for human experience which are considered suitable and adopted. Inquiries and observations are focus on gaining insights from individual experiences and perceptions. These are achieved through group experiences and normative perceptions which are typically sought out. Conducting face-to-face in-depth interviews using selected sample of DSD actor groups are ideal research process to obtain phenomenological data for examination and analysis in Chapter Six (Guest, et al., 2012; Gill et al., 2008; Pratt, 2006).

5.3.7 Research Design

Research design is an action plan through which the research can be carried out from the beginning to the set of conclusions. It involves:

1. Review of relevant DSD activities and literatures on the research topic and problem.
2. Review of relevant literatures on the methods, procedures, processses on the development of frameworks and models.
3. Review of relevant Social Science theories- particularly Psychology and Sociology theories which were relevant in understanding and explaining the non-collaborative

working, adversarial business relationship, collaborative issues and attitudinal behaviours and the culture of DSD actors.

Also, there was review of what constituted discords, disputes and conflicts (DDC) including how and why non-collaborative working and adversarial business relationship persist among the DSD actors. The study further considered the details of the effects these challenges posed to the development of the SCIfs and the DSD activities. Rigorous investigation was further carried out to find other constructional bases for DDC in the traditional procurement systems, particularly concerning the nature of business relationship and cultural practices common in Ghana. Effort was made to find out why and how non-collaborative working and adversarial business relationship attitudinal behaviours of DSD actors affect improvement of DSD activities. Attention was further given to the aspects of construction supply chains and networks as well as business relationship management aspects that would produce effectiveness and efficiency in SCIfs for the improvement of DSD activities. It was also to reason, deduce, induce and abstract from the literature survey, the aspects that could contribute to development of the framework for the assessment and improvement of DSD activities. These included studies on critical business relationship improvement factors (attributes), effectiveness and efficiency of elements such as performance feedback, traditional non-adversarial methods review and innovative information.

5.3.8 Formulation of the Problem:

Formulation of the research problem was based on literature review exploration. The review conducted consisted of various phases as stated in 1, 2, and 3 to gain in depth understanding of the subject under study. The situation needed documentary evidence (Kumekpor, 2002) that showed non-collaborative working and adversarial business relationship and indeed, it is important to find the nature of the adversarial business relationship. It was also to find out

how the non-collaborative working and adversarial business relationship affect the functioning of the processes and procedures used for the development SCIfs. For that matter, a ‘desk-based research’ (Fellows and Liu, 2003) was carried out to find justifications for the existence of the non-collaborative working and adversarial relationship problem.

5.3.9 Characteristics of the Research Objectives

The characteristics of the research objectives considered for effective and efficient study helped to formulate objectives that were specific, measurable and achievable and time-bound (Kumekpor, 2002). Those characteristics were the basis on which the stated research objectives were formulated in Chapter One. They were expected to be realized through the use of tools such as research interviews (specifically semi-structured interviews) with closed questions and an interview guide, with open-ended questions as shown in Appendix B. There were written responses, observations and audio recordings, of the DSD actors’ description (narration) of the various situations. Also field notes records of all relevant DSD information/observations were made. The qualitative data collection was to provide information on the nature, bases and characteristics of the adversarial business relationships, how they affected the SCIfs and what business relationship strategies could be proposed for improvement. The in-depth interviews and discussions with the DSD actors (DSD practitioners and contractors) were conducted to gather data to confirm or contradict theories, concepts, facts and issues raised in the literature. The data collection could provide appropriate attributes and strategies to be used to develop proposals for improvement of DSD activities. Interviews and discussions with the DSD actors have straightened, reshaped and made the development proposals more justifiable and applicable for the improvement of DSD activities.

5.3.10 Research design adopted in this study

The qualitative research interviews as explained in section 5.5.2 is considered the most appropriate type of design for this study. In-depth interviews for participants descriptive (narrative) responses designed are used. This design is strengthened by content analysis which offered appropriate triangulation tools that are used for the business relationship management textual research undertaken (Zainal, 2007). These qualitative research interviews have tools for all the relevant aspects of the study including dealing with variables of the research. However, having in mind the weaknesses in generalizing the detailed results of the qualitative research interviews approach is supported by content analysis to overcome this inherent weakness. The design of the qualitative research interviews also looked at the validity of the issues in section 5.5 to 5.5.3

These types of research interviews are selected and used to produce a rigorous qualitative data for analysis. The design for the research interviews design for this thesis clearly indicates that the remaining designs have not been used for some reasons:

- The study is not dealing with cause and effect variables and specific relationships between independent variables of which some require manipulation and control as in an experimental design. It does not concern direct causal relationships.
- The survey design involves the collection of large data which avoids direct observations which are essential in a qualitative study. This survey design makes use of examination and testing which are concerned with counting and objectivity. These are not in line with the qualitative research interviews undertaken.
- The study involves qualitative research interviews in which the researcher's involvement in conducting the interviews cannot be ruled out. In this sense, the action research is not used because in that design the researcher does not interfere in what is observed. In those research design the problem is identified in real-life and

then an intervention is set up, monitored and evaluated which is not the focus of this study.

5.4 Field Research Process

The field research process is divided into two levels of field issues as shown in Figure 5.3.

The Figure also shows procedures and steps used in the field research and how the process ends.

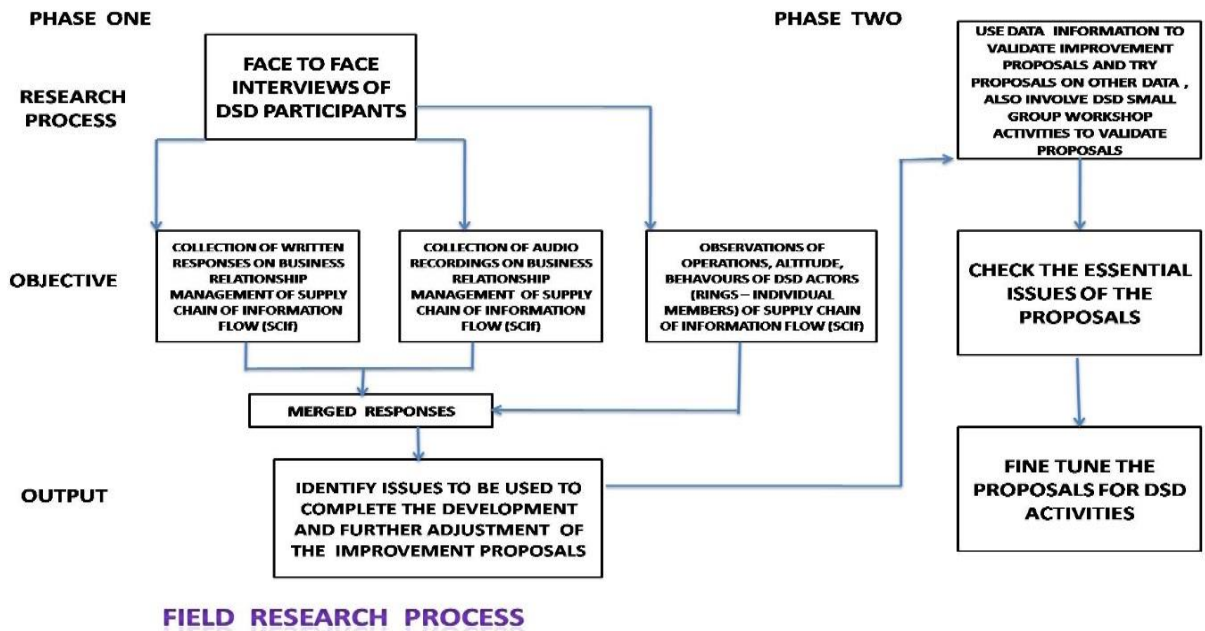


Figure 5.4 Field Research Process

The field process shows the procedure for investigating and understanding the nature of non-collaborative, adversarial business relationships, how they affect the SCIFs and the steps to develop proposals for the improvement of the DSD activities. This is explained in the succeeding sections below:

Further details of the field research process considered in the study to achieve the objectives in Chapter One are outlined in sections 5.5 to 5.6.2. The main field research details followed after the participants' selection process as described in 5.5.1. It was conducted at two levels as indicated in the field research process in Figure 5.3.

5.4.1 Selection Criteria for Research Participants

The critical criteria in Sections 5.5.1.1 was developed and used to enable proper selection of DSD participants (professional actors- interviewees) who were experienced in the design delivery. The critical selection criteria of DSD participants made it possible to identify the appropriate DSD participants to provide responses that contributed to the investigation and understanding of the nature of non-collaborative, adversarial business relationships, how they affected the SCIFs and the steps to develop the proposals for the improvement of the DSD activities. The research interviews conducted are explained in section 5.5. The results and analysis, discussion and findings are presented in Chapter Six of this thesis.

5.4.1.1 Selection Criteria Adopted

The study considers the following relevant structured criteria in Table 5.1 for the selection of participants in this new area of DSD practitioners and contractors business relationship management. This research intends to contribute to the supply chain of information flow – the chain of project documentations (Hatmoko and Scott, 2010; Edum-Fotwe et al. 2001) for the improvement of DSD activities. The criteria are based on the research topic, aim, and objectives, local and international professional best practices. Besides, the criteria outlined are in accordance with the literature review (Gravetter and Forzano, 2006; Naoum, 2004 Kumekpor, 2002) to ensure a presentation of sizeable and reliable representative sample from the DSD universe of the research area. The first eligibility criterion in Table 5.1 is based on the length of period in practice a DSD actor needs. A minimum of 10-year post-professional membership qualification experience is identified to be adequate. This minimum period allows a member to graduate fully into fellowship status. It then enables the participants to have sufficient period to understand and be comfortable (mastery of the practice) in solving difficult problems in their respective professions in project delivery. The

length of period in the local best practice is closely in line with the American Institute of Architect (AIA) (AIA, 2003). The period would also give the DSD actor the opportunity to have worked with a group of professionals. The participant must also have a suitable length of time during which he has managed a professional team in sharing ideas of best professional practices as well as graduate into fellowship and gaining professional experiences in other professions (see for example Gravetter and Forzano, 2006; Kumeckpor, 2002). In addition, a participant would then be capable of sharing useful professional experience with others.

The second eligibility criterion in Table 5.1 is the size of projects handled by the DSD actor within the period of professional practice. The sizes of projects required under this criterion are projects involving a number of actors' from the different actor groups, contributing to develop and constitute the SCIfs – chains of project documentations for the DSD activities (Patel, et al., 2003). In this sense, participant (DSD actor) should have been involved in projects where at least 5 of the DSD actors from the nine different groups managed or were managing the projects (Gravetter and Forzano, 2006). This is to avoid the selection of participants who are engaged in projects, where the number of DSD actors involved are about 3 or 4, a situation that would lower the quality of this criterion. This is based on the examination of the profiles of some of the DSD actors, which reveal that irrespective of the size of the project they have been on, a minimum of 3 or 4 DSD actors were always present (Patel, et al., 2003). In order to have the data that will effectively reveal the experience and knowledge of collaborative features expected from the study, a minimum of 5 of the nine DSD actors is realized to be optimum. Additionally, this was also necessary to facilitate achieving the expected number of participants to be interviewed (Gravetter and Forzano, 2006; Kumeckpor, 2002). This becomes necessary as a check of the profile of eighteen DSD

participants against the eligibility criterion revealed that, with regard to the actors who should qualify by the five-point criterion, only one was completely successful. Generally, the procedure followed to develop the eligibility criteria for the selection of the DSD participants is basically non probability sampling. It is a sampling approach which does not involve the classical type of statistical analysis. The non-probability sample deals with unknown probability. It provides better reasoning in selecting participants to represent and determine the 'opinions, ideas, mind set or visions' of the DSD actors. The participants' selection processes discussed are achieved through purposive convenient non proportional quota sampling. For that matter, participants are to satisfy at least sixty percent of the participants' selection eligibility criteria to be included in the interviews. This allowed the expected number of qualified participants' interviewees for the field study to be realized (Patel et al., 2003).

The third eligibility criterion in Table 5.1 is the status (class of membership) of the actor in the professional association/ institution. Participants who had attained fellowship status in the various professional organizations were considered to have acquired the requisite experience to manage non-collaborative working and adversarial business relationship issues as well as how they affect the SCIfs (Gravetter and Forzano, 2006; Patel et al., 2003; Kumekpor, 2002). That apart, participants who held or were holding positions of national recognition or had received international or national or institutional awards in construction were eligible. These positions and awards are indications that the participants had wider contact with DSD actors in the DSD universe of the research area.

The fourth eligibility criterion in Table 5.1 is the value of projects executed. The value of projects can determine the number of DSD actors in the DSD universe of the research area

that can be engaged in the Design Service Delivery for particular projects. This gives indication of the extent of experiences in interaction involving adversarial business relationship issues and how they affect the SCIfs among DSD actors in Design Service Delivery handled in a particular project (Patel et al., 2003). In this regard, the larger the group size, the greater the difficulties or challenges which will call for a higher levels of maturity, business relationship management adjustment and judgment of an actor in managing with others in developing the supply chains of information flow (SCIf) (Gravetter and Forzano, 2006; Landreneau and Creek, 2003). More so, experience in larger groups of different cultural and professional background offers the DSD actor the opportunity to become knowledgeable and well-informed in non-collaborative working and harsh or adversarial relationships issues or situations as required in the study.

The fifth eligibility criterion in Table 5.1 is the role played by the participant in the business relationship management of the DSD actors contributing to constitute the SCIfs for the DSD activities in the universe of the research area. The role will enable the participants to gain experiences and judgment in non-collaborative working and harsh or adversarial business relationship issues or situations (Gravetter and Forzano, 2006; Landreneau and Creek, 2003). That will enable him/her to offer an informed opinion, view or decisions about the nature of the adversarial business relationship, how they affect the SCIfs such as the functioning of its processes and procedures used in developing SCIfs; as well as attitudinal behavioural and technical knowledge required for the DSD improvement proposals (Gravetter and Forzano, 2006). Besides the inclusion and exclusion criteria in the classical type of statistical analysis, the sample size is determined based on the textbook formulae approach.

Table 5.1 Summary Eligibility Criteria for Selection of Design Service Delivery (DSD) Participants

Serial number	Criterion	Minimum requirement	Importance
01	Period of post professional qualification practice	10 years	Period would allow DSD actor to have graduated fully into fellowship level to understand and be comfortable with his or her work.
02	Team size of past or recent project managed	5 out of 9 DSD actors in a unit	Team or group size worked or working with would allow participant to have gained experience in collaborative working and vast challenges in adversarial relationship situations
03	Status in professional association or other achievement in professional practices	Fellow or International or National positions of recognition held or Awards received.	Fellow status, would have given participant opportunity to have gained in larger projects of team and varied working relationship. Or holding position of international or national recognition and be confronted with attitudinal behavioural problems
04	Value of project	5 Million Ghana Cedis	A project of such magnitude is highly likely to have most of the 9 DSD actors on the managerial team and have understanding in DSD issues
05	Role played in recent project managed	Managerial or administrative role	The DSD actor (participant) would have gained experience and knowledge in dealing, reporting or managing non collaborative working and adversarial relationship

However, in these criteria, in Table 5.1, the sample required is non-probability sample of different populations (precision, power, etc.) of heterogeneous construction professionals (DSD actors). The research also seeks to achieve opinions or ideas of high level participants to achieve reliability and credibility from the in-depth interviews. Therefore, the field study used purposive convenient non proportional quota approach to draw a representative size of sample from the DSD universe of population to elicit relevant data on the topic. This is to achieve sample size that will produce data or DSD opinions, views and ideas that are representative of the DSD practitioners and contractors universe population (Kumekpor, 2002). From the foregoing participants' eligibility criteria discussed, the next critical issue was to achieve a robust balance of opinions or views from the nine (9) different DSD actors. Moreover, there were some of the professions with limited numbers of practitioners. For

instance, there were fourteen (14) recognized practising Services Engineers (DSD actors), a minority group available in the DSD universe population. In order to overcome an overrun of majorities, ‘opinions or views’ in the data to be gathered on the research problem, aim and objectives, forty-five (45) DSD actors (participants- interviewees), 5 from each of the (9) different professions were selected for the full in-depth interviews for generalization (Yin, 2003). Therefore, forty-five (45) DSD actors participated in the interviews earmarked for the study, (5) DSD actors were drawn from each of the nine (9) different DSD actor group including the contractor organisations in the DSD actors’ universe population.

5.4.2 PHASE 1 – Research Interviews

Face-to-face in-depth interviews involving the nine different professional groups were conducted as in phase 1 of the field research process. Each professional group was represented by five DSD actors. In all, forty-five DSD participants took part in the research interviews. First, face-to-face research interviews were set up for the DSD participants: hand-written responses or reports on account of personal ‘views’ and experiences were obtained concerning business relationship management issues under study. Also, data was collected concerning the nature and characteristics of the adversarial business relationship, how they affect the SCIfs such as the functioning of its processes and the procedures used in developing SCIfs; as well as attitudinal behavioural and technical knowledge required for the DSD improvement proposals. Secondly, the study obtained electronic (audio) recordings of all views of every professional group interviewee (DSD actor). Thirdly, careful observations to explore the individual supply chains of information flow (SCIfs) actor’s business relationship were made. Particularly concerning collaborative and non-collaborative attitudinal behaviours and other relevant issues involved in developing SCIfs such as the nature of working association and arrangement of the set ups were recorded in a

field notebook. All three methods concurrently used in the study as shown in phase 1 of the research process in Figure 5.1. The detailed information gathered concerning business relationship management were shown in the results and discussions as obtained from the interviews. The DSD data obtained was textually analysed using qualitative content analysis and pareto analysis triangulation, in which the coding of the text data followed the constant comparative method. The findings were presented in chapter six.

5.4.3 PHASE 2 - Validation of research results in the proposals.

Phase 2 relates to the final part of the research process where the results of the interviews used in developing the improvement proposals were validated. Initially the attributes in DSD activities IACF and ICF were compared with the raw data inputs (field data) to find out the functioning, consistency and distinct similarities and differences were noted for adjustment of the improvement conceptual framework (ICF) to upgrade (ICF) to improvement proposals. A seminar on the detailed findings of the study was presented to a small group of DSD actors who made comments and inputs on the improvement proposals. The essential issues of the proposals were checked and the final fine tuning of the proposals was carried out. The conclusion of the validations of the textual data and results are available in Chapter Six.

5.5 Conducting the Research Interviews

Interviews are ways of enquiries used in gathering factual information about a phenomenon under study (Naoum, 2004). According to Fellows and Liu (2009) and Naoum (2004) interview techniques are classified under three headings: structured, semi-structured and unstructured.

Table 5.2 Type of Interviews and Key Characteristics with Associated Questions

Type of Interview	Type of question	Key characteristics
structured	Closed questions	In gathering of information there is no chance for further examination of the responses All respondents answer same type of questions which have alternatives or multiple responses Data collection is through formal questions; further in depth study require additional questions
semi-structured	Both open and closed questions are used	In gathering of information there is some of chance to examining the responses further, cover the response by audio means and written descriptions or narratives. All respondents answer questions in line with subject or topic in questions Data collection is through formal and informal approach, respondents can give further information about the subject under investigation. There are no specific order of arrangement
unstructured	Open questions (open-ended)	In gathering information the respondents are free to say all they wish to provide and audio recordings are most appropriate for interview after the interviewer has introduced the purpose. All the respondents' answers are given in any order by the respondents when they have had short insight into the subject under investigation. Data collection are carried out through informal approach of question Questionnaires are pitched at level to allow responses to views or opinions of interviewees on the phenomenon under study

Source: Fellows and Liu (2009); Naoum (2004) and Gravetter and Forzano, 2006.

These can be shown on a continuum with the structured and unstructured at the extreme ends and the semi-structured in the mid-span. Table 5.2 shows the type of interviews and key characteristics with associated questions. According to Oppenheim (2003), interviews can either be exploratory (in-depth) or standardized type. An in-depth interview involves collection and understanding of ideas or facts and feelings including flexibility in administering SCIFs for improvement of DSD activities (Patton, 2002). The research study followed the path of in-depth interviews to collect ideas or views to guide and review the research objectives. It was also to select the appropriate DSD participants group for the qualitative in-depth interviews. This in-depth interview method was used to collect ideas or views concerning construction business relationship management data from DSD participants for the improvement of the design service delivery. Business relationship

management data such as the nature and characteristics of the adversarial business relationship, how they affected the SCIFs; also the functioning of its processes and procedures used in developing SCIFs; as well as attitudinal behavioural and technical knowledge required for the DSD improvement proposals. The standardized type of interviews was not used for this research study. Patton (2002) mentions that standardized method makes use of hypothesis and large scale sample which are set. In this qualitative research no hypothesis and large samples are involved. In-depth insights and ideas are required in this qualitative research. In the collection of the data for the study of background facts on issues, people's beliefs, perspectives about facts, feelings, motives and behaviours interviews are useful tools to achieve the required results (Leedy and Ormrod, 2005; Gravetter and Forzano, 2006).

5.5.1 The type of interview technique adopted

This study made use of a semi-structured interview technique which allowed the use of both open-ended and closed-ended questions in the data collection. Fellows and Liu, 2009; and Naoum (2004) agreed that the semi-structured interview technique is capable of collecting comprehensive and flexible data provided freely through the complete involvement of the DSD participants (interviewees). The interview techniques used in this qualitative research allowed the gathering of the data in three different forms, written responses, audio recording and written observations (as in section 5.4 Figure 5.3).

The DSD qualitative study followed a strategy of descriptive (narrative) data gathering (Thomas, 2002). This strategy based on the research aim, questions and objectives it benefited from the semi-structured in-depth interviews conducted. Evidence emerging from the relevant literature study on how to realize the aim and objectives was in favour of qualitative studies. The purpose was to allow the researcher and the DSD participants

(interviewees) to meet to enable the researcher to gather detailed data on the topic (Guest, et al., 2012). For that matter, a relaxed atmosphere for interviews and rapport would let the participants offer freely and effectively their views and experiences directly on the topical area for an in-depth data (Creswell, 2003). In qualitative interviews with semi-structured questions, the information was obtained directly from the participants. Observations of the DSD participants' and the relationships as they went about their activities were rigorously pursued during the data collection and information about relationship situation recorded in a field notebook. The kind of observations recorded was useful in supplementing the data collection efforts in the natural setting of occurrence of the attitudes and behaviours in their usual contexts (Baxter and Jack, 2008; Devers and Frankel, 2000) as described in section 5.6.2. Observations served as useful confirmation tool for the audio and written responses.

5.5.2 Approach to interviews design

In section 5.5 and 5.5.1, three types of interviews are identified and they include the structured, semi- structured and unstructured. Each of the interview types has three approaches to interviews design. The basic differences are the way the questions are constructed, their appropriateness in standards used and the period within the study in which questions are set before they are used to interview the participants. The Table 5.2 provides the interview design types:

Table 5.3 Type of Interview designs approaches

Type of Design		Name of design	Detail description of design
Type 1		Informal conversational (spoken interview)	In this informal type interview questions may develop not based on any predetermined events or situation. The questions come along naturally with the trends of activities or as situations are unfolding. This makes the participants become unaware that they are been interviewed. The usefulness of this interview depends on the questions asked, how they are personalised, consist and relevant to the researcher's purpose. Data that evolved are difficult to manage during analysis.
Type 2		Interview guide	This type of interview approach is good for exploring opinions, views and experience on issues. The researcher list out all relevant issues or attributes in the topical area to be covered and present them to interviewees beforehand. By this action the

			interview Systematic and effective in covering all essential issues of the topic and prevent data gaps during the data collection. The approach allow lot of flexibility in the preparation of the interview guide list to adjust to situation in achieving less comparable responses
Type 3		Standardised open-ended interview (interviews compared with set standards)	The standardized interview type makes use of rigid kind of questions which do not encourage further examination. It is a type of interview which allows the same type of questions to be used illicit information from all participants and the order of issues addressed and wording are to cover all relevant aspect of the topical area concern. The standardized interview approach control biases in gathering data. It offers data of high comparable standard from participants and other side of this type of interview is that there are less standardization limit and flexibility in approach.

Source: Patton (2002) Fellows and Liu (2009); Bryman (2004), Naoum (2004)

This study made use of the interview guide and standardized open-ended interview approaches (Type 2 and 3 in Table 5.3). The use of the combined approach benefited research the study as they allowed the most relevant features to be combined (Patton 2002). It is in this sense that the relevant characteristics of the two were tapped for the development of the questions and were used to gather the data (Guest, et al., 2012). Questions were however standardized and open-ended which offered mild flexibility and high comparability. The combination allowed a cordial and relaxed situation throughout the interviews because the participants had the chance to air freely all views on the issues without any reservation whatsoever. It was moderately systematic and the coverage was effective as the requirement in interview guide indicates. Control of biases was not compromised in the gathering of the data, that is, nothing was assumed and the same equal opportunity was given to all the interviewees (Guest, et al., 2012). Participants expressed willingly their views or opinions on the business relationship management and offered useful information around the topical area in line with the interview design objectives.

5.5.3 Interview design objectives

The in-depth semi-structured interviews were carried out to collect qualitative data from design service delivery (DSD) actors such as project managers, architects, quantity

surveyors, geomatic engineers, geotechnical engineers, service engineers, structural engineers, planners and Contractors (Orgen et. al., 2013a). The interviews explored professional views or opinions and experiences from DSD practitioners' business relationship management influence on the supply chain of information flow (SCIf). The interviews were geared towards meeting the objective to acquire comprehensive real-life information in its natural setting (professional practising offices). The data was gathered on the nature and characteristics of the adversarial business relationship, how they affect the SCIfs such as the functioning of its processes and procedures used in developing SCIfs; as well as attitudinal behavioural and technical knowledge required for the DSD improvement proposals. This qualitative research study devoid of biases had the following broad objectives:

- To find out the bases of the business relationship situations existing among the DSD actors
- To find out the effects of business relationship situation on the SCIfs and in the Design Service Delivery activities
- To explore the characteristics of business relationship situation on the SCIfs and Design Service Delivery.
- To explore the nature of SCIfs developed and constituted in the existing business relationships situation.
- To find out the functioning of the processes and procedures used in developing Supply Chains of Information flow and their effect on Design Service Delivery
- To find out attitudinal behavioural and technical knowledge required for collaborative business relationships among Design Service Delivery actors

- To find out an interactive, collaborative attitudinal behavioural and technical attributes for cordial, harmonious business relationship required to achieve effective and efficient SCIFs essential for development of proposals to improve the DSD activities.

To realize the objectives set, the following issues were addressed in the interview questions:

- The nature of SCIFs, non-collaborative working and adversarial business relationships among DSD practitioners in developing and constituting SCIFs and their effects on DSD activities.
- The nature of the characteristics of non-collaborative working and adversarial business relationships among the DSD practitioners and between them and contractors (DSD actors) and how they affect SCIFs
- Adversarial business relationship effects on effectiveness and efficiency of SCIFs and the functioning of processes and procedures used in developing the SCIFs and also effects on the DSD activities.
- Business relationship management attitudinal behavioural and technical knowledge required in developing an effective and efficient SCIFs for the improvement of DSD activities
- Proposals for attitudinal, behavioural and technical knowledge attributes required for collaborative cordial and harmonious business relationships for improvement to achieve effective and efficient SCIFs for improvement of design service delivery activities.

5.5.4 Selection of Interviewees

In built environmental research, efforts were pursued rigorously to have a representative sample- interviewees (participants or ideas of participants) for examination. To arrive at a

representative sample may not always be possible (Gravetter and Forzano, 2006). However, attempts to achieve Design Service Delivery (DSD) representative sample had been pursued and ensured for the improvement of the study of Design Service Delivery (DSD) activities. The DSD participants (practitioners and contractors) of the study were selected as a subset of the DSD population (Landreneau and Creek, 2003). The choice was made between the two major groups of sample design, the probability and non-probability sampling techniques (Landreneau and Creek, 2003).

- i. Probability Sampling includes some form of random selection in choosing the participants to achieve a representativeness of the sample. In this selection, each participant has equal, non-zero probability and an independent chance of being selected as part of the sample (Greenstein, 2001; Landreneau and Creek, 2003).
- ii. Non probability Sampling involves selection of participants by non-random methods. Researchers use this non probability sampling as per the difficulties of non-randomness in the population of the research universe. In that case, the probability or likelihood of any given element being included in the sample is unknown (Landreneau and Creek, 2003).

The business relationship management improvement proposals for the improvement of the DSD activities study benefited from the use of non-probability sampling approach for a number of reasons. Firstly, appropriate sampling efforts that embraced key characteristics of the DSD population such as DSD professional groups which have business relationship experience and recognition in DSD practice. Furthermore, the good educational background and information available to DSD practitioners gave credence to the views they provided in the interview data. Besides, it could as well be considered as a true representative opinion of the DSD universe population for the purpose of external validity. This is because the DSD actor groups selected are those in the society who hold most of the

construction job opportunities and carry out professional training of the actors. They represent different interest of wide construction groups. Secondly, in this sense, specific sampling procedures that were less likely to result in biased sample than others were used.

Thirdly, steps were taken to evolve participants' eligibility criteria to select a possible DSD sample interviewee in a way to minimize or control errors in the data sought. Lastly, it was also to have a sample that represented the heterogeneity of practitioners' and contractors' opinions and concerns on the problem and objectives of the study. Indeed, the approach yielded participants that confidently and willingly provided information. The information provided was undisputable due to their professional backgrounds and experiences which were hardly available among other DSD actors, due to their construction business activities, status and national recognition. That enabled generalizations to be made without lowering internal or external validity of the research. It was in these regards that the non-probability sampling approach selected was deemed appropriate for the research into the business relationship situations of DSD practitioners and contractors for the improvement of DSD activities in Ghana.

5.5.4.1 Sampling Selection Strategies Adopted

In this study, the main purpose in the sampling issue was to select a portion of the DSD universe population which would yield results or could provide an outcomes that could be extended to the entire DSD population. It was therefore best to adopt sampling triangulation strategy for the selection of DSD sample that had complete representativeness of the DSD population or universe of which the sample forms part. That was then supported by a description of the DSD actors' population or universe for the research in question. The description of the sample technique was more important than the name given to it (Gravetter

and Forzano, 2006). On the basis of the forgone argument, sampling triangulation was applied. The mixed sampling approach made use of non-probability sample of purposive/convenience non-proportional quota sampling (Kumekpor, 2002; Gravetter and Forzano, 2006) which is an approach identified as most appropriate for the selection of DSD participants to elicit data for developing improvement proposals to improve DSD activities in Ghana.

5.5.4.1.1 Selection of Representative Sample of DSD Participants for the Study

The area of Design Service Delivery (DSD) activities for the research in question comprise the DSD population, which the research considers as the sum total of all the DSD actors (DSD participants block of units). The task was to understand how to draw a representative sample from that universe or the block of units to be interviewed for their opinion on the research problem and objectives. The data that resulted from the interviews was used for the adjustment and further development of improvement proposals. Hence a properly developed improvement proposals has been made available to improve the DSD activities (research phenomenon) in the research area (Kumekpor, 2002). The population for the research area consists of DSD actors; these DSD actors included on one hand DSD practitioners/professionals who constitute the supply chains of information flow (SCIfs) and on the other hand, the contractors who use the information to execute construction projects (executors of SCIfs). In real terms, therefore, DSD actors in the research area contribute to the production of SCIfs- the chains of project documentation and their usage. The DSD actors are of two major DSD subgroups (DSD practitioners-subgroup and contractors-subgroup).

The DSD producers of the supply chains of information flow (SCIfs) population comprise all DSD practitioners or professionals (sub-actors) including Project Managers (PM),

Architects (Arc), Quantity Surveyors (QS), Services Engineers (SerEng), Civil/Structural Engineers (C/St Eng), Geometric Engineers (Geo Eng), Geotechnical Engineers (GeotechEng) and Planners (Pl). That aside, the DSD executors of SCIfs population consist of contractors (sub-actors) who are in business (working) relationships and construction management activities with all the professionals- DSD practitioners mentioned. These two sub-groups of DSD actors form the proportion whose 'views or opinions or perceptions' were required for the development of improvement proposals to improve the DSD activities (research phenomenon) for project delivery in the area of the research. It is this DSD universe population that uses the various procurement strategies in project delivery, who are fully aware, understand to comment and interpret issues concerning the DSD activities about the research phenomenon (Kumekpor, 2002). Furthermore, after acquiring the data from these DSD actor groups, qualitative content analysis provides appropriate tools to analyse the data to answer the research questions with 'How' questions; and have the capacity of achieving suitable subjective interpretation of the content of the DSD textual data obtained as explained in Chapter Six.

5.6 Data Collection

Data collection is a critical stage in any research. It is at that point where a study goes beyond the literature review (Fellows and Liu, 2003). Indeed, it is a state that the credibility and reliability of the research can be questioned. Doubtful outcomes can render the research hopeless and invalid. Data collection is a method of gathering information and facts in research study. Data collection can be carried out either through 'fieldwork or desk study' or both (Naoum, 2004). 'Fieldwork' is data generated from primary sources and 'desk study' is literature review which is a secondary source data (Naoum, 2004). Data collection strategies are classified into two: quantitative and qualitative methods (Leedy and Ormrod, 2005). This

study focuses on qualitative data collection strategy as an approach to fieldwork data collection.

In determining the data for the study the qualitative research strategy was used. The strategy concentrated on in-depth interviews, gathering information on the nature of the adversarial business relationship, how they affected the SCIFs such as the functioning of its processes and procedures used in developing SCIFs; as well as attitudinal behavioural and technical knowledge required for the DSD improvement proposals. Considering the nature of the topic, research aim and objectives, in-depth research interviews were conducted using semi-structured interviews with the interview guide shown in Appendix B. Information elicited from the DSD participants was manually and electronically recorded. Besides, descriptions of relevant observations were manually recorded in a field notebook. These were supported and strengthened through attitudinal study of 'issues', 'views' or 'perceptions' of DSD participants that their responses were sought. These steps were taken to achieve triangulation in the data collection and increase the credibility of outcomes. That in a way made literature inputs and conversion of the study into hopeful and valid report output that was dependent on the nature of the sampling method used (Fellows and Liu, 2003).

Data collection as stated followed qualitative approaches (Fellows and Liu, 2003).. It was a necessary strategy employed purposely to achieve data triangulation which aimed at eliminating problems of construct validity (Pathirage et al, 2005). These conditions were important in the determination of the quality of the strategic processes and techniques used in the data collection. The strategic processes and techniques used for the study of the nature and characteristics of the adversarial business relationship and how they affected the SCIFs as per the research objectives provided data to develop proposals for improvement of the

DSD activities (Pathirage et al, 2005). The structured and semi-structured questions were used to obtain the DSD data as appropriate form of data collection instruments that made the research philosophies discussed in section 5.3.3.3 possible (Guest, et al., 2012; Gill et al., 2008)

Further, the semi-structured questions were used for the in-depth interviews. The semi-structured closed-ended questions were only used to elicit personal data of audio and written responses from the selected DSD participants (interviewees). The focus of the in-depth interviews were to gather credible data through more than one qualitative technique and as such semi-structured interviews which allow the use of both close-ended and open-ended questions was most appropriate to enrich the data for new ideas or facts for analysis. However, to collect qualitative data in line with the research philosophy apart from the participants' personal data, all other information (the aspect of the data collected to answer research questions) was obtained through semi-structured interviews with open ended questions (Guest, et al., 2012; Gill et al., 2008). Again, the data was to be used to address the research aim, questions and objectives. For that matter, the importance of in-depth interviews required for the study necessitated that the interviewer interacts with the DSD participants for a long period of time. In that sense, the consideration was partly to use qualitative study of the DSD activities based on semi-structured interviews (Naoum, 2004) in an in-depth narrative and discourse information gathering of audio, written and observational responses. Such semi-structured questions were used as open-ended research approaches which involve discovery of new ideas or facts or both from data (Fellows and Liu, 2003). This qualitative technique employed was to gather data through interactions with participants (DSD actor interviewees). The researcher examined all the data from the perspective of DSD improvement based on first, finding the nature and characteristics of the

adversarial business relationships, how they affected the SCIFs, such as the functioning of its processes and procedures used in developing SCIFs. Furthermore, how could effectiveness and efficiency in the supply chains of information flow (SCIFs) be achieved; and what attitudinal behavioural and technical knowledge attributes are required to develop the DSD improvement proposals for cordial harmonious business relationship management (BRM).

In the face-to-face in-depth interviews conducted among forty-five (45) DSD participants including contractors, five from each of the nine (9) different professions developing and constituting SCIFs were interviewed and studied on an average of three hours per DSD actor. The initial identification of categories of issues such as non-collaborative, adversarial business relationship, its effects and attitudinal behavioural and technical knowledge used to develop the measuring instrument for the data collection fit the study. There was then no need for further adjustment in the instrument for the collection of data from all DSD participants of different professions for examination and categorization to achieve the research objectives and for development of the proposals. The data collection exercise continued until the data categories acquired were meaningful, important and saturated (Fellows and Liu, 2003). At this stage of the research, three phases are of importance; comprehension, synthesis and saturation. Comprehension became possible as indicative issues like non-collaborative and adversarial business relationship and collaboration produced from the literature reviewed showed data characteristics to be investigated. That apart, comprehension is also realized when adequate data of the full spectrum of DSD actors and on their activities were collected through participants' observations through the use of semi-structured interviews. Synthesis occurred in the situation in which during the data collection in the initial analysis of DSD actors and the activities they carried out were covered with in-depth interviews to the saturation stage.

Fellows and Liu (2003) noted that the saturation stage or situation in the research is where additional data collected on DSD actors and their activities do not provide any new information or produce further changes in the collection exercise. To strengthen the interview approach, the study involved a situation where the researcher recorded the audio descriptive (narrative) responses and discourse that ensued and was cautious not to have direct influence on the observed and collected data (Fellows and Liu, 2003). Qualitative data collection is where efforts are made to achieve subjective information, using an interview guide. The open ended questions used in the in-depth interviews were carefully administered to avoid influence of the researcher in collecting electronically recorded narrative responses. The nature of influence that came into the investigations were the ones that directed the respondents to the topic when they strayed from the topic or subject of the research. Much effort was made to be flexible in the use of cues and prompts that came in the interview as much as possible creating atmosphere of constant good rapport among the participants, from one participants to another participants throughout the gathering of the data. In qualitative data collection which is value-laden research, participants or respondents influence or personal thinking is important in the research and was encouraged and sustained throughout the research. For that matter, the narrative research which sought to provide the nature and extent of business relationship culture is identified as a variable influencing the improvement of the DSD activities which had narrative responses from the natural setting in which the participants lived and worked. The narrative qualitative approach to the study which used the open-ended interviews and 'desk research' provided data with strong evidence for the main research question of the study. The narrative evidence through data collection and initial analysis confirmed literature search conducted (Fellows and Liu, 2003). In qualitative aspects of the research, the study focused beyond the observed by

being careful in gathering all narrations from the DSD participants. Therefore an in-depth qualitative research interviews which looked beyond the facts, especially considering detailed narrative of illustrative issues which clarified and provided answers to the research questions and satisfied the research objectives of this study (Leedy and Ormrod, 2005). This was considered as a useful focus for the ‘how’ and ‘why’ investigation and confirmation studies in support of the qualitative data triangulation pursued.

5.6.1 Data Sources

Data is not all wholly the reality as observed. Data is a clear show of the state of things as it actually exists or existed (Leedy and Ormrod, 2005). To unveil the original sources of data, the researcher is always imprisoned in complete factual darkness. The situation is like that because what is behind or inside the human that caused ‘an action, opinion, exhibit a behaviour or thinking’ is never known (Leedy and Ormrod, 2005). The current research, therefore, has moved through literature, theories and frameworks. Additionally several qualitatively structured processes and procedures were identified and used to overcome the hidden human nature. The study further seeks through the DSD acquired data to find all the underlying issues and truth. The underlying elements in the data is unlimited and could not be grasped in a particular study. The fact that data are transient and ever changing contributes to data’s behaviour of making it inaccessible to get to all the underlying realities. To reduce or overcome such data challenges and achieve data of high percentage characteristics from reliable sources, a very careful data collection approach was used in the study. The researcher used combined sources which included primary and secondary data (Naoum, 2004). Primary data is the one that lies closest to the truth, such as:

- i. DSD data obtained from field research.

- ii. The literature review of business relationship situations among DSD actors and how to achieve effectiveness and efficiency in SCIf for the improvement of DSD activities that are most reliable and valid.

5.6.2 Data Collection Instruments

Generally, there are a number of data collection techniques and they yield different kinds of data (Pratt, 2006). First, after defining the problem, research aim, questions and objectives, the data collection techniques are given a lot of consideration. There are three approaches through which qualitative research interview data collection instrument could be developed (Gill et al., 2008; Pratt, 2006). The data gathering methods could follow structured, semi-structured or unstructured interview, approach or a mixed approach in which two or more of the methods can be adopted for data collection. This mixed approach is to locate specific aspects of the research within the data gathered and to find the interrelationships between different data.

The two main research interview approaches: structured and unstructured, were found not helpful for gathering appropriate data to address the research questions. It was also not appropriate for the philosophy, which is in favour of interpretive and idealistic issues of making efforts to form or achieve new insights in the research areas preferred in this study (Guest, et al., 2012; Gill et al., 2008; Pratt, 2006). It was identified that the structured interview approach follows a restricted agenda. It is an approach that depends more on the interviewer's decision on the structure of the interview, control and use of restricted sets of predetermined questions (Pratt, 2006). This structured approach was found not to be useful since it followed a systematic observation providing less naturalistic responses and not allowing interviewees to generate the agenda (Pratt, 2006).

Furthermore, unstructured interviews do not reflect the use of preconceived theories or ideas. In conducting a study, it allows little or no organisation (Pratt, 2006). Unstructured interviews are usually very time-consuming (often lasting several hours) and can be difficult to manage and to participate in. These associated problems of the unstructured approach are due to lack of predetermined interview questions. Therefore there is little guidance on what descriptions participants should follow. The participants find it sometimes confusing and not helpful. For that matter, it can only be considered where significant 'depth' is required, or complete lack of relevant literature about subject area or a different perspective of a known subject area is required (Pratt, 2006). The semi-structured research interview was selected and used for this study. According to Guest, et al., (2012) and Parkinson and Drislane (2011) semi-structured research interviews linked to qualitative paradigm, is a method that involves participant observations or responses resulting in a narrative/descriptive account of a setting or practice and as such typically rejecting positivism and adopting a form of interpretive approach. Again, this semi-structured qualitative approach would generate interest and understanding of the meaning DSD actor groups have constructed or provided from professional experience. Actor groups would be able to share ideas and the experiences they have in the DSD activities concerning the three key research areas (see for example Merriam, 2009). Also, according to Pratt (2006) the semi-structured interviews develop interview instruments, which makes use of some pre-set questions, however, allowing more room for open-ended responses. Further, the semi-structured interviews allows the development of instrument comprising several questions that helps to define and unearth the truth in the three key areas of this study (Gill et al., 2008). Besides, this kind of interview also provides both the interviewer and interviewee an opportunity to follow the interview agenda set in order to pursue in-depth ideas or responses in the areas of interest in this study (Gill et al., 2008). The areas of interest involving the nature of the adversarial

business relationship, how they affect the SCIfs such as the functioning of its processes and procedures used in developing SCIfs; as well as attitudinal behavioural and technical knowledge required for the DSD improvement proposals.

Additionally, this semi-structured interview approach provides participants with some guidance on what to respond to, eliminating confusion. Again, the flexibility offered by the semi-structured approach of using both open-and closed-ended questions, drew many positive outcome to achieve laborious rich details or new insights in the research area. The method allows information, that is important or relevant for participants, decisions and responses that were unknown previously or had not been thought of or included as a useful aspect of the method (interview guide) used (Gill et al., 2008). The development of data collection instruments is an important aspect of this research. Here the data collection instruments were developed based on the aim, research questions and objectives (Gill et al., 2008; Pratt, 2006). The main focus of developing the instruments was to prepare a range of questions for data-gathering to illuminate the research questions in the three key areas of the research topic as noted by Parkinson and Drislane (2011) and Villainy et al. (1990). The instruments were developed in two phases. In the first phase, there was extensive planning, intensive development of a wide range of sample questions generally put together based on the research topic, research questions, and the philosophy of the study. A number of DSD actor groups who were qualified in terms of the criteria set for the selection of the participants reviewed the questions and offered suggestions. Further, after considering the research questions, aim and objectives that were not found useful were dropped. In the second phase, an effort was made to find out how to obtain appropriate instrument linked to the research philosophy discussed in section 5.3.3.3, which will also provide data relating to the aim and could answer the research questions (Parkinson and Drislane, 2011; Gill et al.,

2008; Pratt, 2006). The research questions were then intensively considered through the setting of range of a semi-structured open ended interview questions that would draw qualitative data. The interview questions were set such that they would facilitate achieving data-gathering in the three key research areas of the study:

Section A. Work of practitioners, contractors and their business relationships

The questions under this section sought information on the business relationships that occur during time of work- conducting the DSD activities such as SCIFs which are the DSD actors main assignments.

Section B. Details of construction business relationship.

The questions under this section sought information on the nature or characteristic of the business relationships that emerge during the construction design service delivery activities. It also sought to find out how they affect the SCIFs such as the functioning of the processes and procedures used in developing and constituting the SCIFs.

Section C. Business interactions and DSD improvement

The questions under this section aimed at finding out how collaborative working in cordial harmonious business relationships in developing and constituting the SCIFs could ensure the needed attitudinal behavioural and technical knowledge required for DSD improvement and continuous improvement proposals.

For example, the interview instrument has some questions as provided under each section and the basis on which they were generated and included are given in brackets as follows:

Section A. Work of practitioners, contractors and their business relationships

Example: What type of business relationship exists among the DSD practitioners in

developing the supply chain of information flow? (Looking for relationship that is commonly seen or observed among the actors. This is to gain information on existing business relationship)

Example: How would you describe the nature of business relationship that emerges when producing supply chain of information flow for project delivery? (It is expected to provide a narrative of the kind or features of relationships exhibited during the DSD actor groups' main activities of developing the SCIFs)

Section B. Details of construction business relationship and effects.

Example: Please have you been experiencing adversarial business relationship in your construction activities or line of duty? (Brief narrative on the specific characteristics of adverse working situations that have been occurring or sometimes occurring as the work progresses as designers or users of designs)

Example: How do the adversarial relationships in producing and using of supply chain of information flow affect the improvement of DSD activities? (Brief narrative of the effects of adverse working relationship situations on the developing and constituting the SCIFs and the disturbing effects of the proper development of DSD activities)

Section C. Business interactions and DSD improvement

Example: What business relationship management attitudes are required of DSD actors to achieve improvement and continuous improvement in the DSD activities? (Brief narrative on attitudes that can promote cordial working relationship activities and promote quality performance of DSD activities)

Example: What business relationship management behaviours are required of DSD actors to

achieve improvement and continuous improvement in DSD activities? (Brief narrative on behaviours that can promote cordial working relationship activities and promote quality performance of DSD activities)

These examples of open-ended questions and others in the interview guide in Appendix B were used in data gathering for this qualitative study.

5.7 Ethical issues

The researcher was very careful at all times not to abuse any research rules such as plagiarism or tampering with data. In that sense, the raw data was used in the analysis to draw conclusions and make recommendations. Also, promises made to participants were kept, protecting their interest and giving them summaries of the recommendations for the benefit of their outfits. Necessary protection for research subjects and articles produced by others were surely not unfairly been critiqued in the study. Besides, an effort was made to ensure the safety of the participants and researcher in the field work. Trustworthiness in the data collection was not compromised and would be upheld in the analysis and presentation of the remaining work (Elo and Kyngäs, 2008). These accounted for the reliable and successful collection of data.

5.8 Summary

The research leaned toward finding new insights or new ideas in business relationships among the DSD actors for improvement proposals (Fellows and Liu, 2003). The study of DSD activities' study is an interdisciplinary research and it is actual life research interviews. The study covered specific existing DSD actors practicing offices involving the nine different DSD actors and professions. The research methods were focused on different approaches to investigate the nature of the adversarial business relationship, how they affect the SCIFs such as the functioning of its processes and procedures used in developing

SCIfs; as well as attitudinal behavioural and technical knowledge required for the DSD improvement proposals. Apart from the details of the ‘desk based’ qualitative (textual) investigation of the research problem and aim developed, details of all other research methods followed including the research philosophy of social constructivism and idealism, were selected based on the research problem, research questions and objectives. Similarly the processes of qualitative data collection of narrative (descriptive) and observations benefited from in- depth semi-structured interviews with closed-and-open-ended questions in the interview guide. Data collection was carried out through face-to-face interviews, where written responses were taken from respondents after audio recordings of the DSD actors’ description (narration) of the various situations on the topical area in practice. Observations on characteristics relationship issues were gathered in a field notebook. The mixed sampling approach made use of non-probability sample of purposive/convenience non-proportional quota sampling (Kumekpor, 2002; Gravetter and Forzano, 2006) for the selection of DSD participants to elicit data for developing the improvement proposals to improve the DSD activities in Ghana. Five eligibility criteria were used to define specific characteristics of interviewees that would provide suitable representative sample for the universe of the population for the study. They include eligibility criterion based on the length of period in practice a DSD actor needed. A minimum of 10-years post-professional membership qualification experience was identified to be adequate.

Further, the eligibility criterion for the size of projects handled by the DSD actor within the period of professional practice followed. Again an eligibility criterion which sought the status (class of membership) of the actor in the professional association/ institution was considered. This involved the practice as requisite experience in managing non-collaborative working and adversarial business relationship issues. Additionally, the eligibility criterion

which looked for the value of projects executed was drawn in. The eligibility criterion considering the role (relationship expert information provider) played by the participant in the business relationship management of the DSD actors as they contributed to the development of SCIIs for the DSD activities in the universe of the research area was also considered. Besides, the chapter/section concentrated on how to select appropriate research methods to develop business relationships management improvement proposals for the improvement of the DSD activities. Also the study looked for methods of analysis and validation of findings through which attitudinal behavioural and technical knowledge attributes could be adjusted and be used to construct new ideas or in-depth insights in the proposals for the improvement of the DSD activities rather than theory testing efforts. Such methods of analysis and validation processes and procedure have been presented in Chapter Six and Seven respectively, which follow.

CHAPTER SIX

RESULTS AND DISCUSSIONS

6.1 Chapter Outline

This chapter illustrate in practical terms the consequences of methods used for the research. Initially, it explains the selection of the DSD actors who were interviewed, their personnel profile, organizational profiles and overviews of the SCIfs and DSD actor groups' activities. Further, the chapter is structured to show the data analysis methods adopted which is followed by data analysis and coding procedures. The results of the interviews involving the nature and characteristics of the adversarial business relationship, how they affect the SCIfs; as well as the functioning of the processes and procedures used in developing SCIfs are presented and discussed. Also the results concerning attitudinal behavioural and technical knowledge required for the DSD improvement proposals are obtained and discussed. In ending the chapter, the summaries of the issues raised are provided.

6.2 Profile of Participants (DSD Actors Interviewees) for the Field Study

In the design service delivery activities, there are different types and categories of construction experts practicing in each of the nine different professions (Hatmoko and Scott, 2010). The ranges of experts in each professional group consists of many practitioners who have gained admission into the professional association as members. The in-depth interviews covered forty-five (45) DSD actors (participants - practitioners' interviewees) as in Table 6.1. Five (5) participants were selected from each of the nine (9) different DSD professions with ages ranging from over forty years and close to sixty years with various levels of experience in practice. Again, the levels of experience in practice ranges from over fifteen years up to forty years as presented in Table 6.1.

Table 6.1 Profile of participants (DSD actors interviewees) Engaged in the field Study

Professionals (DSD actors)	Number interviewed	Age range	Academic Qualification	No / Professional membership category	Years of practice	Remarks
Project Managers	5	41-60	Masters Degree	1 / PM 4 / FM	20-40	In well Established Firms
Architects	5	41-60	Masters Degree	2 / PM 3 / FM	20-40	✓
Quantity Surveyors	5	51-60	2 first Degree, 3 Masters Degree	5 / FM	20-40	✓
Services Engineers	5	51-60	3 first Degree 2 PhD	1 / CM 1 / PM 3 / FM	20-40	✓
Structural Engineers	5	41-60	2 first Degree, 1 Masters Degree 1 PhD	4 / CM 1 / PM	20-40	✓
Geotech. Engineers	5	51-60	2 first Degree 1 Masters Degree 2 PhD	4 / CM 1 / FM	15-40	✓
Geomatic Engineers	5	41-60	3 Masters Degree 2 PhD	1 / PM 4 / FM	15-40	✓
Planners	5	40-60	3 first Degree 2 Masters Degree	5 / PM	15-40	✓
Contractors	5	40-60	3 Post dip. 1 first Degree 1 Masters Degree	1 / TM 2 / CM 2 / PM	15-40	✓
Total	45					

Note: TM- Technician Member, CM- Corporate Member, PM -Professional Member, FM- Fellow Member

Besides, all the participants interviewed have various academic qualifications and belong to various associations with different categories of membership as shown Table 6.1. For instance, the surveyors belong to Ghana Institution of Surveyors (GhIS), the architects belong to Ghana Institute of Architects (GIA), the engineers belong to Ghana Institute of Engineers (GhIE) and the geotechnical engineers belong to Ghana Society of Geotechnical Engineers. Additionally, the categories of professionals interviewed included technician members, members and fellow as according to various published membership lists. In the selection of DSD participants to represent the DSD practitioners, the knowledge base or

level, understanding of the practice, comfortable (mastery) period of practice and experiences were considered relevant for desired impact responses in the interviews (Kumekpor, 2002). These yielded desired responses in finding out the nature of the adversarial business relationship, how they affect the SCIFs, such as the functioning of its processes and procedures used in developing SCIFs. Additionally, concerning attitudinal behavioural and technical knowledge required for the DSD improvement proposals, the participants' eligibility criteria provided appropriate representative sample of the DSD population as shown in Figure 6.1; which offers objective criticism and meaningful responses during data collection for analysis (Orgen et. al. 2011; 2012a; 2012; Cheung and Rowlinson, 2005).

6.3 Profile of DSD Organizations

The profiles of DSD organization actors involved in the study are presented in Table 6.2 showing 45 practising organizations of which 9 are public and 36 private entities. In all, 132 DSD actors were identified in the various organizations as shown in table 6.2. Out of the 132 DSD actors, 50 of them comprising 13 public and 37 private organizations satisfied the interview eligibility criteria (Kumekpor, 2002; Devers and Frankel, 2000).

The interview eligibility criteria which used non-probability purposive non-proportional quota sampling method, allowed only 45 senior DSD actors (i.e. Executive Officers or Directors of the organizations) to be interviewed (see for example, Gravetter and Forzano, 2006; Landreneau and Creek, 2003; Kumekpor, 2002; Greemstein, 2001; Devers and Frankel, 2000).

Table 6. 2 Profile of DSD organizations and actors involved in the study

Type of Organization	No. of Organization visited	No. of DSD actors in Organizations	No. of DSD actors who met the interview criteria	Type of DSD actors who meet the interview Criteria	Actual No. of DSD actors interviewed	Type of DSD actors interviewed
Public	9	52	13	Project Managers (2No.) Architects (1No.) Quantity Surveyors (1No.) Geotechnical Engineers (2 No.) Geomatic Engineers (2 No.) Planners (5 No.)	13	Project Managers (2No.) Architect (1No.) Quantity surveyors (1No.) Geotechnical Engineers (2No.) Geomatic Engineers (2No.) Planners (5No.)
Private	36	80	37	Project Managers (3No.) Architect (4No) Quantity Surveyors (5No.) Services Engineers (5No.) Structural Engineers (6No.) Geotechnical Engineers (4No.) Geomatic Engineers (5No.) Contractors (5No.)	32	Project Managers (3No.) Architects (4No.) Quantity Surveyors (4No.) Services Engineers (5No.) Structural Engineers (5No.) Geotechnical Engineers (3No.) Geomatic Engineers (3No.) Contractors (5No.)
Total	45	132	50		45	

Again, in all a sample size of forty-five (45) participants took part in the interviews, 13 from public and 32 from private organizations showing the profiles of DSD actors as presented in Table 6.2. Out of the thirty-seven private organisations visited, twenty-eight were owned by individuals. In the private organizations, the staff were mostly of one ethnic group.

6.4 Overview of DSD Actors' Roles and Responsibilities in Supply Chains of Information Flow (Scifs)

As mentioned in Section 6.2, there are nine different professional groups which took part in the interviews. These deal with supply chains of information flow (SCIfs) - chains of project documentations - for design service delivery activities. Each profession involved in the DSD interviews has a unique role it plays in developing and constituting SCIfs for a successful project execution (Hatmoko and Scott, 2010) as presented in Sections 2.2 to 2.2.9. For

example, architects produce initial and tangible design impressions of the work (a contribution of a single profession, a ring on the SCIfs) – that is architects carry out assignments of the clients based on their brief, producing pictorial and graphical views of the requests and desires of clients (see for example American Institute of Architect, AIA, 2003). While other DSD actors, like geomatic engineers contribute to the SCIfs development (as contribution of another single profession, is also a ring on the SCIfs), they produce design information such as spot levels, contour plans, site plans or block plans and offer other site surveying advice different from that of the architects. The architectural and geomatic information are also different from the other remaining professional actors' work (which are different contributions of professions, acting as separate rings on the SCIfs). Though the architects, the geomatic engineers and/or the other seven remaining DSD actors' professional contributions are entirely different and unique from one another, all contributions are required by one DSD actor or the other in doing or completing particular professional part of the SCIfs. These explanations confirm ideas Roeser (2005) and Tuomela (1991) put forward in support of collective action that, for example, any of the nine professions is like a ring in a chain without which the SCIfs would be short of some essential information flow. This would make the supply chain incomplete. Such a situation could cause incomplete project documentation resulting in shoddy work or/and negligence in project delivery.

6.5 Overview of Design Service Delivery (DSD) Activities

The in-depth interviews were aimed at covering construction business relationship issues concerning design service delivery (DSD) activities. One key DSD activity is the provision of supply chain of information flow (SCIf). It is a kind of supply chain that is different from

other supply chains such as the flow of materials, labour, plant and equipment including temporary work (Hatmoko and Scott, 2010). This supply chain of information flow, which the DSD practitioners develop/constitute, consists of project documentation such as drawings, specifications, contract conditions, explanations and clarifications which form the basis of all activities in project delivery (Edum-Fotwe et al. 2001). The DSD work of providing SCIFs is also for decision-making, which affects planning, executing controlling and closing of projects. Thus, it is the DSD practitioners who are responsible for the activity of sharing information among themselves. This information sharing among actors is seen as key to effective construction supply chain management of projects (Titus and Bröchner, 2005; Titus and Bröchner, 2005; Hatmoko and Scott, 2010). It is worth noting that delay in the information flow may slow down decision-making of all the project teams, which has been identified as the main cause of delay in projects delivery (Chan and Kumaraswamy, 1997).

6.6 Data Analysis Methods Adopted in this Study

Content analysis is a flexible method used in analysing the DSD actor groups' text data. The qualitative content analysis relies on three analytic approaches conventional, directed and summative processes (Hsieh and Shannon, 2005; Taylor-Powell and Renner, 2003). These approaches produce different forms of analyses like impressionistic, intuitive, interpretive analyses to systematic textual data (Hsieh and Shannon, 2005). The study considers all aspects of the DSD narrations to realise interpretive analyses of all the issues in the textual data obtained in line with the objectives of this research. This qualitative type of content analysis processes have been chosen based on the interest of gaining new insights and possibly utilizing completely an obtained DSD actor groups' data.

6.6.1 Conventional Approach

This method of analysis is generally used in research which is aimed at describing a phenomenon, especially in the situation where emotions and reactions of the participants interviewed are recorded. It is a kind of research design useful in situations where there is little theory or relevant literature on the research issues (Elo and Kyngäs, 2008; Taylor-Powell and Renner, 2003), or it is used where the researcher wishes to avoid the influence of previous outcomes on the research categories (attributes) resulting (Taylor-Powell and Renner, 2003; Kondracki and Wellman, 2002). It provides a type of analysis which allows the categories, clusters (subheadings) and the labels (headings) of the categories to come from the data obtained (Taylor-Powell and Renner, 2003). Also, the researchers get themselves involved in the collection of the data to allow for the emergence of new insights (Kondracki and Wellman, 2002). This kind of approach is referred to in the work of Mayring (2000) as inductive categories appropriate for new emerging issues. This type of analytic approach is found appropriate for some aspect of the study and it is used for the Objectives one, two, three and four.

Analysis of the DSD data followed the process outlined:

The researcher read all the DSD data several times to gain a full sense of the issues described. These are carried out after both audio recordings and written summaries have been transcribed verbatim and put together (Elo and Kyngäs, 2008). Next the data was read word-by-word to capture and mark out codes (repeated words and phrases) to be used from text data which cover or capture main ideas and issues raised by the DSD participants (Miles & Huberman, 1994). These are followed by carefully transcribing and noting in general the separate views of the different DSD actor groups. Further, the cross related and unrelated views of the actor groups are separated.

The codes which emerge to capture or cover several main issues and ideas raised in the data are used as labels for the first direct coding of the textual data (Elo and Kyngäs, 2008). The codes are then sorted into themes under categories based on how different codes are related and associated (Taylor-Powell and Renner, 2003). The themes are considered in a similar manner looking at the labels of the codes and the group of coded words and phrases. The main themes are then further probed for emerging views of one, two or three categories for a particular issue of an objective- unit of analysis (Taylor-Powell and Renner, 2003). The categories with similar or dissimilar themes (attributes) are put into clusters and placed under labels produced in tabular forms as a result of both qualitative textual data and attributes with some proportions (frequencies) presented in this chapter. (Patton, 2002). This approach is used for the issues of Objectives one, two, three and four presented in page 19 and supported with the summative content analysis to provide proportions (frequencies of occurrences) of the attributes for the improvement proposals in Chapter Eight.

6.6.2 Directed Approach

With respect to this approach, either a known theory or gaps in previous research concerning a phenomenon are exploited as a useful avenue to direct or guide the research (Mayring, 2000). In this sense, the qualitative research follows the directed approach to content analysis according to available factors, concepts and relevant theories in the literature. This type of analysis is classified as deductive (Elo and Kyngäs, 2008; Mayring, 2000). The naturalistic situation or paradigm surrounding this type of research analysis still continues, as the directed content analysis helps to guide some of DSD research questions and objectives. This kind of research analysis assists in providing vital initial information concerning the attributes and the associations and/or note links among them. These links

offer a useful coding plan for the DSD data. The data collected with open-ended questions in an interview guide were used for the different DSD actor groups. According to Hickey and Kipping (1996), directed content analysis follows more structured process like using relevant concepts or theories essential for the improvement of the study of DSD activities', as in the issues of objectives five and part of objective six presented in page 19.

Relying on the concepts and theories of previous research in the relevant literature assisted in the careful search through the DSD data for the main issues of words and phrases (Elo and Kyngäs, 2008; Hsieh and Shannon, 2005). These are coded and the other codes (sub-codes) placed in groups. The groups are further probed and put under themes (sub-themes) and main themes. The main themes are put into categories and clusters (subheading) which are a useful guide in providing labels for results presented in tabular forms of both qualitative textual data and attributes with some proportions (frequencies) in this chapter (Taylor-Powell and Renner, 2003). These processes of analysis are supported with the summative content analysis to generate the proportions (frequencies of occurrences) of the attributes for the improvement proposals in Chapter Eight.

Directed content analysis approach was also used. In this approach, coding the relevant aspects of the DSD data straightway for the remaining part of objective six based on predetermined (pre-set) codes in the literature was carried out (Hsieh and Shannon, 2005). The data that could not be linked to the literature pre-set codes were analysed later with new codes to determine if they fit as different themes for a new category or a subcategory for the cluster (subheading) for the issues of the objective (Elo and Kyngäs, 2008). The directed approach was very useful in capturing all possible occurrences covering the phenomenon (the attitudinal behavioural knowledge required to develop and constitute the SCIFs to

improve the DSD activities) under study ((Elo and Kyng  s, 2008; Taylor-Powell and Renner, 2003).

This approach was therefore employed in the search to capture all occurrences, specifically to capture all possible circumstances like emotions and reactions from the DSD actor groups' data. Also, such circumstances also involve attitudinal behavioural knowledge required to develop and constitute effective and efficient SCIfs, to improve DSD activities as presented in page 19 as the other part of objective six. This was carried out with particular attention to avoid the slightest bias in the coding by allowing any codes to emerge for new insights (Elo and Kyng  s, 2008), in that sense increasing the trustworthiness of the coding approach and the credibility of the results (Hsieh and Shannon, 2005). These were put in tabular forms as results of both qualitative textual data and attributes with some proportions (frequencies) in this chapter. These processes of analysis were further supported with the summative content analysis to provide proportions (frequencies) of the attributes for the improvement proposals in Chapter Eight.

6.6.3 Summative Approach

The summative approach to qualitative content analysis is concerned with noting and quantifying some words, phrases or statements in textual data. The approach is used to seek the contextual meaning of the use of words, phrases or statements in the text. Gathering the proportions or quantities of the words, phrases or statements in a data like the DSD actor groups data is obtained in a careful way avoiding interference with the meaning but on the other hand to explore the usage in the qualitative text.

In analysing the data to unearth or bring to light common repeated words, phrases and statements, is a show of what is called manifest content analysis of textual information, like the DSD actor groups data (Potter & Levine-Donnerstein, 1999). To manifest the content of the DSD data counting process words and phrases of interest are carried out manually for each issue of the objective into various categories and clusters of attributes and the results presented in tables in this chapter (Hsieh and Shannon, 2005). The quantification of the manifested words or phrases and the use of statistical approaches can turn the analysis into quantitative study (Kondracki and Wellman, 2002).

However, to keep the qualitative study including the analysis of DSD actor groups' data on track, after the manifest content analysis with the proportions (frequencies) the analysis moves further to provide latent (hidden) content analysis. In this sense the summative approach of the qualitative content analysis extends beyond the counting process of proportions (frequencies) of the attributes to latent (hidden) content analysis. The latent analyses involve interpretive processes, such as interpretations of DSD actor groups' proportions of attributes obtained from the tables of results in this chapter (Hsieh and Shannon, 2005; Holsti, 1969). These interpretations of the frequencies of usage of the attributes offer support and credence to textual results obtained using the conventional and directed content analysis approaches in analysing the data for issues of interest for the objectives. Interpretations of the frequencies also help to grasp and illustrate the underlying issues of the views of the different DSD actor groups. This qualitative analysis triangulation also provides essential credibility for the results and their subsequent discussions presented in this chapter.

6.6.4 Further Analysis of the Results Using Pareto Plot Analysis

The proposals for the improvement of the DSD activities as part of the topic of the study “a business relationship management improvement proposals for improving Design Service Delivery (DSD) in Ghana”, border on how to improve an existing situation. The existing identifiable problems of the study show that there is the need to adopt concrete steps to overcome the challenges. To overcome the challenges and realize any form of improvement in the DSD activities depend on the methods used. The methods should be such that they have inherent capacity to identify and deal with the critical situations or challenges through some systematic principles and allow for improvement of the DSD activities.

The appropriate method of analysis of the four issues derived from the research questions are examined by the pareto analysis (Ahmed et al., 2013; Ultsch, 2002). The pareto analysis has almost all the required tools to identify critical issues of the DSD challenges and further analyse the results produced through qualitative conventional, directed and the summative content analysis (Elo and Kyngäs, 2008). The pareto charts unlike the pie charts, bar charts and histograms, have inherent improvement target referred to as pareto 80/20 law of the trivial many, and the critical few useful in investigating a phenomenon (Ultsch, 2002). For instance, 20% of possibilities of the business relationship situation creating faults in developing and constituting SCIfs are responsible for 80% of defects in DSD produced SCIfs. Sometimes, the improvement targets hit by the 80/20-law are more. The other charts like pie charts, bar charts and histogram only illustrate (portray) the details of the data but do not rank, identify or locate the critical attributes of the challenges (Ahmed et al., 2013; Ultsch, 2002)

6.6.4.1 Pareto Analysis of DSD Qualitative Data

The data required for the analysis should be categorical data (Ahmed et al., 2013). For example, the DSD qualitative data of discrete attributes produced from the content analysis are categorical data in tabular forms presented in this chapter. The critical attributes are determined so as to project or include them in the DSD improvement proposals.

i. Data are aggregated so that a count of the number of occurrences of the attributes (themes) in each category is obtained.

The conventional, directed and summative content analysis approaches are used to achieve the proportions (frequencies) of the attributes presented in the result in this chapter.

ii. Pareto charts are constructed from the tabulated data.

A programme like GUI, where G- graphical, U- user and I-interface (graphical user interface) or the use of a programme like Minitab software. The programme adopted can also determine the number of steps to be taken to do the pareto analysis. The GUI is used in producing the results of the pareto charts in this chapter.

iii. Assess the nature of the charts produced for the Pareto principles.

The analysis are carried out consistently for all the issues of objectives involving the critical contribution made by the critical attributes.

iv. Take the appropriate next step based on the results of the analysis.

The next step is to use at least all the critical attributes identified in the development of the DSD activities improvement proposals, as appropriate steps in the case of the

business relationship improvement proposals for improvement of DSD activities developed in Chapter Eight.

6.7 Data Analysis

Figure 6.1 presents a flow chart of the methods and processes used in the analysis of field data. Again, the field data was analyzed in four different parts. The first part of the flow chart in Figure 6.1 illustrates the grouping of the audio recordings, written responses and observed data under the respective DSD actor groups. During this process the audio recordings were transcribed verbatim and the text grouped under the nine (9) different DSD professions from which the actor groups were selected. The second part used the three content analysis approaches of conventional, directed and the summative procedures to analyze the data transcripts (DSD groups' data). The content analysis started with several reading of the data transcripts. This was followed by the coding of the data. The summative procedure was the last of the content analysis to be employed. Additionally, the third part of the analysis looked at detailed procedures of coding the data using the constant comparative method which involved interpretive memo with categories, clusters and labels showing various similar and dissimilar properties in the data transcripts. The interpretive memo helped to identify and categorized the data into attributes and textual information. Again, this resulted in information being put together in clusters with subheadings of similar or dissimilar clusters placed under different labels as main headings (overall headings). The labels presented clusters of attributes or textual data as findings to satisfy specific objectives of the study.

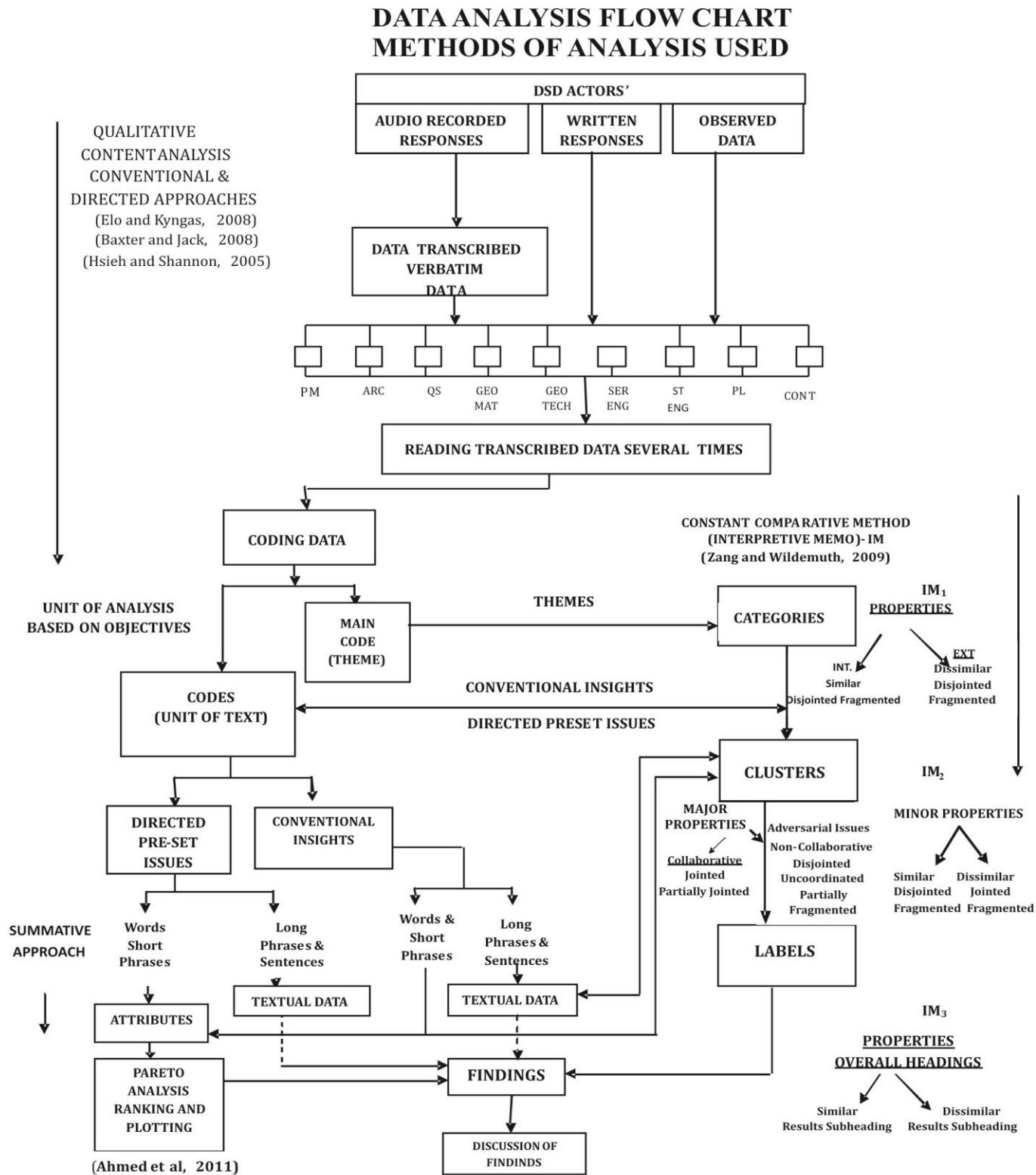


Figure 6.1 Methods of Data Analysis Used

Additionally, Figure 6.1 also shows the fourth part of the analysis, where the Pareto analysis was used to plot and rank the attributes for the critical ones to strengthen findings (results). The Pareto analysis was followed by the discussions of the findings which were used for the improvement proposals.

The data from the interviews was transcribed verbatim into textual data (Hsieh and Shannon, 2005). The approach used in analyzing the interviews and transcripts was qualitative content analysis (Elo and Kyngäs, 2008; Baxter and Jack, 2008; Hsieh and Shannon, 2005). First, in using the qualitative content analysis approach, the transcribed and other text data were classified under the 9 different DSD actor groups. Again, each DSD actor group text data had divisions according to main issues to be addressed in the question guide by the DSD participants (Hsieh and Shannon, 2005). The divisions' headings (labels) of the main issues were: the bases of the adversarial business relationship, how they affect the SCIFs and the characteristics. The headings also include the functioning of processes and procedures use in developing SCIFs as well as attitudinal behavioural and technical knowledge required for the DSD improvement proposals.

The qualitative content analysis approach unearthed insights or issues that were peculiar to the different DSD actor groups. The specific concerns of the nine (9) professions; isolated issues were clearly noticed and drawn in by the approach (see for example, Elo and Kyngäs, 2008; Baxter and Jack, 2008). The content analysis approach facilitated understanding of the divisional issues of the various actor groups such as the nature and characteristics of business relationship existing within the DSD groups (see for example, Elo and Kyngäs, 2008; Baxter and Jack, 2008). Additionally, the approach also helped the cross examination

of the different DSD actor groups, in finding out the nature and characteristics of business relationship situation existing between/among them. The cross examination of the various text data which helped to unearth similar and dissimilar views of all the different actor groups' from the transcripts were put together in categories and clusters and later given labels as in Figure 6.1 (see for example, Elo and Kyngäs, 2008; Baxter and Jack, 2008). Again, this continued for all the key issues to be addressed in the study such as how the business relationship situation affects the development of the SCIfs.

Additionally, the analysis produced detailed results on the functioning of the processes and procedures used in developing SCIfs, as well as attitudinal behavioural and technical knowledge required for the DSD improvement proposals. Furthermore, the textual data (transcripts) of both specific professional and common views of all the DSD actor groups were further analyzed by using all the three qualitative content analysis approaches explained in the earlier Sections 6.6, 6.6.1, 6.6.2 and 6.6.3 (Hsieh and Shannon, 2005). These three approaches were used based on the aim, research questions of the study and related objectives, in order to prevent loss of any vital information available in the data (Elo and Kyngäs, 2008; Baxter and Jack, 2008 Jack, 2008).

6.7.1 Coding Procedures Used in the Data Analysis

The constant comparative method was used. This method involves the development of coding system through comparisons of words, phrases and sentences or statements across a range of situations, events among a number of issues checking through data, testing ideas which bring out distinctive elements of themes and categories in the qualitative data (Zhang and Wildemuth, 2009; Pratt, 2006). This constant comparative method of coding was

applied alongside the content analysis as in Figure 6.1 The constant method not only helped to generate original insight but also assisted in making the identification of differences between categories, themes (main codes) and codes (units of text) clear or apparent (Zhang and Wildemuth, 2009). Besides, the constant comparative method was used in two parts. In Part 1, a systematic comparison of each text information assigned to a category was carried out for its suitability to be placed in that category (Zhang and Wildemuth, 2009; Hsieh and Shannon, 2005). Further, text information assigned to a category was compared with each of those already assigned to that specific category and assigned with similar codes. This took place in order to fully or clearly understand theoretical properties of the categories, which led to the viewpoints and thoughts being harboured by the DSD actor groups (Hsieh and Shannon, 2005).

The Part 2 considered the associated common views the DSD actor groups have, which were realized through the data. Additionally, the data obtained through the method showed the integrating categories and their properties through the development of interpretive memos (Zhang and Wildemuth, 2009). The developed interpretive memos showing categories of themes, codes and properties relating to specific or integrating issues were put together after reading through the textual data several times analyzing the content (Hsieh and Shannon, 2005). The content analysis was carried out after reading through the text several times word by word, phrase by phrase and sentence by sentence probing and coding the data in logical order using the constant comparative method of coding text as shown in Figure 6.1 Texts were assigned codes relating to themes and categories generated in the interpretive memos (headings of issues and subissues provided for the results- findings) throughout the content of the transcripts of DSD data.

The qualitative content analysis allowed codes (unit of text) to be assigned to more than one category simultaneously or units of text were assigned to more than one category at the same time (Zhang and Wildemuth, 2009). These coding processes and procedures were followed throughout in all the different types of the content analysis, such as the conventional, directed and the summative approaches used for the interviews transcripts data. The conventional, directed and the summative analysis were used depending on the appropriateness and availability or unavailability of information in the literature for the analysis (Hsieh and Shannon, 2005). The content analysis approaches were employed to get the categories in the coding scheme defined such that they were internally as similar or homogeneous as possible but externally dissimilar or heterogeneous as possible. This is the manner through which consistency in coding was ensured (see for example Zhang and Wildemuth, 2009).

6.7.2 Analysis of the SCIfs and DSD Data

The codes and main codes that were named themes had labels that related to the codes under them to form categories (Elo and Kyngäs, 2008; Baxter and Jack, 2008). These categories were put into clusters to obtain six main labels: the nature of business relationship situation existing among the DSD actors; they also concerned the characteristics of the business relationship issues or information providing understanding of the relationship situation as well as their effects. Again, other main labels include: the nature of supply chains of information flow (SCIfs) in developing and constituting SCIfs; business relationship effects in developing and constituting SCIfs for improvement of DSD activities; the functioning of the processes and procedures used for the SCIfs and attitudinal behavioural and technical knowledge issues of developing and constituting of SCIfs for improvement proposals (Hsieh and Shannon, 2005). The DSD actor groups data holistically confirmed as the qualitative

data of responses obtained from the field study were further analysed in the following three stages:

6.7.2.1 Stage one: Analysis for objectives 1, 2, 3 and 4

The Conventional approach was used:

The conventional approach to the qualitative data analysis was used throughout the transcribed textual data (narrative) for Objectives one, two, three and four as stated page 19.

Unit of analysis (issues to be addressed) The “unit of analysis” concerns the commonly used units of levels of abstractions required of the text data or interview designed to generate data about event or objective(s) of the study (Guest, et al., 2012; Gill et al., 2008)

These four objectives (one, two, three and four) were achieved by carrying out studies of the issues of the objectives to be addressed (units of analysis) and all the four issues were analysed in a similar manner using conventional content analysis

For example,

The issue of objective one involved the study of:

Such common words and phrases in the data which kept appearing and relating to the issue of the objective like “information flow is not very well coordinated” were coded. The codes that covered a lot of the issues concerning Objective One were then placed under subheading like “no collaboration or less collaboration” as main code (themes). Related main codes which emerged from the data providing descriptive, integrating and associated views or codes (attributes and textual data - words or phrases or statement) relating to the issue of Objective One either similar or dissimilar properties were placed under appropriate main themes- put into categories with categorized subheadings. The categorized subheadings (clusters headings) were assigned to related groups of codes and main codes of

the objective and later labelled- given specific main headings (overall heading) as the results.

These conventional analysis were supported by the summative content analysis. In that analysis, the occurrences of attributes of interest which satisfied the issues of Objectives Three and Four such as “qualitative inquiry to help provide empirical understanding of the characteristics of the adversarial relationship of DSD actors” and “nature of the supply chains of information flow (SCIIs) and the construction business relationship situation among DSD actors” respectively were counted to provide the proportions (frequencies of occurrences) and placed in tabular form. The proportions of the attributes assisted in the interpretation and confirmation of the qualitative data required for the improvement proposals were developed in Chapter Eight.

6.7.2.2 Stage Two: Analysis for Objective Five and Part of Objective Six

The Directed approach was used with presets from the literature such as “lack of coordination”, “poor information flow”, “delays” used as codes and “Issues that carry uncertainty in project delivery”, “Issues that demand engineering clarifications, interpretations and explanations” used as categories to form clusters etc. The directed approach to the qualitative data analysis was used to address the issues of the objectives (unit of analysis) five and part of objective six stated in page 19.

The issues of the objectives (Unit of analysis)

These two objectives (five and part of six) were achieved by carrying out studies of the issues of the objectives (unit of analysis) and both objectives were analysed in a similar manner using directed content analysis.

In these issues of the objectives (five and part of six) the directed content analysis was used. Under this analysis, the data of the DSD actor groups concerning the issues of the objectives were read and studied several times looking for pre-determined technical attributes from data which have association with the relevant literature. Based on the technical concepts and facts in the previous desk-based research, a careful search through the DSD data for the main issues of the objectives of words, phrases and sentences was carried out (see for example Elo and Kyng s, 2008; Hsieh and Shannon, 2005). The relevant technical issues linked to the objective were coded and other similar or dissimilar codes depending upon the properties of the codes were place under headings like “Effects of the functioning of the processes and procedures used in developing and constituting SCIfs on DSD activities” as main heading (labelled) for groups of attributes and textual data.

Further details of the coding reveal codes (units of text- words, phrases and sentences) which were identified as themes with similar or dissimilar issues (properties) and put under categories (attributes and textual data). Additionally, the categories were put together according to their properties as clusters with subheadings (categorized subheadings) such as “Technical Relationship issues” and “Uncertainty in project delivery issues”. Further the clusters under subheadings also were grouped based on their similar and dissimilar properties and labelled with main headings (overall headings) put in tabular forms as results of both qualitative textual data and attributes with some proportions (frequencies in this Chapter (see for example Taylor-Powell and Renner, 2003). The kind of analysis carried out for these issues of objectives was mostly deductive in nature, as the DSD actor groups in their narrative data did not provide clues or identification procedures in grouping the technical attributes. Indeed, the literature was a useful guide in this analysis.

These directed analyses were similarly supported by the summative content analysis to obtain the proportions (frequencies of occurrences) of the attributes of interest concerning the issues of the objectives in tabular form of results as in the issues of the other objectives in stage one and presented as part of the results in this chapter.

6.7.2.3 Stage Three: Analysis for the Remaining Part of Objective Six

The Directed approach was used with pre-sets such “trust, communication, commitment,” etc.,

The directed approach to the qualitative data analysis was also used for the remaining part of the issues of the objective (unit of analysis) six stated page 19.

As To find out essential attitudinal behavioural knowledge required of the DSD actors for the development of a collaborative business relationship management improvement proposals to improve the DSD activities in Ghana

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Directed content analysis approach was also used in coding straightaway the data relevant for the remaining part of Objective Six based on predetermined codes such as “trust” ;“communication” and “Commitment” (see for example Hsieh and Shannon, 2005). The data that could not be coded using predetermined codes were analysed inductively (new insight to emerge) to determine if they represent a new category or a subcategory of an existing code (Elo and Kyngäs, 2008). The directed approach was very useful. It captured all possible occurrences covering the phenomenon under study (see for example Elo and Kyngäs, 2008; Taylor-Powell and Renner, 2003). This approach therefore, was employed to search and capture all occurrences.

Specifically, the analysis captured codes of all possible circumstances such as actions, emotions and reactions from the DSD actor groups' data on attitudinal behavioural knowledge required to develop and constitute the SCIfs to improve DSD activities (see for example Hsieh and Shannon, 2005), as presented below by the other part of the objective six. This was carried out avoiding the slightest bias in the coding. The coding revealed emergence of new insight (new codes), these together with the pre-determined codes were grouped and placed under common themes (attributes and textual data). The themes were categorised (see for example Elo and Kyng s, 2008). These processes of analysis increased the trustworthiness of the coding approach used and also the credibility of the results (Hsieh and Shannon, 2005). The results were put in tabular forms of both qualitative text data and attitudinal behavioural attributes of knowledge with some proportions (frequencies) to support and confirm interpretation of the results in this chapter. These process of analysis were followed and supported with the summative content analysis to provide proportions (frequencies of occurrences) of the attributes for the improvement of the proposals in Chapter Eight.

To end the analysis, the textual data (narrative views) were placed in tables and presented. Again the attributes obtained in each tabulated results for each issue of objective were ranked and plotted using the pareto analysis (see for example Ahmed et al., 2013). Additionally the ranking provided through the parato plot helped to identify the critical attributes that could be used in developing the improvement proposals. The three content analysis approaches provided systematic procedures which allowed the pareto analysis to be applied to attributes which emerged from qualitative data for the development of the pareto charts in figures 6.2 to 6.7. The charts present show the plotting and ranking of all

attributes and the critical ones identified for the development of the improvement proposals in Chapter Eight supporting and confirming the textual results.

6.8 Presentation of Results

The presentation of the results of the study considered the conceptual and theoretical bases of the business relationship situations in which the SCIfs are developed as well as the effects on the SCIfs. Additionally, these are followed by the characteristics of the existing construction business relationship situation including the nature of SCIfs developed and constituted. Again, the functioning of the processes and procedures used in developing and constituting the SCIfs as well as the effects on the SCIfs and the DSD activities are presented. Further, in ending the presentation of the results the attitudinal behavioural and technical knowledge required to develop improvement proposals for improvement and continuous improvement of the DSD activities are considered.

6.8.1 Conceptual and Theoretical Bases of Adversarial Business Relationship Situation

Table 6.3 presents the conceptual and theoretical bases of adversarial business relationship situation in which the SCIfs in DSD activities in Ghana are developed and constituted.

Table 6.3 Summary of the conceptual and theoretical bases of business relationship situation among DSD actors in developing SCIfs in the construction industry

DSD actors (Professional interviewee groups)	Interpretation of results	DSD ACTORS' SUMMARIZED NARRATIVE EXPLANATIONS OF THE BASES OF THE BUSINESS RELATIONSHIP AMONG DSD ACTORS IN DEVELOPING SCIfs
Project Managers (5No.)	Less Collaboration	Information flow is not very well coordinated, various professionals (DSD actors) work independently, the DSD involve profession specifics and localized activities
Architects (5No.)	No collaboration	Only collaborative among friends and affiliates, not based on competencies; difficult to get information flow among practitioners, also each practitioner operates from his or her own office
Quantity Surveyors (5No.)	Less collaboration	Perform specific and localized activities and documentation flows are not continuous, which lead to shoddy construction and litigations;
Services Engineers (5No.)	No collaboration	In most cases the chain does not exist at all, the whole system needs to be sanitized. There are no initial or pre-meetings before design and there are insufficient professional (DSD actors) consultations in developing SCIfs

Structural Engineers (5No.)	Less collaboration	They do not work under one umbrella but rather work as individual specialist Practitioners
Geotechnical Engineers (5No.)	Close to average collaboration	Practitioners are sought from different areas, the sources are different, it is not good practice , it affects quality of work
Geomatic Engineers (5No.)	No collaboration	Not coordinated among the DSD actors, always a lot of afterthought in DSD activities because the chain practitioners are from different firms, facing different problems with documentation and information flow. Also very difficult due to differences in level of experience.
Planners (5No.)	Close to average collaboration	Most documentation is not appropriately obtained, some of the documentation satisfies the requirement but others do not, building/ development plans vary from chain to chain, they do not follow procedures.
Contractor (5No.)	No Collaboration	It is somehow problematic, inflow of information comes with difficulty; practitioners do not work together. There is inconsistency in the flow of well-coordinated information in developing SCIfs, and sometimes there is total fragmented flow or information flow in pieces.

6.8.1.1 Conceptual Bases of Business Relationship Situation

In table 6.3, the description of the Project Managers indicates that information flow is not well coordinated and DSD actors work independently (see for example Odusami et al, 2003). This indicates less collaboration among the DSD actors when carrying out DSD activities. According to the Architects, collaborative efforts can be seen only among friends or affiliates and not based on competence. The implication is that there is no proper collaboration among the DSD actors for effective and efficient development of SCIfs (Hatmoko and Scott, 2010; Titus and Bröchner, 2005; Hsieh and Shannon, 2005; Edum-Fotwe et al. 2001). The Quantity Surveyors are of the opinion that currently DSD actors perform specific functions and deal with localized professional activities. This in their view affected continuous flow of project documentations for effective and efficient work (see for example Hatmoko and Scott, 2010; Titus and Bröchner, 2005; Edum-Fotwe et al. 2001).

Again, the Services Engineers' description of the nature and bases of the business relationship in DSD activities is that, there are no chains of SCIfs in DSD activities and there is lack of initial consultation among DSD actors. The situation indicates no continuous flow of information and no proper collaboration in DSD activities as shown in table 6.3. The

Structural Engineers explain that DSD actors do not work together under one umbrella, but rather are seen to be working as individual DSD practitioners with separate goals. The Geotechnical Engineers are of the view that practitioners required for developing SCIfs are sought from different or sometimes unknown backgrounds and sometimes lack practical experience, which may have implications on the quality of work. The opinion of the Geomatic Engineers is that business relationships are not coordinated, and actors often show a lot of afterthought in their decisions and activities.

That view of the Planners was that most documentations are not appropriately obtained and documentations do not thoroughly satisfy requirements and procedures. The Contractors explain that information comes with difficulty as DSD practitioners do not work together, causing inconsistent flow of information. The above descriptions and explanations given by the various DSD actor groups indicate complete lack of collaboration among DSD actors in the development and constitution of SCIfs in the Ghanaian construction industry. The results confirm literature assertions of non-collaborative, adversarial business relationship among DSD actors in the construction industry (Laryea, 2010; Anvuur et al, 2006; Odusami et al, 2003; Edum-Fotwe et al. 2001). The non-collaborative and adversarial business relationship situation in DSD activities in the Ghanaian construction industry should be of grave concern to all practitioners since such a situation distorts the effectiveness and efficiency of the SCIfs and disturbs their improvement. This challenge calls for positive action to improve the situation.

6.8.1.2 Theoretical Bases for the Improvement of the Construction Business Relationship Situation.

The text data in table 6.3 having confirmed the non-collaborative and adversarial business relationship cultural challenges, the action theory (AT) requiring the collective action of all DSD actors (Coleman and Ostrom, 2009; Seebass, 2008; Tuomela, 1991) should be the appropriate theoretical strategy to be adopted with other theorisations. Thus, the 'We-intention' or 'We-sense' of the DSD actors should be much stronger than the 'I-intention' or 'I-sense' of the individual DSD actors when developing sub-SCIfs and more importantly, the SCIfs (Coleman and Ostrom 2009; Tuomela 1991). To save the situation, the preference is to realize 'We-intention' of joint goal to achieve full blown or strong collaboration among DSD actors (Coleman and Ostrom 2009; Tuomela 1991), and to overcome or reduce the non-collaborative working challenges in DSD activities. It is clear from the descriptions or explanations of the DSD actor groups that there are no interactive platforms, fora, workshops or seminars for DSD actors to periodically meet and develop collaborative business relationships as expected (see for example Holmlund, 2004).

Such platforms could draw inputs from best practices of well-developed SCIfs-supra-systems in the global environment to improve the current situation in Ghana (see for example Barile, 2006; 2008). The current situation results in harsh or adversarial business relationship situation characterized by discords, disputes and conflicts (DDC), disturbing cost, time and quality of delivery (see for example Laryea, 2010; Anvuur et al, 2006).

Employing the system thinking and more of rethinking will involve a paradigm shift from the parts to the whole system, and the interactions among the DSD actors will result in integration, collaboration and collectivism. The interactive platforms will also provide opportunities for feedbacks and the sharing of information to improve DSD activities in the construction industry (see for example Anim, 2012; Loo, 2003).

6.8.2 The Conceptual and Theoretical Effects of Construction Business Relationship on the SCIFs

Table 6.4 Summary of DSD actors' description of the conceptual and theoretical effects of Construction Business Relationship situation on SCIFs and the DSD activities

DSD actors (Professional interviewee groups)	Summary of the Effects of Business Relationship Management situation on the improvement of DSD Activities	Interpretation
Project Managers	Causes delays in DSD activities, disturbing improvement in DSD time schedules. However, there are improvements in quality of DSD activities and value for money of some SCIFs obtained through collaborative master programmes.	Improvement of DSD activities is affected by delays in time, ineffective cost and poor quality of work. These are manifested in lack of expansion of the DSD activities, also often face a lot of confrontational issues resulting in substandard works. Some DSD activities that are of appreciable standard are over-shadowed by lack of holistic approach to deal with the teaming DSD problems
Architects	Reduce quality of DSD design products and also makes SCIFs cost ineffective. But the situations are different where competent actors improve the DSD activities	
Quantity Surveyors	Disturb effectiveness and efficiency of SCIFs blocking expansion and improvement of quality of DSD actors/products and encourages shoddy works	
Services Engineers	Causes drawback improvement of DSD encouraging unhygienic and haphazard infrastructure activities.	
Structural Engineers	Reduces quality of SCIFs and make DSD less cost effective. But in some few situations improve the DSD activities by reducing errors to achieve lower cost and save time.	
Geotechnical Engineers	Disturbs information sharing and disallows effective developing of SCIFs through a lot of confrontational issues that affect the improvement of the quality of SCIFs. However, some situations foster the right frame of mind to exchange project information freely to improve DSD products of SCIFs in legal and cost control terms.	
Geomatic Engineers	Prevents a holistic approach in developing and constituting SCIFs. These affect standards and ignore important details which prevent meaningful improvement in quality, cost and time control of DSD activities in project life cycle.	
Planners	Results in incomplete SCIFs which are ineffective, inefficient and substandard, affecting the improvement of DSD activities by ignoring procedures, unwillingness to learn and to adopt changes. Also causes unstable development ranging from poorly to properly constituted SCIFs to improve the DSD activities through knowledge acquired in other design.	
Contractors	Creates difficulties in inflow and outflow of project information which is required for SCIFs. These disturb improvement of DSD cost control and time due to non-compliance to regulations, rules and other legal issues. These, however, cause defects in the SCIFs that affect improvement of total quality, cost and time of the DSD activities.	

Table 6.4 presents a summary of the DSD actors' description of the conceptual and theoretical effects of the existing CBR situation on SCIFs in the DSD activities of the

construction industry in Ghana. Some of the effects identified from the study include: lack of time control and delays in DSD activities, reduction in quality of the DSD products, cost ineffectiveness, lack of feedbacks and information inflow and outflow, shoddy work, confrontational issues, lack of effectiveness and efficiency in project delivery.

6.8.2.1 Detail of Conceptual Effects of Construction Business Relationship Situation on DSD Activities

In Table 6.4 the Project Managers indicate that the effects of the business relationship include: delays in DSD activities causing development of SCIFs to stretch over long periods. Such delays disturb improvement in DSD time schedules as there are no collective decisions to follow (see for example Seebass, 2008; Chan and Kumaraswamy, 1997). In the view of the Architects, the current CBR situation reduces quality of the DSD products, lowers cost effectiveness and disallows exchange of feedbacks and innovative information for SCIFs development (see for example Anim, 2012 and Loo, 2003). The Quantity Surveyors' perceives that the current CBR situation disturbs effectiveness and efficiency of the SCIFs, blocking expansion and improvement of quality of DSD products while encouraging shoddy works.

The Service Engineers stated that the current CBR situation causes drawback in improvement of DSD activities, encouraging unhygienic and haphazard infrastructural development due to lack of consultation for feedback and innovative information sharing among the actors (see for example Anim, 2012 and Loo, 2003). The Structural Engineers' description pointed to a reduction in the quality of the SCIFs, making DSD activities less cost effective due to the narrow or limited amount of information shared (see for example Anim, 2012). In the view of the Geotechnical Engineers, as shown in Table 6.4 the current

CBR situation disturbs or disallows sharing of project feedback or innovative information for developing effective and efficient SCIfs (see for example Anim, 2012 and Loo, 2003). There are a lot of confrontational issues among the DSD actors which affect improvement of the quality of DSD main products of developing and constituting SCIfs (see for example Jaffar et al., 2011; Yiu and Cheung, 2006). According to the Geomatic Engineers', the current CBR situation prevents holistic approach to the development and constitution of SCIfs by ignoring important details that affect standards and meaningful improvement of quality. The situation further disturbs cost and time control of the DSD activities, creating difficulties in project life cycles (see for example Yiu and Cheung, 2006).

The Planners, however, point out that the current CBR situation creates incomplete SCIfs, which are ineffective and inefficient, resulting in sub-standard products that affect improvement of the DSD activities. These occur as procedures are ignored, with a show of unwillingness to learn, adapt to changes and have a change of mindset for continuous improvement of DSD activities (see for example Cheung and Rowlinson, 2005). The view of the contractors is that the current CBR situation creates difficulties in inflow and outflow of project information required for the development and constitution of SCIfs (Anim, 2012 and Loo, 2003). This in their view disturbs improvement of DSD cost control and time schedules due to non-compliance with regulations, rules and other legal issues. The situation in turn causes defects in the SCIfs and affects improvement of total quality, cost and time of DSD activities (see for example Yiu and Cheung, 2006; Odusami et al., 2003).

The views of all the DSD actors groups bring to fore the issues of time, cost and quality which are the three traditional performance indicators in the construction industry (see for example Chan and Chan, 2002; Atkinson, 1999). Thus, the DSD actors are generally of the

opinion that the current CBR situation does not promote but disturbs improvement of DSD activities. Jaffar et al. (2011) report of three Business Relationship (BR) challenges that disturb improvement of DSD activities - contractual, technical and attitudinal behavioural relationship challenges. However, in developing and constituting SCIfs by the DSD actors, only technical and attitudinal behavioural relationship challenges are considered since business relationship among the DSD actors are non-contractual and so contractual may not exist (Jaffar et al., 2011). Delays in DSD time schedules causing SCIfs to stretch over long periods when no collective decision or no format are there to be followed (Table 4.6), can be a technical challenge to the development and constitution of SCIfs (see for example Seebass, 2008; Chan and Kumaraswamy, 1997). Reduction in quality of DSD design products and cost effectiveness which are also some of the negative effects of the existing BR situation (Table 6.4), can be attributed to both technical and attitudinal behavioural relationship challenges. Lack of experience or competence can result in poor quality design and cost ineffectiveness, disturbing improvement of SCIfs.

The results also point to the fact that information sharing among members is key to effective and efficient supply chain management of projects (see for example Hatmoko and Scott, 2010; Titus, 2005). The SCIf consists of documentations such as drawings, bill of quantities, specifications, contract conditions, spot levels, geotechnical reports, explanations and clarifications, which form the basis of all activities in a project (see for instance Edum-Fotwe et al., 2001). DSD activities of providing SCIfs are for decision-making, which affects planning, executing, controlling and closing of projects. Smooth information flow and information sharing can improve performance of DSD actors in developing and constituting SCIf in DSD activities. Delay in the supply chain information flow may slow

down decision-making of all the project teams, which is identified as the main cause of delay in projects delivery (see for instance Chan and Kumaraswamy, 1997).

6.8.2.2 Theoretical Associations of the CBR Effects on DSD Activities

Application of the "we-intention" or "we thinking", an act-relational intention, which produces full blown stronger "we sense" of effective and efficient collaborative working, can help reduce cost, time and achieve high quality in design service delivery (see for example Tuomela, 1991). A shift in attention from the parts to the whole (Orgen et al., 2013a; 2012b; Mele et al., 2010) such that the sub-SCIfs are integrated and are in absolute union as system elements of DSD activities, can also help reduce the effects of the existing CBR situation and improve DSD in Ghana. Some positive effects of the existing CBR situation on improvement of DSD activities are reported by some DSD actors (Table 6.4). Some of the SCIfs achieve value for money and record improvements in the quality of DSD activities through collaborative master programmes (a kind of programme prepared by some of the DSD actors to assist them to work together in developing the SCIfs). Such positive effects may be due to the influence of competent DSD actors who work to reduce errors, achieve lower costs and save time through fair amount of cooperation in an open system, as theorized under the system theory (Mele et al., 2010). Some actors also create the right frame of mind through regular consultations to freely exchange project information to improve SCIfs. These are demonstrations of collaborative, less adversarial business relationship among DSD actors, which result in improvement of DSD activities. However the overall, negative aspect CBR effects on the SCIfs and DSD in Ghana as shown from the findings far exceeds the positive shown in Table 6.4, which demand, mitigation; improvement proposals to change the situation.

6.8.3 Characteristics of the Existing Construction Business Relationship Situation in Ghana

Table 6.5 presents twelve attributes used by the 9 professional actor groups to describe the characteristics of the current Construction Business Relationship (CBR) situation in which SCIFs are developed and constituted. Again, from Table 6.5 these include 'lack of harmonization of professional work and good business relationships'; and 'hostility, frustration, tension and conflicts' with frequency of 14% each, and 'lack of interdependencies and sustainability', 'mixed relationships of affiliates and training mates relationships' with frequencies of 13% and 9% respectively. Four other attributes with frequencies of 7%, were used to describe the current CBR situation, which include 'low motivation', 'no command structure', 'harsh system of falsification of documents and greed'.

Table 6.5 Attributes describing the Characteristics of the existing construction business relationship situation in which SCIFs are developed and constituted

DSD actors (Professional interviewee groups)	Details of the characteristics of the nature of the existing construction business relationships situation											
	Attributes describing: existing construction business relationships Situation											
	(A1) Lack of harmonization of professional work and good business relationships	(B1) Hostility, frustration, tension and conflicts	(C1) Lack of interdependencies and sustainability	(D1) Mixed Relationships of affiliates and training mates relationships	(E1) Low motivation	(F1) No command structure	(G1) Harsh System of Falsification of documents and greed	(H1) Misinterpretation of documents by DSD actors	(I1) Business-like relationships	(J1) Detrimental competition	(K1) No agreed practitioners cost inputs on works	(L1) Client dissatisfaction
Project Managers (5No.)	✓			✓		✓	✓					
Architects (5No.)	✓		✓	✓				✓		✓✓✓		
Quantity Surveyors (5No.)			✓✓	✓		✓	✓				✓	
Services Engineers (5No.)	✓		✓						✓			✓
Structural Engineers (5No.)	✓	✓			✓	✓		✓				
Geotechnical Engineers (5No.)	✓✓✓	✓	✓✓		✓		✓	✓	✓		✓✓	
Geomatic Engineers (5No.)		✓✓		✓✓	✓		✓	✓				✓
Planners (5No.)	✓	✓✓	✓			✓			✓			✓
Contractors (5No.)		✓✓			✓							
Total of attribute	8	8	7	5	4	4	4	4	3	3	3	3
Percentage	14	14	13	9	7	7	7	7	5	5	5	5

and 'misinterpretation of documents by DSD actors'. The remaining four attributes are with frequencies of 5%, each for 'business-like relationships', 'detrimental competition', 'no agreed practitioners cost inputs on works' and 'client dissatisfaction'. Attributes used by the different DSD actor groups to describe the characteristics of the existing CBR situation as given in Table 6.5 assisted and strengthened the interpretations provided for the various responses from the different DSD actor groups (Fellows and Liu, 2009).

6.8.3.1 Critical Attributes Describing Current CBR Situation

Additionally, Figure 6.2 shows a Pareto plot of the attributes describing the current CBR situation in which SCIFs are developed and constituted in Ghana.

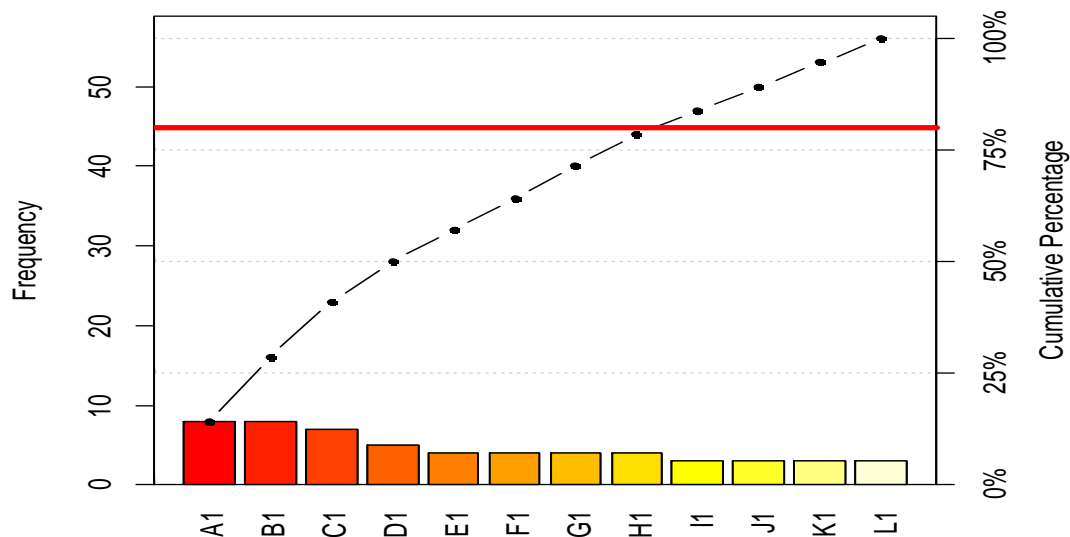


Figure 6.2. Pareto plot showing attributes describing current construction business relationships situation in Ghana

Legend

A1 to L1 - Attributes in Table 6.5

A1 to H1 - Critical attributes in Table 6.5

In Figure 6.2 the Pareto plot is useful for ranking the attributes in Table 6.5 and also for selecting the critical ones for remedying. The plot shows eight critical attributes including 'lack of harmonization of professional work and good business relationships', 'hostility, frustration, tension and conflicts' each with frequency of 14%, 'lack of interdependencies and sustainability' with frequency of 13%, 'mixed relationships of affiliates and training mates relationships' with frequency of 9%. The other four critical attributes are 'low motivation', 'no command structure', 'harsh system of falsification of documents and greed' and 'misinterpretation of documents by DSD actors' each with frequency of 7%, as shown in Table 6.5. Of the eight critical attributes identified using the Pareto plot in Figure 6.2 as attributes describing the current CBR situation in Ghana, seven are negative attributes. These negative attributes with a total frequency of 69% point to business relationship challenges of non collaborative working and adversarial relationships among the DSD actors. The negative critical attributes include: 'lack of harmonization of professional work and good business relationships', 'hostility, frustration, tension and conflicts', 'lack of interdependencies and sustainability', 'low motivation', 'no command structure', 'harsh system of falsification of documents and greed' and 'misinterpretation of documents by DSD actors'. The positive attribute identified, however, is 'mixed relationships of affiliates and training mates' relationships'. Of the eight critical attributes identified using the Pareto plot in Figure 6.2, all the 9 DSD actor groups, except the Quantity Surveyors, the Geomatic Engineers and the Contractors, used 'lack of harmonization of professional work and good business relationships'. This attribute describing the current CBR situation recorded a frequency of 14%, while five DSD actors; Structural Engineers, Geotechnical Engineers, Geomatic Engineers, Planners and the Contractors used 'hostility, frustration, tension and conflicts' occurring at a total frequency of 14% to describe the current CBR situation.

Another group of 5 DSD actors; Architects, the Quantity Surveyors, the Service Engineers, the Geotechnical Engineers and the Planners used 'lack of interdependencies and sustainability' which occurring 13% to describe CBR situation. The Project Managers, the Architects, the Quantity Surveyors and Geomatic Engineers used 'mixed relationships of affiliates and training mates' relationships' with frequency of 9% to describe the current CBR situation. The remaining 4 of the 8 critical attributes are each used by four DSD actor groups with frequency of 7%. The frequency of usage of each of the critical attributes indicates the level of appropriateness of the description given to the current CBR situation. Thus, the attributes: 'lack of harmonization of professional work and good business relationships' 'hostility, frustration, tension and conflicts'; 'lack of interdependencies and sustainability'; and 'mixed relationships of affiliates and training mates relationships' are more appropriate to describe the current CBR situation than the others.

6.8.3.2 Conceptual and Theoretical Characteristics of the CBR Situation

In Table 6.5, the use of 'lack of harmonization of professional work and good business relationships' to describe the current CBR situation shows that majority of the DSD actors see the current CBR as lacking enough cordial or smooth relationship for free open system to share or exchange project information (Mele et al., 2010; Loo, 2003). The use of 'hostility, frustration, tension and conflicts' is an evidence supporting issues underpinning the lack of harmonious professional relationship among DSD actors in Ghana. Hostility, frustration, tension and conflicts generate DDC which can completely destroy achievement of infrastructural project objectives. This attribute also serves as a potential cause of non-collaborative working and adversarial business relationship (Du Plessis, 2007; Axt et al., 2006; Yiu and Cheung, 2006; Adebayo, 2000).

The use of 'lack of interdependencies and sustainability' indicates non existence of inter-professional reliance (see for example Yiu and Cheung, 2006). This indicates the existence of a close system of business relationship with individualism or 'I-intention' or 'I-sense' in which there is professions separatism characterized by non-collaborative adversarial business relationship (see for example Coleman and Ostrom, 2009; Plessis, 2007; Yiu and Cheung, 2006; Mullins, 2005; Adebayo, 2000; Hofstede, 1982). Such business relationship situation makes improvement of DSD activities difficult (Axt et al., 2006; Yiu and Cheung, 2006). The use of the attribute 'mixed relationships of affiliates and training mates' relationships' is somehow positive, though not the best for continuous improvement. This critical attribute is used by four out of the nine DSD actor groups i.e. Project Managers, Architects, Quantity Surveyors and Geomatic Engineers. These are professionals usually seen as working colleague in the construction industry. They are usually trained in the same College or the Universities they attended and some take common courses and share common facilities. It is therefore no wonder that they describe the current business relationship situation as having mixed relationships of affiliates and training mates'. The question, however, is whether this attribute is strong enough to facilitate significant improvement in SCIfs in design service delivery.

The situation of 'low motivation' disturbs or distorts improvement of DSD activities, and indicates harsh or adversarial business relationship. This situation shows a close system characterized by unfair play, which does not motivate DSD actor groups to be collectively collaborative in DSD processes and procedures (Mele et al., 2010; Yiu and Cheung, 2006; Mullins, 2005). The use of 'no command structure' to describe the current CBR situation shows that the individual professions have autonomous culture of no system thinking and rethinking (see for example Pickel, 2007; Gouveia and Ros, 2000). No coordinating

command structure is in place for DSD activities (Mullins, 2005), with each DS actor group operating independently. This situation indicates the existence of a closed business relationship with individualism or 'I-intention' or 'I-sense' in which there is professions separatism characterized by non-collaborative adversarial business relationship (see for example Coleman and Ostrom, 2009; Du Plessis, 2007; Yiu and Cheung, 2006; Mullins, 2005; Adebayo, 2000; Hofstede, 1982). The attribute 'harsh system of falsification of documents and greed' border on corruption (Ameyaw et. al., 2013; Anvuur et al, 2006). Corruption destroys the achievement of project objectives and does not promote improvement in design service delivery. A closed business relationship with individualism or 'I-intention' or 'I-sense' in which there is professions separatism promotes corruption. The Geotechnical Engineers used six of the eight critical attributes to describe the current CBR situation in Ghana. The Structural Engineers and the Geomatic Engineers each used five critical attributes, whilst the Project Managers, the Architects, the Quantity Surveyors and the Planners each used four critical attributes. The Service Engineers and the Contractors, however, used three and two critical attributes respectively to describe the current business relationship situation. This trend indicates variable views of the DSD actor groups on the current CBR situation in Ghana.

6.8.4 The Nature of the Supply Chains of Information Flow (SCIfs) in DSD Activities.

Table 6.6 presents the results of the interview on the nature of the SCIfs. The results in Tables 6.6 show that the 9 DSD actor groups used 8 different attributes to describe the nature of the SCIfs in DSD activities in Ghana. Three of the attributes were most frequently used to describe the nature of the SCIfs including 'disjointed' with a frequency of 36%, 'fragmented' 16%, and 'uncoordinated' 16%. These three attributes constituted a total frequency usage of 68% describing the nature of SCIfs and indicating non- collaborative

working in DSD activities (see for example Pryke, 2009; Bresnen, 2007; Baiden et al. 2006; Odusami et al, 2003). Five other attributes of which three, 'jointed', 'partially jointed' and 'partially disjointed' have the same frequency of usage of 9% each, and two attributes 'partially fragmented' with frequency of 4% and 'incoherent' with frequency of 2% were also used to describe the nature of the SCIfs in DSD activities. Generally, interviewees were of the view that the nature of supply chains of information flow (SCIfs) developed and constituted for activities of the other construction supply chains networks and the business relationship situation face several challenges (see for example Pryke, 2009).

Table 6. 6 The nature of Supply Chains of Information flow (SCIfs) in DSD activities in Ghana

DSD actors (Professional interviewee groups)	ATTRIBUTES DESCRIBING THE NATURE OF SCIfs								Interpretation of DSD actors' description of the nature of SCIfs in DSD activities
	(A) Disjointed	(B) Fragmented	(C) Uncoordinated	(D) Jointed	(E) Partially Jointed	(F) Partially Disjointed	(G) Partially fragmented	(H) Incoherent	
Project Managers (5No.)	✓		✓✓	✓			✓		
Architects (5No.)	✓✓✓	✓	✓						No Collaboration
Quantity Surveyors (5No.)	✓		✓		✓✓	✓			Less Collaboration
Services Engineers (5No.)	✓	✓✓✓					✓		No Collaboration
Structural Engineers (5No.)	✓✓	✓	✓	✓					Less Collaboration
Geotechnical Engineers (5No.)	✓		✓	✓	✓	✓			Close to average Collaboration
Geomatic Engineers (5No.)	✓✓✓	✓						✓	No Collaboration
Planners (5No.)	✓		✓	✓	✓	✓			Close to average Collaboration
Contractors (5No.)	✓✓✓	✓				✓			No Collaboration
Total of attribute	16	7	7	4	4	4	2	1	
Percentage	36%	16%	16%	9%	9%	9%	4%	2%	

Note: Partially jointed – improving in collaboration partially disjointed - deteriorating in collaboration

According to them, the deficiencies in other chains such as materials, labour, plant supply chains and networks in construction project delivery expose the weaknesses, inconsistencies and many other problems in developing and constituting SCIfs as shown in Tables 6.6 to

6.12 (Hatmoko and Scott, 2010). Also, it became evident from the interviews that the DSD activities consisted of several supply chains of information flow (SCIfs). This was because it confirmed the emergence of the fact that every construction project delivery has a unique supply chain of information flow (SCIf) with its DSD actors (Edum-Fotwe et al., 200) The nature of the various SCIfs and the kind of business relationship situation which influenced their development were described by the interviewees with the words and phrases given in the results presented Table 6.6.

Generally, the detailed abstractions of the various responses from the 45 DSD interviewees from 9 different professions contained descriptions of phrases and words such as jointed, incoherent, uncoordinated, disjointed and fragmented describing the nature of SCIfs. The data was analysed using content analysis by coding the text and looking for repeated occurrence of patterns and variables in the data in order to put them into themes or attributes (Hsieh and Shannon, 2005; Devers and Frankel, 2000). Applying the summative approach to the analysis, the textual data transcribed yielded the results in Table 6.6 (Hsieh and Shannon, 2005; Baxter and Jack, 2008). Subjective interpretations of the results were made and presented in Table 6.6 (Baxter and Jack, 2008).

6.8.4.1 DSD Actors' Description of the Nature of SCIfs

Attributes used by the different DSD actor groups to describe the nature of the SCIfs as given in Tables 6.6 assisted and strengthened the interpretations provided for the various responses from the groups (see for example Fellows and Liu, 2003). Project managers most frequently used non-collaborative attributes such as 'disjointed', 'uncoordinated' and 'partially fragmented' to describe the nature of SCIfs, and only used 'jointed', once. Thus, in their opinion, the nature of the SCIfs developed and constituted is less collaborative (see for

example Hatmoko and Scott, 2010; Titus and Bröchner, 2005; Devers and Frankel, 2000). The Architects most frequently used the non-collaborative attribute 'disjointed' to describe the nature of the SCIfs and only used 'fragmented' and 'uncoordinated' attributes once, indicating that in their opinion there is no collaboration among DSD actors in developing and constituting SCIfs see Tables 6.6. The Quantity Surveyors used attributes such as 'disjointed', 'uncoordinated', 'partially disjointed' and 'partially jointed' to describe the nature of the SCIfs, which also indicates less collaboration in the DSD activities. The Services Engineers most frequently used a non-collaborative attribute 'fragmented' to describe the nature of the SCIfs and only used 'disjointed' and 'partially fragmented' attributes once, indicating no collaboration in DSD activities, see Tables 6.6 (see for example Hatmoko and Scott, 2010; Titus and Bröchner, 2005; Edum-Fotwe et al. 2001; Devers and Frankel, 2000).

Three non-collaborative attributes, disjointed, fragmented and uncoordinated, as well as one collaborative attribute jointed were used by the Structural Engineers to describe the nature of the SCIfs. This was an indication that SCIfs were developed and constituted in a less collaborative manner. The Geotechnical Engineers and Planners described the nature of SCIfs as non-collaborative, with attributes such as 'disjointed', 'uncoordinated' and 'partially disjointed', and collaborative attributes such as 'jointed' and 'partially jointed' to describe the nature of SCIfs in DSD activities. Thus, in the opinion of these DSD actor groups, SCIfs were developed and constituted in close-to-average collaborative situation see Tables 6.6. The Geomatic Engineers and Contractors most frequently used a non-collaborative attribute 'disjointed' to describe the nature of SCIfs. Both DSD actor groups again used 'fragmented' once, and the Geomatic Engineers used 'incoherent' once and the Contractors used 'partially disjointed' once to describe the nature of SCIfs in DSD activities. These attributes are all

non-collaborative as shown also in Table 6.6 (see for example Hatmoko and Scott, 2010; Titus and Bröchner, 2005; Edum-Fotwe et al. 2001; Devers and Frankel, 2000).

6.8.4.1.1 Critical Attributes Describing the Nature of the SCIFs

Figure 6.3 shows a pareto plot of the attributes describing the nature of the SCIFs in DSD activities in Ghana.

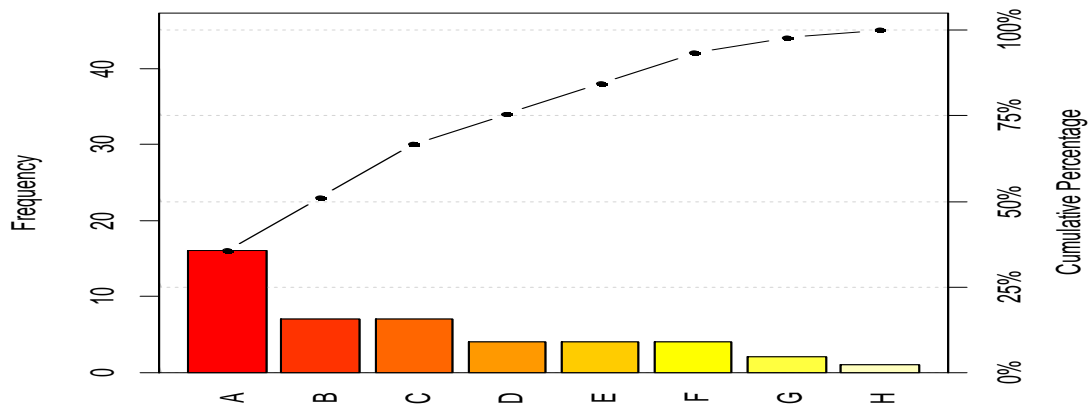


Figure 6. 3 Pareto Plot showing attributes describing the nature of the SCIFs in DSD activities in Ghana

Legend

A - Disjointed C - Uncoordinated E - Partially jointed G - Partially fragmented
 B - Fragmented D - Jointed F - Partially disjointed H - Incoherent

The pareto plot Figure 6.3 is useful for ranking the attributes and also for selecting the critical ones for remedying. The plots show three critical attributes- disjointed, fragmented and uncoordinated with frequencies of 36%, 16% and 16% respectively. These critical non-collaborative attributes indicate that, generally, DSD actors in Ghana consider the nature of SCIFs as disjointed, fragmented and uncoordinated, indicating non-collaborative business relationship situation among them. Those critical attributes revealed by the pareto plot in

Figure 6.3 are the ones that the development proposals have to consider for optimum solution before the other attributes in Table 6.6.

In the literature, the nature of the business relationship situation in which SCIFs are developed in DSD activities are described as incoherent, lack of coordination (Jaffar, et al., 2011; Orgen et al., 2011; Odusami et al, 2003), disjointed and fragmented (Orgen et al., 2011; Hatmoko and Scott, 2010; Pryke, 2009; Bresnen, 2007; Titus and Bröchner, 2005; Edum-Fotwe et al. 2001). These descriptions indicate strong non-collaborative, harsh or adversarial relationships.

Further, a closer observation of Table 6.6 shows that 'partially disjointed' (9%), 'partially fragmented' (4%) and 'incoherent' (2%) are also reinforcing the claim that there are non-collaborative activities in the Ghanaian industry (Laryea, 2010; Anvuur et al, 2006). This is because 'partially disjointed' is about chains of documentations that are partly or not wholly put together in a logical way. 'Partially fragmented' is concerned with documentations which are partly in small parts not completely connected, and 'incoherent' attribute is about chains of documentations that are disconnected or not well organized (see for example Hatmoko and Scott, 2010; Titus and Bröchner, 2005; Odusami et al, 2003; Edum-Fotwe et al. 2001). Literature descriptions lack empirical data to provide clear understanding of the nature of SCIFs in DSD activities. However, the current study has used summative approach and percentage scaling of the individual attributes (Hsieh and Shannon, 2005) to provide the required empirical data to support the above perception.

Some new insights on the nature of SCIFs have also emerged from the current study involving attributes like 'partially jointed', 'partially disjointed' and 'partially fragmented'

which are not found in the literature. Cultural issues, including personal interest as was evident by the number individual firms recorded in the profile of the organisations in Table 6.2 and extended family system, are common and greatly influence DSD activities towards individualism or collectivism (see for example Hofstede, 1982). The culture of DSD actors to establish single professional firms is not by chance, but predictable, based on inherent desires and values that cause them to refuse to collaborate. The non-collaborative individualistic nature of DSD actors may also develop into freedom from control rather than collectivism (see for example Gouveia and Ros, 2000). This may also lead to being uncertain about the future, making them more individualistic and inward looking, not concerned about employing other professionals for collaborative activities in project delivery (see for example Gouveia and Ros, 2000).

The results of the study partly show the existence of some level of collaboration in DSD activities. Attributes such as 'jointed' and 'partially jointed' with total frequency of 18% were used by some DSD actors to describe the nature of SCIfs in DSD activities in Ghana. The attribute 'jointed' means to have parts that fit together and move as whole, implying collaboration in all aspects of developing SCIfs. Also 'partially jointed' indicates partly improving collaboration in all aspects of developing SCIfs. These two attributes give an indication that not all SCIfs are developed and constituted in a non-collaborative manner. Thus, not all DSD actors prefer professional independency and the culture of working towards individualism that avoids collectivism (see for example Gouveia and Ros, 2000). The culture of collectivism positively supports collaborative activities and the employment of experts from other professions. It is not based on inward choice but all plans and agenda depend on competences (see for example Gouveia and Ros, 2000). However, the findings generally show that to a large extent the SCIfs developed and constituted in emerging

countries like Ghana are severely challenged with more than 60% of the efforts creating non-collaborative SCIFs products

6.8.5 Functioning of SCIFs Processes and Procedures

Table 6.7 shows that the 9 DSD actor groups used eleven different attributes to describe how the processes and procedures used in developing and constituting SCIFs function.

Table 6.7. Attributes describing how processes and procedures used in developing and constituting SCIFs in the current construction business relationship situation function

DSD actors (Professional interviewee groups)	Subissue (Category): The functioning of processes and procedures used in developing and constituting SCIFs										
	Attributes describing how processes and procedures of SCIFs function										
	(A) Unsystematic	(B) Insufficient details	(C) Inconsistent or use of outmoded methods	(D) Sub-standards, gaps or voids or no standard for supply chain	(E) Use of weak Incomplete supply chain	(F) Systematic	(G) Non-compliance with legislation, rules, or regulations	(H) Overlapping scope of work	(I) Poor programming and planning	(J) Lack of good Leadership	(K) After-thought activities
Project Managers (5No.)	✓✓ ✓	✓	✓				✓		✓		
Architects (5No.)		✓✓✓		✓✓		✓		✓		✓✓	
Quantity Surveyors (5No.)	✓	✓✓✓✓	✓✓✓✓	✓	✓✓✓	✓	✓	✓✓		✓	
Services Engineers (5No.)	✓✓✓	✓	✓✓		✓	✓	✓✓				✓✓
Structural Engineers (5No.)				✓✓✓	✓✓✓✓ ✓				✓		
Geotechnical Engineers (5No.)	✓	✓		✓✓		✓✓	✓				
Geomatic Engineers (5No.)	✓✓✓	✓✓	✓	✓✓✓	✓			✓✓	✓✓✓	✓	✓
Planners (5No.)	✓✓	✓	✓✓	✓✓	✓✓	✓	✓✓	✓			
Contractors (5No.)	✓✓	✓✓	✓✓✓			✓			✓		✓
Total no. of attribute	15	15	13	13	12	7	7	6	6	4	4
Percentage	15	15	13	13	12	7	7	6	6	4	4

Five of the attributes were most frequently used. These are: 'unsystematic and insufficient details' with frequency of 15% each; 'inconsistent or use of outmoded methods and sub-standards with gaps or no standard for supply chains' with frequency of usage being 13% each; and 'use of weak incomplete supply chain' with frequency of 12%. These five attributes constitute a total frequency of usage of 68%. The other attributes which emerged

to describe how the processes and procedures used in developing and constituting SCIfs function were: 'systematic' (7%); 'non-compliance with legislation, rules and regulations' (7%); 'overlapping scope of work' (6%); 'poor programming and planning' (6%); 'lack of good leadership' (4%); and 'after-thought activities' (4%).

6.8.5.1 Critical Attributes Describing the Processes and Procedures Used in Developing SCIfs

Figure 6.4 shows a Pareto plot of the attributes describing how the processes and procedures used in developing and constituting SCIfs function as shown Table 6.7.

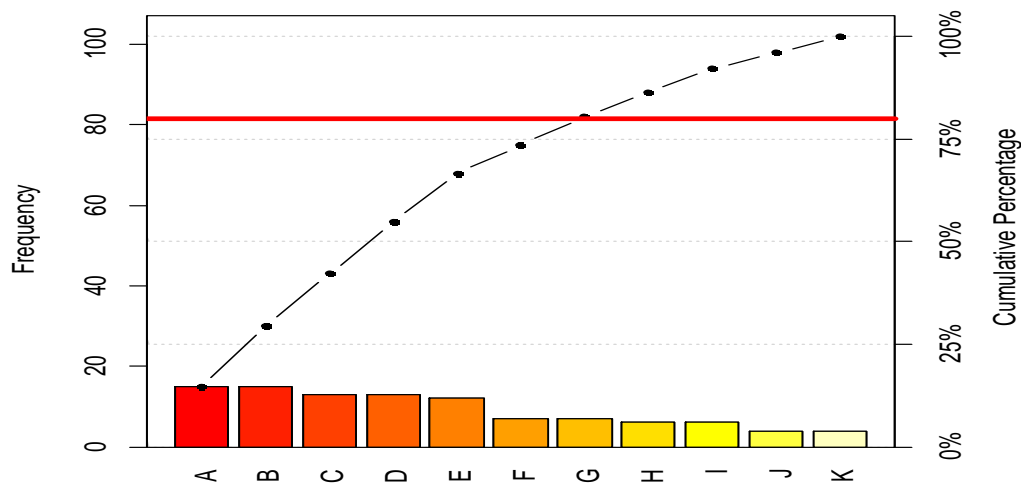


Figure 6. 4 Pareto plot showing attributes describing the processes and procedures used in developing and constituting SCIfs

Legend A to K – Attributes in the **Table 6.7**; A to G – Critical attributes in **Table 6.7**

The Pareto plot helped in ranking the attributes and also for selecting the critical ones for remedying (Ahmed et al., 2013; Ultsch, 2002). The plot enabled the eleven attributes in Table 6.7 to be ranked in order of highest frequency to the lowest. The ranking indicated that 'unsystematic', 'insufficient details', 'inconsistent or use of outmoded design,

interpretation and transfer methods', were the three most important attributes describing how the processes and procedures used in developing and constituting SCIfs function. However, 'lack of good leadership' and 'after-thought activities' were the least important among the attributes identified. The plot also enabled seven of the eleven attributes to be selected as the critical attributes describing how the processes and procedures used in developing and constituting SCIfs function. The critical attributes that emerged include 'unsystematic', 'insufficient details', 'inconsistent or use of outmoded methods', 'sub-standards with gaps or no standard or supply chains', 'use of weak incomplete supply chains', 'systematic' and 'non-compliance with legislation, rules and regulation'.

Further, Table 6.8 presents the summary of the different DSD actor groups views on how the processes and procedures used in developing and constituting SCIfs function.

Table 6.8 Summary of how the processes and procedures used in developing SCIfs function in DSD activities

DSD actors (Professional Interviewee groups)	Sub-issue of the objective	Interview Groups descriptions of sub-issues	Interpretation
Project Managers (5No.)	The functioning of Processes and Procedures used in Developing and Constituting SCIfs	Unsystematic poor programming and planning with insufficient details	The functioning of Processes and procedures, are unsystematic and inconsistent, which lack sufficient details and are used for sub standards SCIfs with less programming and planning; avoiding compliance to legislation regulations and rules.
Architects (5No.)		Suffer from insufficient details due to lack of good leadership, substandard documents	
Quantity Surveyors (5No.)		Inconsistent use of methods and insufficient details	
Services Engineers (5No.)		Unsystematic, inconsistent, after-thought activities and non-compliance with legislation, rules and regulations	
Structural Engineers (5No.)		Use of weak, sub-standards, incomplete supply chain. In some cases no standard	
Geotech. Engineers (5No.)		Are sometimes systematic, but in most cases they are sub-standards and incomplete documentations or sometimes of no standards or no supply chain	
Geomatic Engineers (5No.)		Unsystematic, sub-standards no standard or supply chain with poor programming and planning	
Planners (5No.)		Unsystematic, inconsistent, use of weak incomplete supply chain noncompliance with legislation and rules	
Contractors (5No.)		Inconsistent, unsystematic and insufficient details	

The table 6.8 provides the individual professional actor groups views on the subcase (the functioning of processes and procedures used in developing and constituting SCIFs). It also presents the general interpretation of the views offered.

Table 6.9 shows that the 9 DSD actor groups use 11 different attributes to describe how the processes and procedures used in developing and constituting SCIFs affect design service delivery in Ghana.

Table 6.9 Effects of the functioning of the processes and procedures used in developing and constituting SCIFs on DSD

DSD actors (Professional interviewee groups)	Sub-issue of the objective: The effects of functioning of processes and procedures in developing SCIFs on DSD										
	ATTRIBUTES DESCRIBING effect on DSD activities										
	(A2) Pressure on timelines causing delays	(B2) Difficulties in cost control- cost overruns	(C2) Insufficient share and flow of information	(D2) Poor quality of work	(E2) Lack of continuous, smooth, effective and efficient delivery	(F2) Difficulties in meeting delivery reviews/audit date	(G2) Lack of technical inputs and records keeping	(H2) Too much professional autonomy and slackness	(I2) Slippage of project schedules and uncertainty fluctuations	(J2) Undercutting contract price	(K2) Destroys project objectives
Project Managers (5No.)	✓	✓✓									
Architects (5No.)	✓✓	✓✓				✓	✓	✓		✓	
Quantity Surveyors (5No.)	✓✓	✓	✓✓		✓	✓	✓				
Services Engineers (5No.)	✓	✓✓	✓	✓	✓✓	✓					✓
Structural Engineers (5No.)	✓✓	✓✓✓	✓✓✓			✓		✓	✓		
Geotech. Engineers (5No.)	✓	✓✓✓	✓✓	✓✓	✓		✓				
Geomatic Engineers (5No.)	✓✓✓✓✓	✓		✓✓		✓		✓		✓	
Planners (5No.)	✓✓	✓		✓✓	✓		✓	✓			
Contractors (5No.)	✓✓✓	✓✓✓	✓✓	✓	✓	✓	✓	✓	✓✓		
Total of attribute	19	18	10	8	6	6	5	5	3	2	1
Percentage	23	22	12	10	7	7	6	6	4	2	1

Four of the attributes are most frequently used, including 'pressure on timelines causing delays' with frequency of usage of 23% and 'difficulties in cost control - cost overruns' with frequency of usage of 22%, 'insufficient share and flow of information' with frequency of 12%, and 'poor quality of work' with frequency of 10%. These four attributes constitute a total frequency of usage of 67%. The other attributes are 'lack of continuous, smooth, effective and efficient delivery' and 'difficulties in meeting delivery review/audit date' with

frequency of 7% each, 'lack of technical inputs and records keeping' and 'too much professional autonomy and slackness' with frequency of 6% each, 'slippage of project schedules and uncertainty fluctuations', 'undercutting contract price' and 'destroys project objectives' with frequencies of 4%, 2% and 1% respectively.

6.8.5.2 Critical Attributes Describing Effect on DSD Activities

The Pareto plot (Figure 6.5) helps in ranking the attributes and also for selecting the critical ones for remedying (Ahmed et al., 2013; Ultsch, 2002).

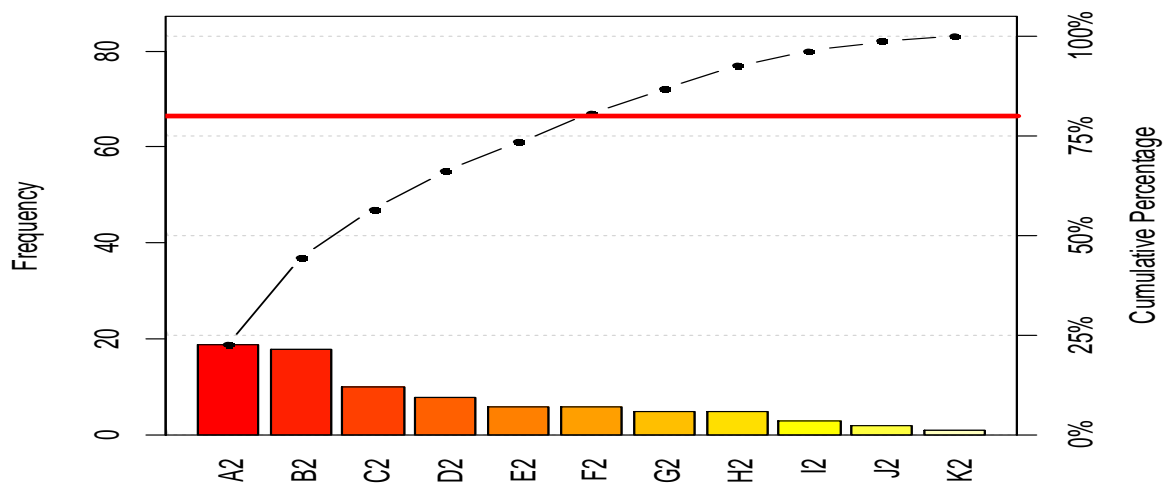


Figure 6. 5 Pareto Plot showing attributes describing effect on DSD activities

Legend

A2 to K2 - Attributes in Table 6.9

A2 to F2 - Critical attributes in Table 6.9

The Pareto plot enables the eleven attributes in Table 6.9 to be ranked in order of highest frequency to the lowest. The ranking shows that 'pressure on timelines causing delays', 'difficulties in cost control- cost overruns', 'insufficient share and flow of information' are the three most important attributes describing how the processes and procedures used in developing and constituting SCIFs affect DSD. However, 'destroys project objectives' is the

least important among the attributes identified. The Pareto plot (Figure 6.5) also enables six of the eleven attributes to be selected as the critical attributes describing the effects of the functioning of the processes and procedures used in developing and constituting SCIfs on design service delivery. The critical attributes include 'pressure on timelines causing delays', 'difficulties in cost control- cost overruns', 'insufficient share and flow of information', 'poor quality of work', 'lack of continuous, smooth, effectiveness and efficiency in delivery' and 'difficulties in meeting delivery review/audit date'.

Further, Table 6.10 presents the summary of the different DSD actor groups views on how the functioning of the processes and procedures used in developing and constituting SCIfs affect the DSD activities.

Table 6.10 Summary of how the functioning of the processes and procedures used in developing SCIfs affect DSD activities

DSD actors (Professional Interviewee groups)	Sub-issue of the objective	Interview Groups descriptions of subcases	Interpretation
Project Managers (5No.)	Effects on the Improvement of DSD Activities	Difficulties in cost control cost overruns with pressure on timelines causing delays	The situation produce Difficulties in cost control and timelines of DSD activities due to insufficient share and flow of project information and too much professional autonomy and inactive (slacken off) attitudinal behaviour
Architects (5No.)		Pressure on timelines causing delays and difficulties in cost control leading to cost overruns	
Quantity Surveyors (5No.)		Pressure on timelines causing delays with insufficient share and flow of information	
Services Engineers (5No.)		Difficulties in cost control - cost overruns and lack of continuous smooth effectiveness and efficiency	
Structural Engineers (5No.)		Difficulties in cost control – cost overruns and insufficient share and flow of information	
Geotech. Engineers (5No.)		Difficulties in cost control – Insufficient share and flow of information	
Geomatic Engineers (5No.)		Pressure on timelines causing delays and poor quality of work, lack of technical inputs and records keeping	
Planners (5No.)		Pressure on timelines causing delays and poor quality of work and too much professional autonomy and slackness	
Contractors (5No.)		Pressure on timelines causing delays, Difficulties in cost control – cost overruns	

The table 6.10 also provides the individual professional actor groups views on the subcase (Effects of the functioning of the processes and procedures used in developing SCIfs on the improvement of DSD activities). It also presents the general interpretation of the views offered.

6.8.5.3 Effects of the Existing Processes and Procedures Used In Developing and Constituting SCIfs on Design Service Delivery

Of the six critical attributes identified in the study (Table 6.9 and Table 6.10), all the nine DSD actor groups used 'pressure on timelines causing delays' and 'difficulties in cost control- cost overruns' to describe the effects of the functioning of the processes and procedures used in developing and constituting SCIfs on DSD activities. Five DSD actor groups including Quantity Surveyors, Services Engineers, Structural Engineers, Geomatic Engineers and Contractors used 'insufficient share and flow of information' to describe the effects of the functioning of the processes and procedures on DSD activities. Five other DSD actor groups including Service Engineers, Geotechnical Engineers, Geomatic Engineers, Planners and Contractors also used 'poor quality of work', whilst Quantity Surveyors, Services Engineers, Geotechnical Engineers, Planners and Contractors used 'lack of continuous, smooth, effective and efficient delivery'. One each of the Architects, Quantity Surveyors, Service Engineers, Structural Engineers, Geomatic Engineers and Contractors, however, used 'difficulties in meeting delivery review/audit date' to describe the effects of the functioning of the processes and procedures on DSD activities.

The six critical attributes selected using the Pareto plot (Figure 6.5) all indicate adverse effects of the functioning of the processes and procedures on DSD activities. For instance, the first two critical attributes 'pressure on timelines causing delays' and 'difficulties in cost control- cost overruns' describe adverse effects on two critical project performance indicators of time and cost. The fact that all the nine DSD actor groups use these two

attributes to describe the effects of the functioning of the processes and procedures on DSD activities indicates the seriousness of the effects of the two attributes. This seriousness is also explained by the fact that the two attributes account for a total frequency of usage of 45%. Thus, in the views of the DSD actor groups, the functioning of the existing processes and procedures results in delays and cost overruns, giving an indication that there are no effective management of project time to avoid delays and cost overruns. Delay in developing and constituting SCIFs might slow down decision-making of all the project teams. This situation is identified as the main cause of delays in projects delivery (see for example Chan and Kumaraswamy, 1997), which may also be a potential source of DDC, leading to further delays and subsequent destruction of all project objectives or abandonment of projects (see for example Ramus and Birchall, 2006).

Using cultural collectivism in planning and programming of SCIFs translates into time saving (see for example Gouveia and Ros, 2000; Mullins, 2005). The two attributes are linked to non-collaborative working and adversarial business relationship which prevent effective cost control. Lack of effective cost control retards improvement of DSD activities (see for example Pryke, 2009; Skitmore and Smyth, 2007; Pickel, 2007)

The use of 'insufficient share and flow of information' accounting for 12% frequency of usage, and 'poor quality of work' with frequency of usage of 10% by five out of the nine DSD actors also show the seriousness of the effects of these attributes on DSD activities. Thus, a significant number of DSD actors are of the view that the functioning of the current processes and procedures weakens and reduces information flow and information sharing in developing and constituting SCIFs in DSD activities. The fact that four other DSD actor groups did not use 'insufficient share and flow of information' might mean the existence of

some earlier collaborative activities where information flow and information sharing were smooth. Smooth information sharing among members is seen as key to effective supply chain management of all projects (see for example Hatmoko and Scott, 2010; Titus and Bröchner, 2005). Insufficient share and flow of information lead to the issue of poor quality of work. Quality of work is the third critical project performance indicator. The inputs of some DSD actor groups are either not fully allowed or not used at all to develop and constitute SCIfs (Mele et al., 2010). These DSD actor groups are mostly ignored, preventing improvement in DSD activities.

The use of 'lack of continuous, smooth, effective and efficient delivery' and 'difficulties in meeting delivery review/audit dates' each with frequency of 7%, are directly related. Inability of DSD actor groups to meet delivery review/audit dates will inevitably result in ineffectiveness and inefficiency in construction project delivery. For business processes to be recognized as suitable for the business functions of the various sub-SCIfs, they are supposed to be functioning effectively and efficiently in developing properly the final product i.e. the SCIfs (ISO, 2008). The SCIfs in any construction project delivery ideally should be effective and efficient (Pryke, 2009). Lack of effective and efficient SCIfs results in poor quality work, lack of expansion, cost and time overruns (Hatmoko and Scott, 2010; Titus, 2005). Similar situations also cause wastage in all phases of projects (see for example Hatmoko and Scott, 2010; Pryke, 2009; Titus and Bröchner, 2005; Chan and Kumaraswamy, 1997).

The use of the two critical attributes by the DSD actors indicates good knowledge of the effects of the functioning of the processes and procedures used in developing and constituting SCIfs on DSD activities, and a high level of understanding of SCIfs in construction project delivery.

The results of the study have shown that the functioning of the existing processes and procedures used in developing and constituting SCIfs have adverse effects on design service delivery activities. Thus, there is no proper functioning of the processes and procedures. There is the need for proper and consistent functioning of the processes and procedures to achieve the desired consequences or the intended results like the SCIfs (see for example ISO, 2008; Kumar and Smith, 2005; ISO, 2008). However, the processes and procedures currently used seem to lack these principles. There seems to be non-existence of common DSD processes and procedures in place. For that matter, the situation creates attitudinal behavioural and technical challenges like ethical issues, uncertainties in project delivery and interpretation difficulties in managing DSD activities (see for example Jaffar et. al., 2011; Fugar and Agyakwah-Baah, 2010; ISO, 2008; Hammer, 2000). Hawkins (2011) and Mullins (2005) state that the proper functioning of the processes and procedures are absolutely dependent on the business relationship among DSD practitioners and between them and the contractors. Also, DSD actors managing the processes and procedures are faced with non-collaborative and harsh or adversarial business relationship (see for example Orgen et al., 2012a; Laryea, 2010; Anvuur et al., 2006). This business relationship challenges, disturbs and distorts all project processes and procedures, consequently ending in complete loss of project objectives (see for example Ramus and Birchall, 2006).

6.9 Discussion of Results

The discussions of the results at this stage are classified into two. The first concerns how the processes and procedures used in developing and constituting SCIfs function, which is presented based on the information in Tables 6.7, 6.8 and in Figure 6.4. The general interpretation given to the different DSD actor groups' views guided the focus of the discussions on the processes and procedures used and its effects on DSD activities in Ghana.

The second aspect concerns the discussions on attitudinal behavioural and technical knowledge required for collaborative business relationship management improvement proposals among DSD actors. Additionally, the discussion is presented after the presentation of the attitudinal behavioural and technical knowledge attributes and text results.

6.9.1 How Processes and Procedures Used in Developing and Constituting SCIfs Function

Eleven attributes have emerged from the study (Table 6.7) and (Table 6.8) to describe how the existing processes and procedures used in developing and constituting SCIfs function in Ghana. These include among others 'unsystematic' and 'insufficient details', 'inconsistent or use of outmoded methods', 'sub-standards with gaps or no standard for supply chains', and 'use of weak incomplete supply chain'. These five attributes constitute a total frequency of usage of 68%. The Pareto plot in Figure 6.4 also enabled seven of the eleven attributes to be selected as the critical attributes describing how the processes and procedures used in developing and constituting SCIfs function. The critical attributes selected include 'unsystematic', 'insufficient details', 'inconsistent or use of outmoded methods', 'sub-standards with gaps or no standard or supply chains', 'use of weak incomplete supply chains', 'systematic' and 'non-compliance with legislation, rules and regulation'.

Table 6.7 shows that among the seven critical attributes, all the 9 DSD actor groups except the Structural Engineers used 'insufficient details' to describe how the processes and procedures used in developing and constituting SCIfs function, and all except the Architects and the Structural Engineers used 'unsystematic'. The rest of the critical attributes were used by 5 or 6 DSD actor groups. The Quantity Surveyors and the Planners

used all the seven critical attributes to describe how the processes and procedures used in developing and constituting SCIfs actually function, whilst the Services Engineers used six out of the seven critical attributes excluding 'sub-standards with gaps or no standard or supply chains'. The Geotechnical Engineers and Geomatic Engineers each use five critical attributes, whereas the Geomatic engineers exclude 'systematic' and 'non-compliance with legislation, rules and regulations', the Geotechnical engineers excluded 'use of weak incomplete supply chain' and 'inconsistent or use of outmoded methods'. The Project Managers use four attributes including 'unsystematic', 'insufficient details', 'inconsistent or use of outmoded methods' and 'non-compliance with legislation, rules and regulations', whilst the Architects use only three critical attributes, 'insufficient details', 'sub-standards with gaps or no standard or supply chains' and 'systematic', and the Structural Engineers use two critical attributes, 'sub-standards with gaps or no standard or supply chains' and 'use of weak incomplete supply chain', to describe how the processes and procedures function. The contractors, however, use only four of the seven critical attributes, 'unsystematic', 'insufficient details' and 'inconsistent or use of outmoded methods' and 'systematic' to describe how the processes and procedures function.

The various descriptions of the DSD actor groups show that out of the seven critical attributes, only one is a positive attribute which describes proper functioning of the processes and procedures used in developing and constituting SCIf in DSD activities in Ghana. The remaining six are negative attributes indicating poor or improper functioning of the processes and procedures used in developing and constituting the SCIfs. The realization or the execution of the final product of SCIfs in the DSD activities concerns the proper and consistent functioning of the processes and procedures to achieve the desired consequences or the intended SCIfs (see for example Kumar and Smith, 2005; ISO, 2008).

Where the processes and procedures currently used lacks these principles or where there is non-existence of common DSD processes and procedures, the situation creates attitudinal behavioural and technical challenges like ethical issues, uncertainties in project delivery and interpretation difficulties in managing DSD activities (see for example Jaffar et al., 2011; ISO, 2008).

The results further show that of the critical attributes, 'unsystematic' was used by all the actors except the Architects and the Structural Engineers. The Architects and the Structural Engineers are designers at the initial stage of the SCIf, providing designs and details for the other actors, probably not realizing the unsystematic functioning of the processes and procedures used in developing and constituting the SCIfs at that stage. The problem, however, seems clear to the other DSD actors involved in developing and constituting SCIfs. This situation smacks lack of holistic consultation and share and exchange of project information (see for example Anim, 2012; Loo, 2003). The 15% usage of the attribute 'insufficient details' by all DSD actor groups except the Structural Engineers indicates that the processes and procedures used in developing and constituting the SCIfs are characterised by individualism or professional autonomy with absolute control and 'I-sense' or 'I-intentions' (see for example Coleman and Ostrom, 2009; Seebass, 2008; Gouveia and Ros, 2000). Cole and Kelly (2011) emphasise the need to adopt appropriate networking and connections amongst suppliers, customers and other business partners towards providing effective service. Hawkins (2011) and Mullins (2005) opined that the proper functioning of the processes and procedures are absolutely dependent on the business relationship among the DSD practitioners and between them and the contractors. Attitudinal behavioural and technical issues may also create difficulties in the functioning of the DSD processes and

procedures (see for example Jaffar, et. al 2011; Fugar and Agyakwah-Baah, 2010; Hammer, 2000).

Six out of nine DSD actors describe the processes and procedures as ‘inconsistent or use of outmoded methods’ with 13% frequency of usage, with the exception of Architects, Structural Engineers and Geotechnical Engineers. This indicates that out-of-date traditional methods are predominant in the practice, confirming the findings of Laryea (2010) and Anvuur et al. (2006). These traditional methods lack regular reviews and continuous transformation (see for example Anim, 2012; Orgen et al., 2012b; Orgen et al., 2011). The use of outmoded methods may be linked up with processes and procedures considered as 'sub-standards with gaps or sometimes without standard for supply chain formation' also used by six of the nine DSD actor groups. Thus, a significant number of the DSD actors are of the view that the processes and procedures used in developing and constituting SCIfs should be modernized in order to improve standards in DSD activities and move with the changing construction business processes and procedures in developed and developing countries (see for example McGeorge and Zou, 2012; Trkman, 2010; Alshawhi and Ingirige, 2003).

Proper and consistent functioning of DSD business processes and procedures depend on the availability of common standardized business processes and procedures for the DSD practitioners to adopt for the development and constitution of SCIfs (Tattersall, 2013).

The attribute ‘weak incomplete supply chain’, with a frequency of usage constituting 12%, shows that the current processes and procedures result in weak and incomplete SCIfs, confirming the findings of Hatmoko and Scott (2010), Titus and Bröchner, 2005 and Chan and Kumaraswamy (1997). They agree that delays in constituting the supply chains of

information flow (SCIfs) cause weak or incomplete chains. These types of chains slow down decision-making of all the project teams. Some SCIfs lack inputs of some of the sub-SCIfs, disallowing the system to reach its finality (Mele et al., 2010). The use of the attribute 'non-compliance with legislation, rules and regulations', with frequency of usage constituting 7% by five of the nine DSD actor groups provides evidence that some of the processes and procedures used in developing and constituting SCIfs do not conform to laid down legislation, rules and regulations. Thus, some DSD actors do not comply with legislation, which is required for developing effective and efficient chains of project documentations useful for construction decision-making (see for example Hatmoko and Scott, 2010; Titus and Bröchner, 2005 ; Chan and Kumaraswamy, 1997). The current study has provided empirical data on how the existing processes and procedures used in developing and constituting SCIfs function, which the literature lacks, to provide a basis for the development of an improvement proposals using common standardized of best-practice.

6.10 Attitudinal Behavioural and Technical Knowledge Required for Collaborative Business Relationship Improvement among DSD Actors

Table 6.11 shows that the 9 DSD actor groups identified twenty-three attitudinal behavioural knowledge required for collaborative business relationship among DSD actors. The attribute 'continuous collaboration' was most frequently identified, with a frequency of 12%, followed by 'trust', 'effective communication' and 'openness' with a frequency of 8% each, and 'commitment', 'respect for each DSD actors' and 'self-discipline and diligence' with a frequency of 7% each. Table 6.11 further shows that 'humility in acquisition of knowledge' with a frequency of 6%, 'willingness for continuous coordination improvement' and 'continuous professional development' with a frequency of 5% each, were also identified as

attitudinal behavioural knowledge required of DSD actors. Other attitudinal behavioural knowledge such as 'time consciousness', 'professional integrity', 'joint problem solving' and 'realization for change' among others, with frequencies ranging from 4% to 1% in Table 6.11 were identified as required for collaborative business relationship among DSD actors to improve DSD activities.

The findings reveal that in the Ghanaian construction business relationship, there is the need to increase the level of 'continuous collaboration' (see for instance Meng, 2010). This finding also suggests that collaborative work sometimes does not receive continuous attention through out the delivery processes. Besides, the knowledge acquired during collaborative works are not transferred to deliveries of other projects (see for example Anim, 2012; Loo, 2003). In Table 6.11 the attributes 'trust', 'effective communication' and 'openness' with frequency of 8% each suggest the need for close or improvement in Ghanaian construction business relationships among the DSD actors. This close business relationship should involve the use of the attributes for increased exchange of DSD information to develop SCIfs. Further, condering the three attributes that followed 'commitment', 'respect for each DSD actors' and 'self-discipline and diligence' with frequency of 7% each, in Table 6.11 suggests attitudinal behavioural changes that will allow collaboration among the 9 different DSD actor groups. Similarly, the other attributes following up in the Table 6.11 suggest there is need for attitudinal behavioural changes in use of the attributes to achieve cordial business relationships through change of 'mind set' for the improvement of the DSD activities (see for instance Pryke 2009; Cheung and Rowlinson, 2005). Furthermore, a close observation of all the findings in Table 6.11 suggests that the long existings procurement system- traditional system has collaboration challenges. The attributes of the findings provide indication that there are concerns about the

levels of non-collorative working and harsh or adversarial business relationships (see for example Laryea, 2010; Anvuur et al., 2006). Therefore, the attributes are important for the development of the improvement proposals to improve the DSD activities in Ghana

6.10.1 Critical Attributes Describing DSD Actors' Attitudinal Behavioural Knowledge Required for Collaborative Business Relationship

Figure 6.6 shows a Pareto plot of the attributes describing the attitudinal behavioural knowledge in Table 6.11 required for collaborative business relationship among DSD actors. The Pareto plot is useful for ranking the attributes and also for selecting the critical ones for remedying a situation. Also, the plotted cumulative frequency curve provides various percentages of the attributes fallen in or within a particular range. The Pareto information are for decision making and development of the improvement proposals.

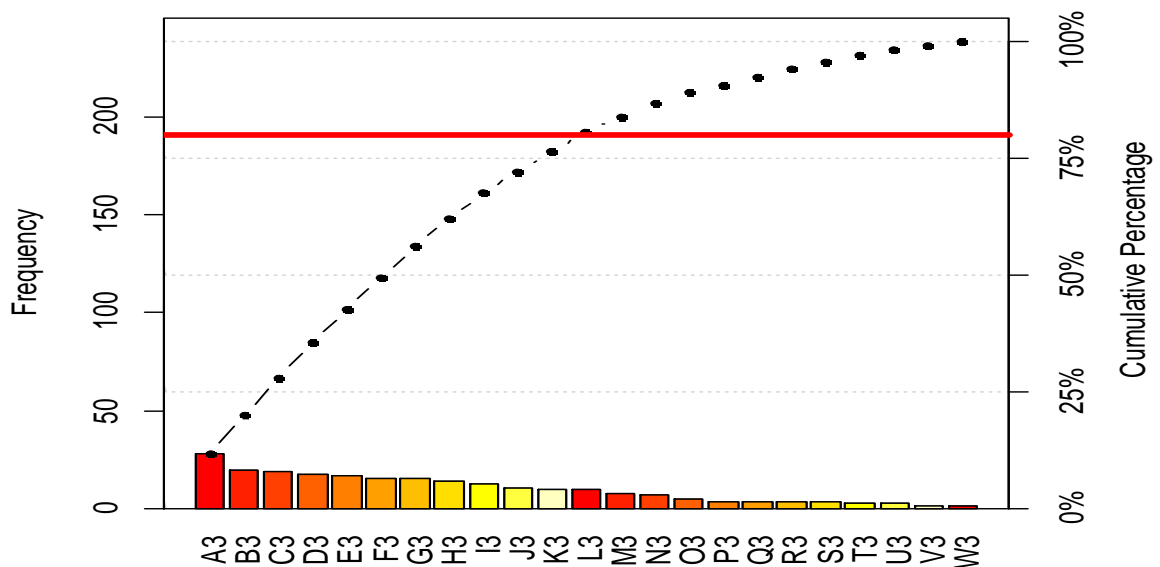


Figure 6. 6 Pareto Plot showing critical attributes describing DSD actors' attitudinal behavioural knowledge required for Collaborative Business Relationship improvement proposals

Legend: A3 to W3 - attributes in the Table 6.11

A3 to K3- critical attributes in the Table 6.11

Table 6.11 Attitudinal behavioural knowledge required for collaborative business relationship among DSD actors

DSD actors (Professional interviewee groups)	Subcase (cluster 1) : Attitudinal behavioural knowledge required for collaborative business relationship among DSD actors																						
	Attributes describing attitudinal behavioural knowledge required for collaborative business relationship among DSD actors																						
	A3) Continuous collaboration	(B3) Trust	(C3) Effective communication	(D3) Openness	(E3) Commitment	(F3) Respect for each other DSD actor	(G3) Self Discipline and diligence	(H3) Humility in acquisition of knowledge	(I3) Willingness for continuous coordination improvement	(J3) Continuous professional development	(K3) Time consciousness	(L3) Professional Integrity	(M3)Joint problem Solving/alignment of	(N3) Realisation	(O3) Accept criticism	(P3) Curiosity and Investigative professional learning'	(Q3) Fairness	(R3) Corrigible	(S3) Responsible and Selflessness in duty	(T3) Control of over confidence	(U3) Appreciation	(V3) Marketability	(W3) Law abiding
Project Managers (5No.)	✓	✓ ✓	✓ ✓	✓ ✓	✓ ✓	✓	✓	✓		✓ ✓ ✓	✓ ✓	✓ ✓	✓						✓				
Architects (5No.)		✓ ✓		✓	✓ ✓ ✓	✓		✓ ✓	✓	✓		✓	✓	✓		✓ ✓ ✓	✓		✓			✓	
Quantity Surveyors (5No.)	✓ ✓ ✓	✓ ✓	✓ ✓	✓ ✓	✓	✓ ✓	✓ ✓	✓		✓ ✓		✓			✓ ✓		✓	✓	✓		✓ ✓		
Services Engineers (5No.)	✓ ✓ ✓ ✓	✓ ✓	✓ ✓ ✓ ✓	✓ ✓		✓ ✓ ✓	✓ ✓	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	✓ ✓			✓			✓				✓			
Structural Engineers (5No.)	✓	✓ ✓ ✓	✓	✓	✓	✓	✓ ✓	✓	✓ ✓ ✓ ✓	✓	✓ ✓ ✓	✓ ✓		✓	✓ ✓			✓ ✓		✓		✓	
Geotechnical Engineers (5No.)	✓ ✓ ✓ ✓	✓ ✓ ✓	✓	✓	✓ ✓	✓	✓ ✓				✓ ✓ ✓	✓	✓	✓						✓			
Geomatic Engineers (5No.)	✓ ✓ ✓ ✓	✓ ✓	✓ ✓	✓ ✓	✓ ✓	✓ ✓	✓ ✓	✓ ✓				✓ ✓	✓ ✓	✓			✓						
Planners (5No.)	✓ ✓	✓	✓ ✓	✓	✓	✓ ✓	✓	✓	✓ ✓	✓ ✓	✓			✓	✓			✓					✓ ✓
Contractors (5No.)	✓ ✓ ✓ ✓	✓ ✓	✓ ✓	✓ ✓	✓ ✓ ✓ ✓	✓	✓ ✓	✓					✓ ✓	✓ ✓			✓		✓		✓		
Total attribute	28	20	19	18	17	16	16	14	13	11	10	10	8	7	5	4	4	4	4	3	3	2	2
Percentage	12	8	8	8	7	7	7	6	5	5	4	4	3	3	2	2	2	2	2	1	1	1	1

6.11 Technical Knowledge Required for Collaborative Business Relationship among DSD Actors

Table 6.12 shows that the 9 DSD actor groups identify fifteen attributes as requiring technical knowledge for the development of collaborative business relationship among DSD actors. 'Inter-professional focused discussions on SCIfs (chains of project documentations) at DSD workshops, seminars, fora and meetings for reviews, feedback and debriefing', with frequency of 15%, most repeatedly emerged as the technical knowledge required for collaborative business relationship. Other attributes such as 'built environment experts' common forum for planning and development of programmes' with frequency of 14%, and 'inter-professional business relationship management development' with frequency of 11%, 'continuous search for all clients' inputs and satisfaction' with frequency of 9%, 'financial benefits, awards and professional fees' with frequency of 7%, and 'documentation and record keeping experiences' with frequency of 7% were also identified as technical knowledge required for collaborative business relationship among DSD actors.

Table 6.12 further shows that four attributes with frequency of 6% each i.e. 'leadership, authority and ethical issues', 'securing of contractors and subcontractors design inputs', 'decisions on SCIfs (chains of project documentations), auditing/vetting' and 'time, quality, cost effective DSD using SCIfs (chains of project documentations)' are also required for collaborative business relationship.

Table 6.12 Technical knowledge required for collaborative business relationship among DSD actors

DSD actors (Professional interviewee Groups)	Sub-case (cluster 2) : Technical knowledge required for collaborative business relationship among DSD actors														
	Attributes describing technical knowledge required for collaborative business relationship to improve DSD activities														
	(A4) inter-professional focused discussions on chain of project documentations at DSD workshops, seminars, fora and meetings for reviews feedback and debriefing	(B4) Built environment experts' common forum on planning and development of programmes	(C4) Inter-professional business relationship management development	(D4) Continuous search for all clients' inputs and satisfaction	(E4) Financial benefits, awards and professional fees	(F4) Documentation and record keeping experiences	(G4) Leadership, authority and ethical issues	(H4) Secure contractors and subcontractors design inputs	(I4) Decisions on SCIFs -chains of projects documentation auditing and vetting	(J4) Time, quality, and cost effective DSD SCIFs chains of project documentations	(K4) Regular decisions and discussion on common roles to prevent adversarial relationships	(L4) Use of up-to-date, acceptable processes, procedures and technology to achieve functionality of the SCIFs	(M4) Implementation strategies in line with laws, by-laws and regulations	(N4) Produce catalogue on common DSD errors for the improvement of DSD	(O4) Determination to produce standardized SCIFs by all acceptable means including study tours
Project Managers (5No.)	✓✓	✓✓✓✓	✓✓	✓✓		✓✓	✓✓	✓✓	✓✓	✓	✓	✓✓	✓	✓	
Architects (5No.)	✓✓✓	✓✓✓	✓✓✓	✓✓				✓	✓✓		✓				
Quantity Surveyors (5No.)	✓✓✓✓	✓✓✓	✓✓	✓✓	✓✓	✓✓	✓✓		✓		✓✓		✓	✓	
Services Engineers (5No.)	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓		✓✓		✓✓	✓	✓			✓✓
Structural Engineers (5No.)	✓✓✓✓	✓✓✓	✓✓✓	✓	✓✓	✓	✓✓	✓✓		✓✓✓		✓	✓		
Geotech. Engineers (5No.)		✓	✓	✓✓	✓✓		✓		✓	✓			✓	✓	
Geomatic Engineers (5No.)	✓✓✓✓	✓✓	✓✓	✓	✓✓	✓✓	✓	✓	✓✓	✓✓	✓	✓	✓		
Planners (5No.)	✓✓✓	✓✓	✓✓			✓	✓		✓						
Contractors (5No.)	✓✓✓	✓✓	✓	✓✓			✓			✓		✓		✓	✓
Total of attribute	25	22	18	15	12	11	10	10	10	10	6	6	5	4	3
Percentage (%)	15	14	11	9	7	7	6	6	6	6	3	3	3	2	1

Additionally, three attributes each with frequency of 3% i.e. 'regular decisions, discussions on common roles to prevent adversarial relationships', 'use of up-to-date, acceptable processes, procedures/ technology to achieve functionality of the SCIFs', and 'implementation strategies in line with laws, by-laws and regulations' are also required for collaborative business relationship, and two other attributes i.e. 'produce catalogues on common DSD errors for the improvement of DSD' with frequency of 2% and 'determination to produce standardized SCIFs by all acceptable means including study tours' with frequency of 1% are also required of DSD actors.

6.11.1 Critical Attributes Describing DSD Technical Knowledge for Collaborative Business Relationship

The pareto plot in Figure 6.7 shows the ranking of the Technical knowledge required for collaborative business relationship among DSD actors, and also the critical ones for remedying the situation (Ultsch, 2002).

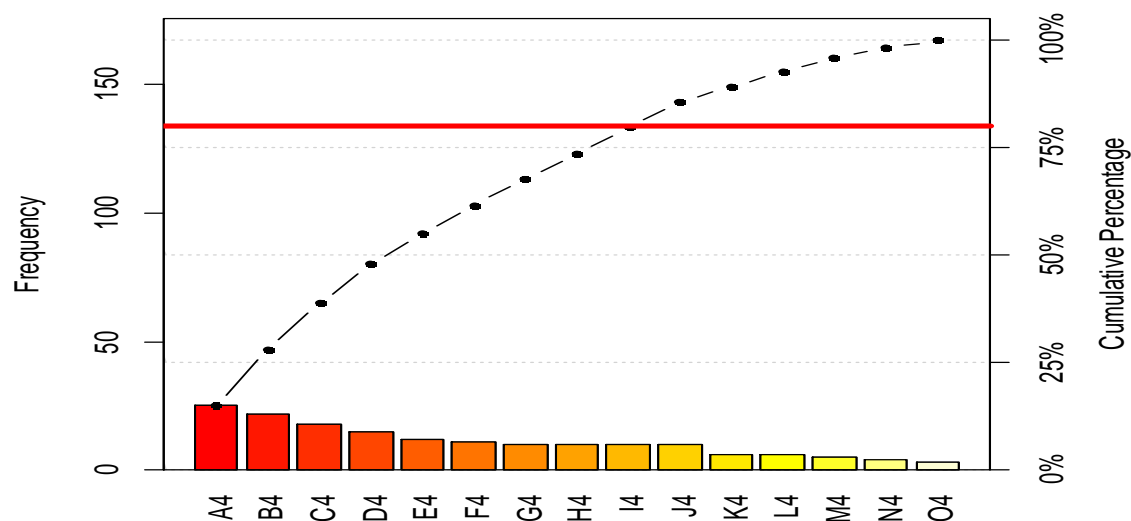


Figure 6.7 Pareto Plot showing attributes describing DSD Technical knowledge for collaborative business relationship improvement proposals to improve DSD activities

Legend: A4 to O4 - Attributes in the Table 6.12, A4 to I4 as Critical Attributes in the Table 6.12

In considering the critical attributes through the Pareto plot analysis in Figure 6.7 and Table 6.12, the following results were obtained. The Geomatic Engineers identified all the nine critical attributes required for collaborative business relationship among DSD actors. The Project Managers identified eight, except 'financial benefits, awards/professional fees'; the Quantity Surveyors identified eight except 'securing of contractors and subcontractors design inputs', and the Structural Engineers also identified eight except 'decisions on SCIFs (chains of project documentations auditing and vetting)'. The Architects, however, identified six except 'financial benefits, awards/professional fees', 'documentation and record keeping experiences' and 'leadership, authority and ethical issues', whilst the Services Engineers identified seven of the critical technical knowledge required for collaborative business relationship, except 'leadership, authority and ethical issues' and 'decisions on SCIFs (chains of project documentations), auditing and vetting'.

The Geotechnical Engineers identified six except 'inter-professional focused discussions on SCIFs (chains of project documentations) at DSD workshops, seminars, fora and meetings for reviews feedback and debriefing', 'documentation and record keeping experiences' and 'securing of contractors and subcontractors design inputs', whilst the Planners identified six except 'continuous search for all clients' inputs and satisfaction', 'financial benefits, awards/professional fees' and 'securing of contractors' and subcontractors' design inputs'. However, the Contractors identified five critical technical knowledge for development of collaborative business relationship. These attributes, however, did not include 'financial benefits, awards/professional fees', 'documentation and record keeping experiences', 'securing of contractors' and subcontractors' design inputs' and 'decisions on SCIFs (chains of project documentations) auditing and vetting'.

6.12 Discussion of Results

This stage of the discussions of the results concerns the attitudinal behavioural and technical knowledge required for collaborative business relationship. The stage is divided into two parts: the 6.10.1 covers discussions on the attitudinal behavioural knowledge and the other 6.10.2 concerns the discussions on the technical knowledge required. The attitudinal behavioural and technical knowledge attributes are used to develop the transformation process of the business relationship improvement proposals for the different DSD actor groups.

6.12.1 Attitudinal Behavioural Knowledge Required for Collaborative Business Relationship

The current study has identified 23 attitudinal behavioural knowledge required for collaborative business relationship among DSD actors. The twenty-three attributes suggest a 'set of attitudes and behaviours' required to improve the non-collaborative working and adversarial business relationship situation among DSD actors in the construction industry (Mullins, 2005). A critical review of the literature identified 10 attributes required for attitudinal behavioural knowledge in the DSD socialization process as 'collaboration', 'trust', 'communication', 'commitment', 'improvement and continuous improvement', 'joint problem solving', 'marketing skills', 'alignment of objectives', 'risk handling/allocation' and 'procurement' (see for example Meng, 2010; Smyth and Fitch, 2009; Smyth, and Edkins, 2007). Thus, the current study has confirmed seven out of the ten attributes in the literature, referred to as relationship improvement factors, and produced some new insights on the attitudinal behavioural knowledge required for collaborative business relationship among DSD actors involving 16 more attributes than what is in the literature. The three remaining attributes in the literature not identified in the current study are: 'alignment of objectives', 'risk handling/allocation' and 'procurement' (see for example Meng, 2010; Smyth and Fitch, 2009). The new insights which have emerged from the current study are: 'openness' with frequency of 8%, 'respect for other DSD actors' 7%, 'self-discipline and diligence' 7%, 'humility in acquisition of knowledge' 6%, 'continuous professional development' 5%, 'time consciousness' 4%,

'professional integrity' 4%, 'realization', 'accept criticism', 'curiosity and investigative professional learning', 'fairness', 'corrigible', 'responsible and selflessness in duty', 'control of over confidence', 'appreciation' and 'law abiding'. These attributes are not linked or associated to the construction business relationship improvement factors in the literature reviewed. Also, the manner in which they are provided by the respondents (DSD interviewees) reveal some cultural and social requirements in the use of the business relationship improvement factors found.

The Pareto plot in Figure 6.6 enable the 23 attributes to be ranked in order of highest frequency to the lowest (see for example Ahmed et al., 2013; Ultsch, 2002). The plot suggests the degree of importance of the attributes required for collaborative business relationship for the improvement of DSD activities. The ranking of the attributes using the pareto plot suggests that 'continuous collaborations', with a frequency of 12% is the most important attitudinal behavioural knowledge required in the DSD socialization process, followed by 'trust' 8%, 'effective communication' 8%, 'openness' 8% and 'commitment' 7% in that order, whilst 'law abiding' 1% is the least required in the process. Also, in Figure 6.5, the Pareto plot enables the 23 attributes to be split into two categories, 'critical few' and 'trivial ones' (see for example Ultsch, 2002). The twelve critical attributes are 'continuous collaboration', 'trust', 'effective communication', 'openness', 'commitment', 'respect for each DSD actors' and 'self-discipline and diligence'. Others are, 'humility in acquisition of knowledge', 'willingness for continuous coordination improvement', 'continuous professional development', 'time consciousness' and 'professional integrity'.

The critical attributes identified indicate that DSD actors in Ghana now recognize the need for change in attitudinal behaviour for improvement of DSD activities. The critical attributes are mainly relationship improvement factors, which serve as a vehicle to create collaborative working and harmonious, cordial business relationship environment for the improvement of DSD activities (see for example Meng, 2010; Smyth and Fitch, 2009). The critical attributes identified suggest a set of attitudes and behaviours critical for DSD professionalism and required for improvement of collaborative business relationship in DSD

activities (see for example Hammer, 2000). Among the critical attributes identified from the current study are five of the attributes in the literature, 'collaboration', 'trust', 'communication', 'commitment' and 'continuous improvement' (see for example Meng, 2010). The use of attributes like 'continuous collaboration', 'trust', 'effective communication', 'openness' and 'respect for each other DSD actor', smack the existence of business relationship challenges. The results show that all but the Architect identify these critical attributes. The critical attributes positively affect business relationship success cycle (see for example Humphries and Wilding, 2004).

The success cycle is greatly influenced by two of the most critical attributes - 'continuous collaboration' and 'effective communication'. Further, critical attributes like 'humility in acquisition of knowledge', 'willingness for continuous improvement', 'continuous professional development' and 'time consciousness' suggest the need for continuous professional development (CP) among DSD actors in Ghana. Other critical attributes describing the attitudinal behavioural knowledge with significantly high frequencies include: 'commitment', 'self-discipline and diligence', and 'integrity'. These suggest that there are moral issues confronting business relationship among DSD actors in the construction industry in Ghana. These moral issues inferred from the results may include corrupt practices, bullying, power struggle, individualism and rigid professional autonomy (see for example Ameyaw et al., 2013; Jaffar et al., 2011; Skitmore and Smyth, 2007; Anvuur et al., 2006; Axt, et al., 2006; Yiu, and Cheung, 2006; Mullins, 2005; Gouveia and Ros, 2000; Hofstede, 1982). Attitudinal behavioural changes through change of 'mind set' are necessary (see for example Cheung and Rowlinson, 2005) to prevent or eliminate non-collaborative working and adversarial business relationship or business relationship failure cycle (see for example Humphries and Wilding, 2004). The adoption of these attributes can improve mutual trust, openness, respect for each DSD actor, and strengthen continuous collaboration among DSD actors for the improvement of DSD activities (see for example Mullins, 2005). The attitudinal behavioural knowledge illustrated by the critical attributes can positively foster collectivism cultural dimension among the DSD actors. Application of the action oriented system theory, system thinking and rethinking process to the

attitudinal behavioural knowledge identified from the current business relationship situation can improve DSD activities, foster collaborative business relationship among the DSD actors and promote effective and efficient SCIIs. Of the twelve critical attributes, all the 9 DSD actor groups identify 'trust', 'openness' and 'respect for other DSD actors' as attributes required for collaborative business relationship among DSD actors. All the 9 DSD actor groups, except the Architects, also identify these attributes: 'continuous collaboration', 'effective communication' and 'self-discipline and diligence'. All of them except the Service Engineers further identify 'commitment', and all except Geotechnical Engineers identified 'humility in acquisition of knowledge' as critical. The fact that most of the DSD actor groups identify the above attributes indicates the importance and appropriateness of the attributes for the improvement of collaborative business relationship among DSD actors.

6.12.2 Technical Knowledge Required for Collaborative Business Relationship

Table 6.12 shows 15 technical knowledge required for collaborative business relationship among DSD actors. These attributes relate to technical issues confronting DSD activities in the construction industry in the developing economies (see for example Jaffar et al., 2011), and are the essential technical issues that describe the appropriate technical knowledge required for the improvement of DSD activities (see for example Smith, 2007). A careful observation of the attributes shows that they are appropriate for the development of a common structure for DSD activities; a structure that can be used for collaborative business relationship in DSD activities (see for example Clements and Gido, 2006).

In Figure 6.7 the pareto plot analysis enabled the fifteen attributes in Table 6.12 to be ranked in order of highest frequency to the lowest (see for example Ahmed et al., 2013; Ultsch, 2002). The ranking indicated that 'inter-professional focused discussions on chain of project documentations at DSD workshops, seminars, fora and meetings for reviewing feedback and debriefing' is the most important attribute that can provide technical knowledge for collaborative business relationship among the DSD actors. However,

‘determination to produce standardized SCIFs by all acceptable means including study tours’ is the least among the attributes identified.

The pareto plot analysis in Figure 6.7 also enabled the 15 attributes to be split into ‘critical attributes’ and ‘trivial attributes’ (see for example Ultsch, 2002). There are nine critical attributes and six trivial ones in Figure 6.6. The nine critical attributes include 'inter-professional focused discussions on SCIFs (chains of project documentations) at DSD workshops, seminars, fora and meetings for reviews feedback and debriefing', 'built environment experts’ common forum for planning and programmes', 'inter-professional business relationship management development', 'continuous search for all clients’ inputs and satisfaction', 'financial benefits, awards/professional fees', 'documentation and record keeping experiences', 'leadership, authority and ethical issues', 'securing of contractors’ and subcontractors’ design inputs', and 'decisions on SCIFs (chains of project documentations) auditing and vetting'.

The results further suggest that the fifteen attributes can be categorised into the three major technical issues identified in the literature as those required for collaborative business relationship to improve DSD activities (see for example Jaffar et al., 2011; Clements and Gido, 2006). These include: 1) issues that carry uncertainty in project delivery; 2) issues that demand engineering clarifications, interpretations and explanations; and 3) issues which concern unrealistic clients’ and representatives’ demands and relationship issue. However, the literature issues only identify broad categories, and do not contain a detailed list of attributes or technical knowledge required for collaborative business relationship as identified in the current study. The information from the literature does not also provide values to show proper interpretation of the relative importance of the issues as provided in this study. Four of the nine critical attributes can be placed under the broad category ‘engineering clarifications, interpretations, explanations and relationship’ (see for example Jaffar et al., 2011; Clements and Gido, 2006). These include ‘inter-professional focused discussions on chain of project documentations at DSD workshops, seminars, fora and meetings for reviews feedback and debriefing’, ‘built environment experts common

forum on planning and programmes', 'documentation and record keeping experiences' and 'decisions on SCIfs - chains of projects documentation auditing and vetting'. Discussion centred on chain of project documentations, and planning and programmes involve engineering clarifications, interpretations and explanations (see for example Jaffar et al., 2011; Clements and Gido, 2006). However, inter-professional focused discussions and built environment experts common forum also involve relationship building and may be placed under the third category (Jaffar et al., 2011; Clements and Gido, 2006). At built environment experts' common forum, technical issues can be resolved or improved. Such resolution or improvement of issues can enhance harmonious, cordial and collaborative business relationship among DSD actors (Smith, 2007). Design services delivery actors face challenges of clear understanding and/or technical implications and explanations of all the sub-SCIfs and SCIfs (see for example Jaffar et al., 2011; Mele et al., 2010). There is also the challenge of getting a common format for constituting all the sub-SCIfs into suitable SCIfs finality whole, hence, the need to ensure documentation and record keeping experience and also SCIfs - chains of projects documentation auditing and vetting. Both critical attributes suggest ways of making SCIfs effective and efficient for the improvement of DSD activities.

Two other critical attributes 'inter-professional business relationship management development' and 'leadership, authority and ethical issues' are associated with relationship i.e. category 3. Both critical attributes primarily seek to address issues of professionalism, co-existence and provision of direction for the DSD activities (see for example Jaffar et al., 2011; Hammer, 2000). The attribute 'continuous search for all clients' inputs and satisfaction' can be placed under unrealistic clients' or representatives' demands i.e. categories 3 (see for example Jaffar et al., 2011). Since clients' requirement cannot easily be met, there is the need for continuous drive to satisfy their changing and sometimes confusing requirements (see for example Smith, 2007).

Two other critical attributes 'financial benefits, awards and professional fees' and 'securing contractors or/and subcontractors design inputs', can be associated with uncertainty in project delivery i.e. category

1. Since there is the possibility of non-payment or failure in budgetary arrangement or promise of some benefits or awards (see for example Smith, 2007; Clements and Gido, 2006), it suggests a certain degree of uncertainty in project delivery. The degree of the uncertainty may vary from client to client. However, payment may sometimes be seriously prolonged and declared as bad debt (see for example Clements and Gido, 2006). The engagement of contractors or subcontractors for their design inputs may be difficult to obtain, depending on the procurement method used, and therefore associated with uncertainty in project delivery. Such an uncertainty has to be overcome for the development of a harmonious, cordial and collaborative relationship among DSD actors (see for example Jaffar et al., 2011).

The results show also that 'built environment experts' common forum for planning and programmes' and 'inter-professional business relationship management development' are identified by all the 9 DSD actor groups as critical technical knowledge for collaborative business relationship. Eight out of the 9 DSD actor groups also identified 'inter-professional focused discussions on SCIFs (chains of project documentations) at DSD workshops, seminars, fora and meetings for reviews feedback and debriefing' and 'continuous search for all clients' inputs and satisfaction'. Geotechnical Engineers and Planners do not identify 'inter-professional focused discussions on SCIFs (chains of project documentations) at DSD workshops, seminars, fora and meetings for reviews feedback and debriefing' and 'continuous search for all clients' inputs and satisfaction' respectively.

The preceding discussions show that the critical attributes are the appropriate technical knowledge required for collaborative business relationship among DSD actors for the improvement of DSD in Ghana. The information provided by the DSD actors in this study suggests their in-depth awareness of the technical issues confronting DSD activities in Ghana. The use of the attributes identified in this study will engender a robust collaborative working among the DSD actors. This will also enable essential, harmonious and cordial business relationships to be realised for the development of effective and efficient SCIFs in the construction industry. The results also illustrate the need to foster collectivism

cultural dimension for business relationship improvement among DSD actors. They suggest the use of technical knowledge attributes in theorization, which can enable the action oriented system theory, system thinking and rethinking process to improve the DSD activities.

6.13 Summary

Empirical evidence has emerged from the study underscoring the fact that with the pareto analysis plot and ranking of eight critical attributes suggest there is non-collaborative working and adversarial business relationship with a frequency of 69%. Besides, the study provides that the business relationship situation is less collaborative than collaborative among DSD actors when developing and constituting SCIfs in Ghana. Further, business relationship situations among DSD actors in Ghana are described in three categories as 44% non-collaborative, 34% less collaborative and 22% close to average collaborative. The results of the study have also shown that the nature of SCIfs in DSD activities in Ghana are mostly disjointed by 36%, fragmented by 16% and uncoordinated by 16%. There are, however, few relationally jointed and partially jointed SCIfs. They represent 18% of SCIfs developed and constituted. These attributes provide summaries of the nature of the SCIfs in DSD activities in the construction industry in Ghana.

Again, the study reveal that cultural challenges of individualism and professional autonomy which limit or block collective and collaborative efforts and the benefits of win-win-win with concern for others are noticed in the study. Theorizations, using the action oriented system theory, thinking and rethinking system theories, have illustrated that there are no inter-professional business relationship policies or appropriate collaborative procedures among the DSD actors. Lack of such inter-professional collaborative activities and harmonious business relationship in developing the supply chains of information flow in construction project delivery have seriously undermined proper and hygienic infrastructure development. The results of the study also showed the absence of interactive platforms, fora, workshops or seminars for DSD actors to periodically meet and develop collaborative business relationships among the different

DSD actor groups. Such platforms could draw inputs from best practices of well-developed SCIFs-supra-systems in the global environment to improve the current situation in Ghana.

Also the study has provided empirical evidence to support the fact that the current CBR in Ghana is adversarial and lacks collaborative relationship among DSD actors when developing and constituting SCIFs. 14% of the situation is characterised as 'lack of harmonization of professional work and good business relationships', 14% 'hostility, frustration, tension and conflicts', 13% 'lack of interdependencies and sustainability', 7% 'low motivation', 7% 'no command structure', 7% 'harsh system of falsification of documents and greed' and 7% 'misinterpretation of documents by DSD actors'. The situation, however, is also characterised as 9% 'mixed relationships of affiliates and training mates relationships'. These attributes characterizes the existing CBR situation in Ghana. Some of the adverse effects of the current CBR situation which cause drawbacks to improvement of DSD activities are delays in DSD activities which disturb improvement of DSD time schedules, reduction of quality of DSD design products through ineffective and inefficient SCIFs and reduction in cost effectiveness, restriction of inflow and outflow of project information. The situation blocks expansion and encourages shoddy works, unhygienic and haphazard infrastructure development.

Furthermore, it is evident from the results of the study that there is malfunctioning of the processes and procedures used in developing and constituting the various SCIFs in the current business relationship situation. The study has identified six critical attributes which adversely describe how the processes and procedures used in developing SCIFs function as "unsystematic", "insufficient details", "inconsistent or use of outmoded methods", "sub-standards with gaps or no standard for supply chains", "use of weak incomplete supply chains", and "non-compliance with legislation, rules and regulation". The DSD actor groups are clear in the assessment that there is malfunctioning of the processes and procedures used in developing the SCIFs. The study has also identified one positive attribute ('systematic') which describes how the processes and procedures used in developing and constituting the SCIFs in the current business

relationship situation function. The study has enabled quantification of the usage of the various attributes which describe how the processes and procedures are used in developing and constituting the SCIFs in the existing business relationship situation which provided a strong basis for interpretation of results. Six critical effects of the functioning of the current processes and procedures used in developing and constituting the SCIFs have also been identified as 'pressure on timelines causing delays', 'difficulties in cost control/cost overruns', 'insufficient share and flow of information', 'poor quality of work', 'lack of continuous, smooth, effective and efficient delivery' and 'difficulties in meeting delivery review/audit date'.

Besides, empirical evidence from the study has identified 23 attitudinal behavioural knowledge required for collaborative business relationship among DSD actors. The twenty-three attributes suggest a 'set of attitudes and behaviours' required to improve the non-collaborative working and adversarial business relationship situation among DSD actors in the construction industry. The study also identifies 12 critical attitudinal behavioural knowledge among the 23 attributes, including 'continuous collaboration', 'trust', 'effective communication', 'openness', 'commitment', 'respect for each other DSD actor', 'self-discipline and diligence', 'humility in acquisition of knowledge', 'willingness for continuous improvement', 'continuous professional development' and 'time consciousness' and 'integrity'. The study also confirm seven of the ten relationship improvement factors found in the literature and produces some new insights on the attitudinal behavioural knowledge required for collaborative business relationship among DSD actors. The new insights involves 16 new attributes not mentioned in the literature, including 'openness' with a frequency of 8%, 'respect for each other DSD actors' and 'self-discipline and diligence' each with a frequency of 7%, 'humility in acquisition of knowledge' with frequency of 6%, 'continuous professional development' with a frequency of 5%, 'time consciousness' and 'professional integrity' each with frequency of 4%, 'realization' with a frequency of 3%, 'accept criticism', 'curiosity and investigative professional learning', 'fairness', 'corrigible' and 'responsible and selflessness' each with a frequency of 2%, 'control of over confidence', 'appreciation' and 'law abiding'

each with frequency of 1%. The study has also provided quantitative values to underscore the importance placed by the DSD actors on each of the attitudinal behavioural knowledge required for collaborative business relationship among them. Such attitudinal behavioural knowledge is a kind of professionalism which comprises critical attributes with potentials to reverse decades of DSD activities failure cycle, and with the capacity to cause collaborative business relationship success cycle. This kind of professionalism will thrive well by the adoption of the action oriented system theory, thinking and rethinking to achieve the development of effective and efficient SCIfs for the improvement of DSD activities.

The study has also identified nine critical attributes which could be placed under the three major technical categories identified in the literature. Four of the critical attributes are placed under 'engineering clarifications, interpretations, explanations and relationship' including 'inter-professional focused discussions on chain of project documentations at DSD workshops, seminars, fora and meetings for reviews feedback and debriefing'. The other critical attributes include: 'built environment experts common forum on planning and programmes', 'documentation and record keeping experiences' and 'decisions on SCIfs - chains of projects documentation auditing and vetting'. Under 'uncertainty in project delivery' are placed two other critical attributes 'financial benefits, awards and professional fees' and 'securing contractors or/and subcontractors design inputs'. Under 'unrealistic clients' and representatives' demands and relationship' are placed three other critical attributes "inter-professional business relationship management development", "leadership, authority and ethical issues" and "continuous search for all clients' inputs and satisfaction".

CHAPTER SEVEN

VALIDATION OF THE FINDINGS

7.1 Chapter Outline

This chapter presents information on the basis and plan used to validate the research findings and proposals for improving Design Service Delivery activities in Ghana. The chapter contains: background of the validation concepts and issues; the forms of validation used in the study; the various DSD participants involved in the validation of the improvement proposals; and the validation technique employed. The chapter continues with presentation of the validation data and results obtained on the findings and the improvement proposals. It also shows the participants' comments on the research findings that led to the achievement of the objectives and the development of the proposals. The chapter ends with validation decisions and confirmations on the research findings for the development of proposals for improving DSD activities and a summary of the chapter.

7.2 Background to Validation Concept and Issues

Validation of the findings obtained from the research and the literature review involve the efforts made to find out the reliability and validity of the findings used for the improvement proposals. The validation process reveal the truth in the research findings and establish the relevance and expected impact of the research on the DSD actor groups in developing the SCIfs (Golafshani, 2003). DSD participants' involvement in the validation dealt with "member checks"⁴ (respondent validation) a systematic way used to seek feedback about the data (findings) obtained during the research (Pratt, 2006; Ammenwertha et al., 2003). Again, Pratt, 2006 notes that the "member checks" which is participants' validation is a better way of judging if the understandings acquired in the interviews are accurate and complete; by giving the findings back to those involved (participants) and ask them to judge or comment.

⁴ The "member checks" involves the respondents (interview participants) validating the findings of the study.

The checks involved confirming the impact or effectiveness of the improvement proposals developed for rectifying the challenges such as the non-collaboration and adversarial business relations. The validation was an important way of obtaining suggestions that eliminate any possible misinterpretation that may have arisen concerning the meaning of what participants said, the views they held and truly shared during the interview (Maxwell, 2008). Further, the validation most importantly helped to confirm the absence or otherwise of biases and misunderstandings in the data that were gathered from the field study (Maxwell, 2008; Golafshani, 2003).

However, the validation process revealed that the participants' feedback are not more important or inherently valid than the interview responses (Maxwell, 2008). In this sense therefore, the outcome of both were considered simply as true evidence regarding the validity of the data accounted for and used in the improvement proposals (Maxwell, 2008; Ammenwertha et al., 2003). In support of this evidence, this was realized through triangulation by using three different methods in the study for the data collection; it was noted that validation of results obtained for an aspect of the same research study are confirmed by congruent (not necessarily equal information) results from other parts of the study as identified by Ammenwertha et al. (2003). Again, this triangulation which according to Pratt (2006, pp.14) was "the use of several methods to explore an issue increases the chances of depth and accuracy" which the validation sought to find out.

The triangulation therefore assisted in the confirmation of the results. The confirmation was carried out by using data from different data collection sources to verify another data from another different source (validating of same response or results through other sources) ie audio recording, written summaries and recording of observations were used for counter check on one another (see for instance Baxter and Jack, 2008; Maxwell, 2008). These carefully put together were shown as new data that presented a complete picture of how the findings will facilitate creation of cordial harmonious business relationship situation. This procedure of validation of the results provided credible evidence for the findings. Such findings

could be applied in improvement proposals for developing effective and efficient SCIFs which could realize completeness of results as asserted by Baxter and Jack (2008) and Ammenwertha et al. (2003).

7.3 The Forms of Validation Used in the Study:

As demonstrated by Yeasmin and Rahman (2012) and Baxter and Jack (2008), triangulation strategy is a verification process that enhances validity by incorporating several viewpoints and methods. Based on this concept, a number of qualitative processes were adopted in triangulating to improve understanding of the issues in the research findings. The purpose was to achieve dependability, trustworthiness and transferability of the findings as required in qualitative study validation (Maxwell, 2008; Hsieh Shannon, 2005). Such triangulations strategies included the efforts made to write “How” research questions, which, were appropriate for the qualitative interview inquiries carried out, where the scope of the research questions and the responses were defined. These were research design principles which lend themselves to numerous strategies that converge to promote data credibility or “truth value” essential in this qualitative study (Yeasmin and Rahman, 2012; Maxwell, 2008). Following mindful process of validation in the study, purposive sampling method appropriate for the in-depth interviews was applied. The qualitative interview inquiries data collected in the main study were managed systematically and analyzed correctly as recommended by Baxter and Jack (2008) and Hsieh Shannon (2005). The central issue underlying the correct analysis in the research hinged on the coding scheme, constant comparative method introduced in the content analysis of the data to improve dependability, trustworthiness or credibility of the findings, which became apparent during the validation. Some other qualitative strategies adopted to establish credible outcome of the study included the use of reflection or the maintenance of field notes and peers (researchers) examination of the data (Hsieh Shannon, 2005). The multiple perspectives (many viewpoints) explored and how convergence of the different issues studied concerning the non-collaborative and adversarial business relationship in developing and constituting the SCIFs had been reached were recognized by the DSD validation participants as providing sufficient credibility to the study (see for example Yeasmin and Rahman, 2012; Maxwell, 2008; Ammenwertha et al., 2003). The participants’ reactions such as ‘exact account’ and ‘the same as what happens among the DSD actors’ after the

presentation of each objective for comments confirmed the quality of processes adopted to obtain the findings as expressed in the work of Baxter and Jack (2008) and Ammenwertha et al. (2003).

The use of different processes indicated that dependability and trustworthiness of findings received attention as may be desirable, by considering them at the various stages of the study to generate understanding. To carry out the overall validation for the final state of the validity of the findings, further credibility step of integrated process of ‘member checking,’ was undertaken to examine the findings. In that process the researcher’s findings and interpretations of the data were shared with the participants, and the participants had the opportunity to discuss and seek clarification of the various interpretations presented. The participants examined the objectives of the study one after the other together with the corresponding findings for each objective. They contributed additional perspectives on the issues studied, and detailed approach to the validation processes used. As a general consensus, almost all the findings were confirmed. The confirmation and new perspectives provided were issues that bordered on the participants’ validation decisions, confirmations on the research findings and further research.

7.4 The Validation Participants

Nine DSD participants were drawn, one from each of the nine different DSD actor groups previously interviewed based on the eligibility criteria used in the selection of the participants for this study, in Table 5.1 of the research methods in chapter five section 5.4.1.1. The actors included Project Managers (PM), Architects (Arc), Quantity Surveyors (QS), Services Engineers (SerEng), Civil/Structural Engineers (C/St Eng), Geometric Engineers (Geo Eng), Geotechnical Engineers (GeotechEng), Planners (Pl) and a Contractor. The nine DSD validation participants were drawn based on the selection criteria as small representative sample of the previous 45 participants. However, the nine were selected due to difficulty in bringing together all the DSD professionals off their tight schedules as appointments were not confirmed. This difficulty forced the researcher to limit the number of the validation participants to nine representative group. They comprise key professionals who highly satisfied the interview criteria set for the study. Alongside this selected actor group were eleven DSD actors (researchers) who joined the nine

examining group who were invited to assess, comment and present their judgments on the findings and the improvement proposals. The eleven other DSD actors were not part of the 45 participants involved in the in-depth interviews for this study. They were invited as part of the beneficiaries of the outcome of the study; to comment on dependability, trustworthiness or credibility of findings and contribute to the validation of the proposals based on their experiences which meet two points of the criteria. All the participants were DSD actors that noticed the research findings and the improvement proposals as relevant to the development of the SCIfs, which also have the capacity to improve DSD activities. The participants had long rich practising DSD experiences which enabled them to carry out the “member checks” of validating the findings and the improvement proposals as thoroughly as possible.

7.5 Final Validation Technique

The validation process and technique of ‘member check’ used were carried out in two phases to ensure credibility as expressed in Maxwell (2008); Ammenwerth et al. (2003) and Christie et al. (2000). At the initial stage, the findings as well as issues and processes used for the improvement proposals development were presented to the DSD participants. Next after the presentation was the final phase of the validation in which the participants’ responses in the form of verbal questions, discussions, clarifications, written answers including additional perspectives were provided and gathered as validation data. The initial phase of the technique of ‘member check’ involved presentation of research findings and improvement proposals issues in two parts. The first part of the presentation was to find out the dependability, trustworthiness and transferability of the DSD qualitative research findings and conclusions drawn from development of the improvement proposals (Maxwell, 2008). To realise this first part of the validation, a full power point presentation of the research findings to the participants of the different DSD actor groups was carried out. In the presentation, the participants were guided through the topic of the study, the problem statement, the aim, and the objectives, how the data was obtained and analyzed. In order to provide the DSD participants with full understanding of this part of the study, each objective and the

corresponding findings, literature review, methodological processes and charts leading to objective and findings were explained in detail to the participants for feedback.

In the second part of the initial phase of the validation, presentation to the participants continued. This part comprised showing the purpose of developing the improvement proposals, theories used in developing it, flow charts, conceptual framework developed and the expected outcome for adaptation. Further, an explanation on how the improvement proposals would be used to achieve its intended purpose was given (Golafshani, 2003; Winter, 2000). To generate understanding and get the DSD participants involved in the second part, five maturity levels which were used in the flow chart to guide the development of the improvement proposals, were explained. Expected changes in non-collaborative and adversarial business relationship were also discussed with the aid of a flow chart. The DSD participants were further guided through all the three stages of how the improvement proposals can be applied. They were guided through the challenges stage, the business relationship transformation processes stage, the development of effective and efficient SCIFs, auditing and how an improved DSD stage can be attained. The presentations, displays of the separate parts of the improvement proposals and explanations provided for the stages of the improvement proposals to participants ended the initial phase of the validation.

In the final phase of the validation, the participants had the opportunity to ask series of questions. They demonstrated their understanding and enthusiasm in the issues presented and willingly made suggestions for the final development of the improvement proposals through the series of critical questions that were asked. The participants went into full discussions of the objectives and the corresponding findings, one after the other, noting the relevance of the findings in offering solutions to the research problems. Some of the DSD participants took turns willingly offering more clarifications of points raised by fellow participants. This generated more interest and increased understanding of the issues. It was observed that the contributions were given willingly. In the end, after the participants have expressed and demonstrated

verbal understand of all the issues raised, they were made to provide written answers in addition, as provided for in the validation questions (Appendix B)

7.6 Validation Data Obtained

The data obtained from the validation exercise, as given by the participants, who were of different DSD actor groups, were offered both in verbal and written forms. The verbal feedback were written down by the researcher and the written forms to the validation questions were collected. These validation information were subsequently transformed into textual data and analyzed (Baxter and Jack, 2008). The validation process revealed necessary adjustment and clarifications that should be made to the improvement proposals development process. The discussions and issues clarified concerning the objectives and their corresponding findings and interpretations confirming the support given to attributes drawn from the findings for the development of the improvement proposals were presented. That apart, the comments and contributions towards the effective and efficient development of the SCIIs, showing that a proper implementation of findings in improvement proposals will fulfill the purpose of seeking cordial and harmonious business relationship for the improvement of the DSD activities in Ghana were also presented. All other participants' comments on the findings for the objectives and the improvement proposals were presented after the analysis of the validation data:

7.7 Analysis of the Validation Data

The directed content analysis of the data involving constant comparative method was followed as well as grouping of issues in two different ways (Hsieh and Shannon, 2005). In both ways using the directed content analysis and making use of constant comparative method approach a systematic comparison of each text information assigned to a category was carried out for its suitability to be placed in that category (Zhang and Wildemuth, 2009; Hsieh and Shannon, 2005). For the first instance themes were placed under objectives whilst in the second instance, themes were placed under headings drawn from validation questions sampled in Appendix B, as categories. The validation data was then assembled under various objectives for the findings, it was carried out objective by objective as the participants discussed the

objectives and offered comments. The participants' comments were put together for each objective and read several times to identify similarities and differences- agreements or contrary issues (themes).

Furthermore, for the improvement proposals, the data from the nine participants were put together question by question, verbatim as were written (Hsieh and Shannon, 2005). This approach was carried out in a similar manner for all the questions. The textual data assembled under each question from the nine participants was read several times, comparing and trying to obtain relationships in terms of similarities and differences in the information provided (Elo and Kyngäs, 2008). Isolated issues were noted as well as similar and dissimilar issues (very few), which were assembled under categories-headings that provide the textual data presented in this chapter (Elo and Kyngäs, 2008; Baxter and Jack, 2008).

7.7.1 Participants' Comments on the Research Findings of the Objectives

The participants comments on the findings of each objective and improvement proposals had been presented in the order and manner as the objectives and corresponding findings were displayed in a power point presentations during the validation for feedback; is provided below on:

7.7.1.1 The issue of understanding the conceptual and theoretical bases of adversarial business relationship in the construction industry especially in the context of developing countries such as Ghana:

Under this objective, the textual data provided by 45 DSD participants involving conceptual issues such as “information flow is not very well coordinated”; “difficult to get information flow among practitioners” and “inflow of information comes with difficulty; practitioners do not work together” and many others in Table 6.3 of the results presented and discussed in sections 6.8.1, 6.8.1.1 to 6.8.1.2 which were the bases of adversarial business relationship was categorized into three. The business relationships categories were of no-collaboration, less collaboration and close-to-average collaboration (see for example Ammenwertha et al., 2003),

7.7.1.1.1 Participants comments (feedback) on objective one

In a lengthy discussion held on the business relationship situation among DSD actors in Ghana, participants agreed with the findings that portrayed the situation to be of three categories non-collaborative, less collaborative and close-to-average collaborative; resulting in poor performance and lack of improvement in DSD activities (see for example Pratt, 2006; Ammenwertha et al., 2003),. These findings for the research objective one were accepted as a true reflection of the situation and issues and theorisations that provide understanding of the conceptual and theoretical bases of adversarial business relationships which emerged in carrying out professional work (see for example Maxwell, 2008; Pratt, 2006).

7.7.1.2 The issue of understanding for the conceptual and theoretical effects of the adversarial business relationship on SCIIs which the DSD actors developed especially in Ghana in the light of the present challenges of the construction industry:

Further the textual data obtained from the 45 DSD participants on this objective of understanding the conceptual and theoretical effects of the adversarial business relationship situation involve phrases such as “reduces quality of SCIIs and make DSD less cost effective” and “causes delays in DSD activities, disturbing improvement in DSD time schedules” and many others, in Table 6.4 of the results presented and discussed in sections 6.8.2, 6.8.2.1 to 6.8.2.2 (see for example Maxwell, 2008; Golafshani, 2003). These effects cause the development of SCIIs to suffer and for that matter drawback improvement of DSD activities in Ghana were presented to the validation participants (see for example Pratt, 2006; Golafshani, 2003).

7.7.1.2.1 Participants comments (feedback) on objective two

The participants held the view that resultant effects of the current CBR situation among DSD actors include 'difficulties in sharing and exchanging information', 'disturbance of time schedule/control',

'reduction in quality of work' and 'cost ineffectiveness' is exact account (see for example Maxwell, 2008; Pratt, 2006). Other effects include situations where there can hardly be 'reduction in errors' and 'use of legal rules and regulations' among others were confirmed as a true account of the effects and theorisations which offer understanding for the conceptual and theoretical effects of the adversarial business relationship on the SCIFs and DSD activities. However, some of participants were quick to mention that 'seemingly cordial behaviours' of some Ghanaians which are put up seem to hide the real situation (see for example Pratt, 2006)

7.7.1.3 The issue of undertaking a qualitative inquire to help provide empirical understanding of the characteristics of the adversarial relationship among DSD actors especially in the light of the difficult economic and business operating environment.

The findings on the qualitative inquiry obtained from the DSD textual data for this objective providing empirical understanding of the characteristics of the adversarial relationship among DSD actors which involve phrases that confirm the adversarial issues were presented (see for example Maxwell, 2008; Pratt, 2006). This include phrases such as relationship situation 'lacking harmonization of professional work and good business relationships' and also being 'hostile, frustrating, full of tension and conflicts' and many others in Table 6.5 of the results presented and discussed in sections 6.8.3, 6.8.3.1 to 6.8.3.2 were displayed (see for example Pratt, 2006; Golafshani, 2003). The characteristics of the nature further cause ineffectiveness and inefficiency among the DSD actors, disturbing improvement of DSD activities.

7.7.1.3.1 Participants comments (feedback) on objective three

Similarly, on the business relationship situation, the validation participants held the same view which DSD actors who provided the data revealed about the current CBR situation during the main data collection. According to the participants, the views described the CBR as 'lacking harmonization of professional work and good business relationships' and being 'hostile, frustrating, full of tension and conflicts' were as exact account offered. Further, they accepted that the CBR situation indeed is 'lacking interdependencies and sustainability'; it also has 'mixed relationships of affiliates and of training mates relationships' among others (see for example Pratt, 2006; Golafshani, 2003). Additionally, the phrases in

the text data and theorisations which provide the empirical understanding of the characteristics of the nature of the adversarial relationship among the DSD actors is in line with the what they offered (see for example Maxwell, 2008; Pratt, 2006). .

7.7.1.4 The issues of the nature of the supply chains of information flow (SCIfs) and the construction business relationship situation in developing and constituting

The textual data obtained from the 45 DSD participants on this objective concerning the nature of supply chains of information flow and the CBR revealed words and phrases such as ‘disjointed’, ‘fragmented’, ‘uncoordinated’ and ‘partially disjointed’, ‘partially fragmented’ including ‘partially jointed’ respectively. These words and phrases describing the nature of the SCIfs are tabulated in Table 6.6 of the results presented and discussed in sections 6.8.4, 6.8.4.1 to 6.8.4.1.1 which were made available to the participants for comments (see for example Pratt, 2006). The various descriptions of the nature of the SCIfs indicated the disturbed CBR in which the SCIfs are developed and constituted (Golafshani, 2003).

7.7.1.4.1 Participants comments (feedback) on objective four

It was confirmed from the validation that the findings concerning the nature of the SCIfs could be described as disjointed, fragmented and uncoordinated as provided by the 45 DSD participants, meanwhile, some of DSD actors described the nature of SCIfs as partially jointed and/or jointed and other similar description were found to be the exact account gathered in the data collection (see for example Pratt, 2006).. Also, some of the SCIfs developed and constituted in the construction industry in Ghana are further described as partially disjointed, partially fragmented and incoherent are not disapproved by the participants (see for example Pratt, 2006).

7.7.1.5 The issue of how the processes and procedures used in developing and constituting SCIfs function to affect the DSD activities in Ghana.

Under this objectives the textual data provided by the 45 DSD participants in this study involved how the processes and procedures were used in developing and constituting SCIfs function to affect the DSD activities. The findings from the text data in summarised forms were made available to the validation participants for comments on issues concerning this objective in Tables 6.7; 6.8; 6.9 and 6.10 of the

results presented and discussed in sections 6.8.5, 6.8.5.1, 6.8.5.2 to , 6.8.5.3 of chapter six (Golafshani, 2003).

7.7.1.5.1 Participants comments (feedback) on objective five

In addition, the validation outcome of ‘member check’ supported findings that there was a malfunctioning of the processes and procedures used in developing and constituting SCIFs. This was as a result of the fact that seven out of the eleven attributes in the research findings were identified as critical attributes adversely describing how the processes and procedures used in developing SCIFs function. Also five of the seven critical attributes which included 'unsystematic', 'insufficient details', 'inconsistent or use of outmoded methods', 'sub-standards with gaps or no standard for supply chains', and 'use of weak incomplete supply chains', support what have been revealed in the findings (see for example Pratt, 2006). These findings and others for the objective three were accepted with some suggestions and recommendations for the conduct of further research in the area like ‘the evaluation of processes and procedures used in developing and constituting SCIFs to find out why there was malfunctioning’(see for example Pratt, 2006)..

7.7.1.6 The attitudinal behavioural and technical knowledge required of the DSD actors for the development of a collaborative business relationship management improvement proposals to improve the DSD activities in Ghana.

Similarly from the textual data provided by the 45 DSD participants helped to obtain the findings involving

attitudinal behavioural and technical knowledge required of the DSD actors for the development of a collaborative business relationship management improvement proposals to improve the DSD activities.

The findings from the text data in summarised forms were made available to the validation participants for comments on issues concerning the objective in Tables 6.11 and 6.12 of the results presented and discussed in sections 6.10, 6.10.1, 6.11 to , 6.11.1 of Chapter Six (Golafshani, 2003)..

7.7.1.6.1 Participants comments (feedback) on objective six

Most of the participants, after following the presentation on this last objective, consented that, though there were twelve critical attitudinal behavioural attributes out of 23 identified from the study emerging as very relevant to the improvement of collaborative business relationship among DSD actors, the others should not be played down or neglected. Besides, they held the view that DSD actors identification of 'continuous collaboration', 'trust', 'effective communication' and 'openness'; 'commitment', 'respect for each other DSD actors' and 'self-discipline/diligence' were useful attributes obtained (see for example Maxwell, 2008; Pratt, 2006).. Also, according to them proper application of 'humility in acquisition of knowledge' 'willingness for continuous coordination improvement' and 'continuous professional development', and 'time consciousness' and 'professional integrity' could help bring improvement in DSD professional practice

On the other hand, concerning the critical technical attributes which emerged from the study for adoption to improve collaborative business relationship among DSD actors, the participant judged them as useful attributes through which required improvement can be realized. In their view, other technical attributes such as inter-professional focused discussions on SCIIs at DSD workshops, seminars, fora and meetings for reviews and feedback and debriefing', would all enhance the desired improvement of DSD activities. Further, the participants confirmed that issues or attributes as 'built environment experts' common forum for planning and programmes', 'inter-professional business relationship management development', 'continuous search for all clients' inputs and satisfaction', 'financial benefits, awards/ professional fees' were relevant and should be addressed adequately (see for example Maxwell, 2008; Pratt, 2006). .The 'documentation and record keeping experiences', 'leadership, authority and ethical issues', 'securing of contractors' and sub-contractors' design inputs' and 'decisions on SCIIs auditing or vetting' were all

essential issues that they agreed should be part of the DSD transformation process (see for example Maxwell, 2008; Pratt, 2006)..

7.8 Participants' Comments on the Research Findings for the Improvement Proposals

The participants were of the view that the stringent eligibility criteria employed purposively to select the nine different professional groups of five DSD actors for each group in the study enhanced the dependability and credibility of the findings and their subsequent use in the improvement proposals. They also commented that the developmental stages of it showed that the application of the findings made the improvement proposals reliable for use (see for example Maxwell, 2008; Pratt, 2006).. The validation study provided responses through the discussions and suggestions carried out by the participants. The responses were classified under appropriate validation headings which included: “Collaborative working and construction business relationship processes and procedures in the improvement proposals”, “Linkages and possibility of regular flow of relevant design information in developing SCIFs for the improvement of the DSD in the improvement proposals”, and “Effectiveness and efficiency in developing SCIFs for quality and timely construction design service delivery”. Others were “Dependability of the findings for improvement of DSD activities through the improvement proposals”, “Credibility or Trustworthiness of the findings for its continuous application in developing SCIFs to improve the DSD activities” and “transferability of the findings to be used in developing SCIFs for the improvement of other DSD activities” (see for example Pratt, 2006; Golafshani, 2003). These classifications are put under validation decisions and confirmations of the research findings for the development of improvement proposals,

7.8.1 Validation Decisions and Confirmations on the Research Findings for the Development of Improvement Proposals

The following concern the participants' decisions and confirmations on the research findings and the framework presented. The comments involved their assessment of the findings for the objectives and their

subsequent applications in the stages of the improvement proposals (see for example Maxwell, 2008; Pratt, 2006).

7.8.1.1 Collaborative Working and Construction Business Relationship Processes and Procedures in the Improvement Proposals

The participants felt that by the use of the findings on collaborative working and business relationship, all the different DSD actor groups will be brought on board at the conceptual, initial and final stages of projects. According to them, this will be possible through the workshops, fora; seminars; meetings and other such issues provided in the framework to offer equal opportunities for free inputs (see for example Pratt, 2006; Golafshani, 2003).. They considered this situation as a possible clear channel through which the improvement proposals would assist in providing rapid open flow of information to develop and constitute the SCIFs for the improvement of the DSD activities. The participants also identified that through the meetings and discussions allowed for in the improvement proposals system, the improvement proposals would offer another equal opportunity for the different actor groups to come together with the aim of working in collaboration to achieve not only effective SCIFs but also continuous improvement in business relationship (see for example Pratt, 2006; Golafshani, 2003)..

7.8.1.2 The Linkages and Possibility of Regular Flow of Relevant Design Information in Developing Effective and Efficient SCIFs for Continuous Improvement of the DSD in the Improvement Proposals

The views of the participants were that, through workshops, fora, meetings seminars and others, it was possible for the different DSD actor groups to form strong useful collaborative linkages for regular flow of relevant design information to develop effective SCIFs (see for example Pratt, 2006; Golafshani, 2003).. Besides, participants noticed that the improvement proposals had links that drew all the different DSD actors as part of the initial and final SCIFs developmental process effectiveness and efficiency. This offered actors the chance to contribute to designs and be heard. It was further realised by the participants that a co-ordinator or a facilitator to channel information to DSD actors provided in the improvement proposals was also very useful. According to them transfer or information flow may effectively happen at the traditional, short, medium and long-term periods as allowed in the improvement proposals system (see

for example Maxwell, 2008; Pratt, 2006). Free comments that can occurred at SCIfs meetings, fora, seminars and evaluations and the provision for regular audit in the improvement proposals offer all the DSD actor group equal opportunity to provide their design comments for the development of the SCIfs. However, they had difficulty with how small DSD professionals would relate effectively. This difficulty according to them could be overcome by initial identifications of individual different professions or groupings of different professionals one would like to develop and constitute the SCIfs, based on performance and business relationship factors only.

7.8.1.3 The “Effectiveness and Efficiency in Developing SCIfs for Quality, Timely and Value for Money Construction Design Service Delivery”.

Participants consented that it was possible to develop and constitute effective and efficient SCIfs through collaboration of all different DSD actor groups introduced in the improvement proposals for quality, timely, value-for-money and sustainable DSD activities (see for example Pratt, 2006; Golafshani, 2003).. They were of the view that there were opportunities to be derived from the workshops, seminars, fora and regular audit of the SCIfs work, which would provide technical inputs to develop and constitute properly completed SCIfs finality. They recommended that initial effective collaboration will be necessary during and after the transitional period to enhance pre and post contract planning and programmes prepared from the workshops, seminars, fora and meetings. The validation participant accepted that the attitudinal behavioural and technical knowledge to be applied by the different DSD actor groups as provided in the improvement proposals would cause effective collaboration and sustainability of business relationship(see for example Maxwell, 2008; Pratt, 2006).. This was identified as a process that could bring continuous improvement in the DSD activities throughout the five different periods indicated in the improvement proposals. The DSD actor groups were brought together on time, at the conception and planning stages of the design. The improvement proposals allowed effective sharing of inputs as it was required according to the findings for attitudinal behavioural and technical knowledge as appropriate for DSD activities

7.8.1.4 Dependability of the Findings for Improvement of the DSD Activities through the Improvement Proposals

From the participants' views, the improvement proposals showed clearly how collaborative working process could be realised through cordial business relationship by the adoption of the attitudinal behavioural and technical attributes obtained through the study. The participants identified that by the flow process of the attributes of findings used in developing the framework, a reliable system could be followed to realise the desired attitudinal behavioural change of DSD actors (see for example Pratt, 2006; Golafshani, 2003). They also considered the improvement proposals as dependable based on the introduction and implementation stages developed. Some of the participants were of the view that legal or regulatory rules would help its enforcement.

The improvement proposals was developed to benefit from inputs made available by all DSD actor groups concerned. As such, both the attitudinal behavioural and technical challenges revealed by the research can be addressed. The improvement proposals arrangement offered open chance for the DSD actors to become well-motivated, respect each other and confidently use their professional inputs to achieve reliable continuous improvement of the DSD. Besides, they were of the view that the detrimental competing interest of DSD actor groups would be reduced or overcome through the adoption of more of collaborative issues possibly in the short-term and medium term periods. It was accepted after some length of discussion that the attitudinal behavioural and technical knowledge used for the improvement proposals would permit participation and transparency in gathering reliable free inputs in developing and constituting of the SCIfs as well as bring consensus and respect among the DSD actors as shown by the findings (see for example Maxwell, 2008; Pratt, 2006)..

7.8.1.5 The Details on the “Credibility or Trustworthiness of the Findings for Its Continuous Application in the Improvement Proposals”.

The findings were discussed, the researcher questioned on methods, the processes and procedures used, with participants systematically assessing the findings as part of the ‘member check’ explained earlier. Evidence produced at the end of their validation of both the findings and improvement proposals indicated that the results of the study were credible and could be trusted for further work or other applications (see for example Maxwell, 2008; Pratt, 2006). They were encouraged by the continuous collaborative activities that the framework can indeed be produced among the DSD actors. They became convinced that by the feedback channels introduced in the improvement proposals, continuous collaboration would be realized to improve the DSD situations especially on proper adaptation of the improvement proposals for the improvement of DSD work. They were also of the view that since there was trustworthiness in the findings, continuous improvement was possible through the regular auditing spelt out in the improvement proposals. The improvement proposals itself also provided possible ways through which it could be utilized to enhance increase in professionalism (see for example Pratt, 2006; Golafshani, 2003). According to participants, self-motivation and some benefits would be necessary for achievement of continuous effectiveness and efficiency of the SCIIs in adopting the improvement proposals. Provisions were therefore made at the various stages of the processes and procedures used in the improvement proposals (see for example Pratt, 2006; Golafshani, 2003).

It further became obvious that improvement and continuous improvement in DSD activities were possible through feedback allowed by the improvement proposals. The free sharing and transferring of feedback was noticed in the improvement proposals as a way of readily making available information for developing and constituting effective and efficient SCIIs. According to participants, trustworthiness was shown in the processes and procedures used in gathering the attributes. Therefore, inclusion, the participants were of the view that the improvement proposals provided sufficient information for the DSD professionals to collaborate for increase and large volumes of national and international project works and

derive large benefits. However, there was one isolated case where the actor felt there should be further elaboration of the non-collaboration problem in the improvement proposals. This concern had been addressed by creating a gap to indicate the issues for or which need better understanding.

7.8.1.6 Transferability of the Findings Used In Developing Effective SCIfs in the Improvement Proposals for Improvement of Collaborative Working in Other DSD Activities

Participants identified that the findings used in the improvement proposals could be adopted in other DSD working situations apart from the pre- and post-contract designs service works. The findings could be tried in other areas of work. According to them, for instance, the findings could be reframed into a regulatory improvement proposals for the different DSD actor groups' professional activities (see for example Maxwell, 2008; Pratt, 2006).. Further, they were of the view that, findings could be of hand down issues and concepts, which could be used for other improvement proposals for those working under professionals, such as technicians including other human resources in DSD to streamline their activities. Also, it was recognized that the findings could become part of an academic discipline area to change conduct of collaborative working among other engineering groups (see for example Pratt, 2006; Golafshani, 2003).. The participants agreed that there was the need for legislation to increase its transferability and adoption among the DSD actor groups' and other professionals since these were critical issues. In the participants' view, the DSD actor groups needed to consider the improvement proposals as policy or principles that guided the effective and efficient development of SCIfs. For easy transferability and adoption of the concepts of the findings used in processes and procedures, there was the need for some level of flexibility on the part of the users. This kind of flexibility would help the improvement proposals to gain the ability to adjust to various work situations and suitability encompassing different SCIfs been developed and constituted for the improvement of DSD activities (see for example Pratt, 2006; Golafshani, 2003).. According to participants, the adjustments based on feedback in the use of the improvement proposals would help identify linkages that would allow interrelated collaborative working among the different DSD actor groups. Such conditions would let the

improvement proposals continue to be of benefit in developing and constituting other SCIfs. By their 'member check' assessment, it was possible to develop and constitute other effective and efficient SCIfs using the same improvement proposals as the improvement proposals had adoptable and flexibility characteristics. Therefore, once it worked for some SCIfs it could work for others with minor changes or none (see for example Maxwell, 2008; Pratt, 2006).

7.9 Summary

The DSD participants commented that, starting with the investigation into the understanding of conceptual and theoretical bases of the adversarial business relationship situation before following it up with its effects on SCIfs and nature of SCIfs, it was a good start for the investigation into the topical area. According to them, the effort made to uncover the issues surrounding the conceptual and theoretical bases and characteristics of the adversarial business relationship, the effect on SCIfs and the nature of the SCIfs were a dependable approach and are beneficial to the business relationship intercourse among the different DSD actor groups. Also, in their view, the findings of the nature of the SCIfs such as 'disjointed' and 'fragmented' among others confirmed the conceptual and theoretical bases and characteristics of the adversarial business relationship situation. These relationship situations were found to be ranging from 'no collaboration' to 'close-to-average collaboration' situation and with characteristics such as 'lacking harmonization of professional work and good business relationships among others.

The participants commented that the first four objectives following each other which tried to show the way the construction business relationship was adversarial and harsh, been a challenging situation that slowed down performance. They were also of the view that the business relationship has damaging consequences on the effectiveness and efficiency of the SCIfs. They, in their discussion, agreed that the findings were the true reflection of the situation on the ground and urged that further research should be carried out in the area to unearth more about the construction business relationship in the Ghanaian construction industry.

Regarding how the processes and procedures used in developing and constituting the SCIfs function, participants unanimously supported the findings that there were malfunctioning challenges facing the whole documentation processes and procedures. Some of the participants were quick to mention that the situation could be addressed through proper legislation and careful enforcement of the law. They recommended that further research should also be carried out to increase the awareness level for action to be taken to overcome these DSD challenges. The participants also asserted that the attitudinal behavioural and technical knowledge attributes such as trust, continuous collaboration, openness etc., were the right findings that could produce sustainable attitudinal behavioural changes or transformation. They noted that the attributes acquired in the findings could be useful in transforming the non-collaborative working and adversarial business relationship or business relationship failure cycle, only if the different actor groups willingly adopted the attributes. This would then cause the attitudinal behavioural and technical knowledge attributes to reshape DSD professionalism by conforming to the set of attitudes and behaviours identified in this study. The situation of conformity to the set of attitudes and behaviours according to the participants would prevent or reduce vulnerability of the individual professions from breaking down harmonious, cordial business relationships or be entangled in business relationships failure cycle. The responses from participants confirmed that the attitudinal behavioural and technical attributes used at the various stages of the improvement proposals evidently illustrated that a proper application of it would result in collaborative working and cordial harmonious business relationship among DSD actors in developing and constituting the SCIfs.

Comments that were gathered on the linkages and possibility of regular flow of relevant design information in developing effective and efficient SCIfs were positive. For continuous improvement of the DSD through application of the improvement proposals, the participants were of the view that DSD activities of auditing the SCIfs could reduce the harsh and adversarial business relationship and its negative impact. These would occur through proper share of information and interaction linkages and associations provided in the arranged improvement proposals system. The participant agreed that the

improvement proposals system had made available arrangements, feedback and audit mechanism to provide effectiveness and efficiency in developing and constituting SCIfs for quality, timely and value for money construction design service delivery work. They consented that findings for the improvement proposals were dependable and could produce the necessary improvement in DSD activities. Besides, the comments offered by the participants concerning the details of using the findings in developing the improvement proposals reveal the connections between research objectives and the solutions sought by the improvement proposals. These connections between the objectives and the improvement proposals solutions demonstrated credibility or trustworthiness of the findings for its continuous use in the improvement proposals to develop SCIfs for the improvement of the DSD activities.

Finally, after a careful discussion, exhausting issues extensively on the transferability of the findings used in developing effective SCIfs, the participants felt the findings were appropriate and can be made available for DSD activities improvement. Conclusions made by the participants indicate that the findings used in the improvement proposals in Chapter Eight that follow could improve collaborative working among the DSD actor groups and reduce harsh or adversarial business relationship in developing and constituting SCIfs. Agin, it could be tried on collaborative business relationship development in other construction and engineering works.

CHAPTER EIGHT

PROPOSALS FOR IMPROVING BUSINESS RELATIONSHIP IN DESIGN SERVICE DELIVERY (DSD) ACTIVITIES

8.1 Chapter Outline

This chapter consists of improvement proposals which seeks to improve business relationship in developing and constituting effective and efficient SCIFs in design service delivery activities. To shape the direction of the improvement proposals, pre-conditions for its development and relevant definitions are introduced. Furthermore, the content of the improvement proposals embraces all identified theories, concepts and other issues essential in the improvement of the DSD activities. These are followed by the critical attributes of the DSD challenges obtained from the study. Further, carefully considering the DSD challenges, the content of the improvement strategies in the improvement proposals are structured in the following manner. The critical attributes of the attitudinal behavioural and technical knowledge for the improvement of the DSD activities are discussed. Also the specific improvement strategies involving the processes and procedures are dealt with for the realization of the best expected optimum outcome. These are followed by the illustration of how multi-theorization and critical transformational issues acquired from the relevant literature and findings can produce improvement in DSD activities. In ending the chapter, the expected improvement and consequences are presented before the summary.

8.2 Pre-Conditions for the Development of the Improvement Proposals

In the study of the design service delivery (DSD) activities, theories used for the improvement proposals include the action theory, the system theory, system thinking and rethinking discussed in chapter four sections 4.2.1 to 4.2.5. The Action Theory (AT), for instance, is used to structure the improvement proposals because it helps to identify and illustrate the unfavourable pre-conditions or barriers to improvement of the DSD activities (Axelsson and Goldkuhl, 2003). These pre-conditions include the

bases of adversarial business relationship in Table 6.3, its effects in Table 6.4, characteristics of the nature of adversarial business relationship in Table 6.5 and the nature of SCIFs in Table 6.6 all in the results presented in chapter six. Furthermore, the greater proportion of the text data presented in this results have been described as business relationships ranging from “no collaboration” to “close-to-average collaboration”. Again results on characteristics of the nature of the CBR and the nature of the SCIFs developed are described by attributes in Table 6.5 and 6.6 in Chapter Six and supported with pareto charts in figures 6.1 and 6.2 respectively. Besides, the attributes are ranked using the pareto plots to identify the critical attributes for the improvement proposals. The pareto plots in Figures 6.1 and 6.2 offer an opportunity to consider the inclusion of the critical attributes which are generally negative and are challenges that call for improvement at every stage of the improvement proposals as demonstrated in the flow chart in Figure 8.1 in Chapter Eight. Some of such negative critical attributes causing the pre-conditions which require remedy include “information flow is not very well coordinated”, “lacking harmonization of professional work and good business relationships” and “disjointed” and “fragmented” SCIFs among others on the various tables from Table 6.3 to 6.6 in Chapter Six. Most of these critical attributes suggest that there are adversarial business relationships challenges of record levels, with total frequency of 69%. The business relationship situation reveal that the extent of collaborative work among the DSD actors is not up to average. The best recorded in the data collected describe the relationship as close-to-average collaboration. This shows that there are huge collaborative problems to be tackled among the DSD actors before national infrastructural development can realize continuous improvement.

Additionally, evidence from the study shows that there is malfunctioning of the business processes and procedures used in developing and constituting the SCIFs. This malfunctioning is also another unfavourable pre-condition. The business processes and procedures currently being used vary among the DSD actors and are open to different problems which affect national infrastructural development (see for example Anim, 2012; Hawkins, 2011). There is no acceptable, common standardized processes and procedures in developing and constituting the SCIFs or a common format, reviewed regularly for the

entire DSD groups work to improve the DSD activities (see for example Tattersall, 2013; ISO, 2008). These challenges occur due to lack of outsourcing for best standardized business processes and procedures in developing and constituting the SCIFs (Tattersall, 2013). In addition, there is failure in carrying out due diligence in investigations about the functioning challenges of the existing processes and procedures used.

Other unfavourable pre-conditions besides the business relationship situation are cultural challenges such as individualism and professional autonomy, which help to keep the DSD actors apart creating non-collaboration as indicated in the text data explaining the organizational profile in Tables 6.2 of section 6.3 (Orgen et al., 2012a; Gouveia and Ros, 2000; Hofstede, 1982). DSD actor groups working as individuals coupled with ethnic culture was evident during the interviews. Out of the thirty-six private organisations, visited, twenty-eight were owned by individual DSD actors. Also in the private organizations, staff was mostly of one ethnic group. These provide evidence to signify that the DSD actor groups more lean to Hofstede's cultural dimensions of the individualists' stance or pole that accepts independence and personal autonomy. This situation encourages professional autonomy whereby the DSD actors prefer individual ownership of organisations rather than the collectivist stance or pole, which look for more collective ownership of organizations and environment where ties between members are strong (Bredillet, 2009).

Additionally another difficulty is the harsh or adversarial business relationships that lead to discords, disputes and conflicts (DDC), which are strengthened by the traditional procurement practices commonly used (Laryea, 2010; Anvuur et al, 2006; Axt et al. 2006; Yiu, and Cheung, 2006). Lessons and experiences of DSD professionals in the use of the traditional procurement system over the years reveal the architect as the lead professional, yet none of the actors bear the responsibility and risk of defeats or defaults for the client. This development provide grounds for GCI to be characterised by non-collaborative working and adversarial business relationships (Ahadzie, 2007; Anvuur et al., 2006). The

government Public Procurement Law, 2003 (Act, 663) introduces the Project Manager as the lead professional to coordinate and remedy the situation (Ahadzie et al., 2012). The law is a comprehensive legislative instrument intended to correct the shortcomings such as the harsh and adversarial relationship inherent in the public procurement system and its associated organizational weaknesses in Ghana (Ahadzie et. al., 2012; Ameyaw et al., 2012) as discussed in section 2.4.4 in Chapter Two. This interventional effort of the government, however, has encountered challenges due to the perceived widespread corruption in the current procurement activities exacerbated by adversarial business relationships, ethnic culture and other social groupings, shown in the literature review in Chapter Two and Three or/and in the results of this study presented in Chapter Six or in both (Ameyaw et al., 2012; Laryea, 2010).

The foregone pre-conditions put forward, coupled with both attitudinal behavioural and technical challenges, encourage DSD business failure cycle mentioned in Chapter Two Section 2.4.4.1 (Jaffar, et. al 2011; ISO, 2008; Humphries and Wilding, 2004). The challenges disturb and distort the effective and efficient development of the SCIFs for the improvement and continuous improvement of DSD activities. According to the study business failure cycle occur because majority of the DSD actor groups' input and output are indirectly or directly excluded from the developed and constituted SCIFs. There are design information, which sometimes reach or are requested from other DSD actors late when the work has advanced to the final stage or when that aspect is completed even on project site (see for example Owolabi et al., 2014; Fugar and Agyakwah-Baah, 2010).

This situation contributes to incomplete, weak or baseless SCIFs. The results of such SCIFs lead to infrastructure defects and loss of investment- where infrastructure fails to perform its intended functions. Production using such SCIFs are often of poor quality, ineffective cost and time overruns become rampant in DSD activities (see for example Owolabi et al., 2014; Ssegawa-Kaggwa et al., 2013; Laryea et al., 2012; Jaffar et al., 2011). The reoccurrence of this situation ends in the collapse of structures or

production of structures that serve as ‘construction death traps’ (see for example Ghana Institution of Surveyors, GhIS, 2012). These are accompanied by unhygienic, structurally unsafe building conditions and situations in which single-storey and multi-storey structures or high rise buildings are developed. Most of the time proper building standards, code of practice and bye-laws are not followed according to the results.

8.5 Adopted Definitions for the Development of the Improvement Proposals

In the development and construction of the improvement proposals, the following improvement and continuous improvement definitions are used. These definitions are appropriate for the aim of the improvement proposals and to distinguish the kind of improvement required for the improvement proposals other specific details of definitions used in the improvement proposals are captured in the working definition of the study.

8.5.1 Improvement

It is an organization of or an engagement in a one-off quality improvement of project, like DSD project activity (Park et al, 2013). Also improvement can be expressed as concerns for two issues, structured product development and unstructured reduction of chronic waste (Park et al, 2013; Bhuiyan, and Baghel, 2005).

8.5.2 Continuous Improvement

This term is defined on the basis that continuous (quality) improvement is a way of organizing day-to-day activities, incorporating quality improvement in individuals in the system (Park et al, 2013; Meng, 2010; Pryke, 2009). The word “continuous” is used along with improvement which signifies quality. In this sense, quality improvement can be divided into three: i. the degree of occurrence of quality improvement,

for instance in the DSD activities ii. The maturity and acceptance levels in the use of continuous improvement principles by the various DSD actor groups and iii. The degree of being able to establish laid down rules and regulations for the DSD entity processes and procedures. These illustrate the fact that continuous (quality) improvement requires regularity and constancy. Continuous improvement in an entity is not one-off quality improvement project. It is generally understood that “continuous” requires regularity and high frequency. However, the frequency of improvement is in itself insufficient to classify an organization as conducting continuous improvement. There should be with it, an action plan of facilitating system (monitoring and assessment) (Park et al, 2013; Bhuiyan, and Baghel, 2005).

8.5.3 Working Definition of the Study for the Improvement Proposals

An attitudinal and behavioural change of the DSD actors working relationship culture (personal and industrial), which will allow development of long-term fruitful collaborative working, inter-professional harmonious, cordial business relationship (business relationship that extend beyond non-contractual and sociocultural boundaries). This change of DSD actors working relationship focuses on change of ‘mind set’ of all the different actors for joint goals in producing and using the supply chains of information flow (chain of documentations) with mutual respect. Thus it is to realise business relationship involving the use of factors such as trust, openness, and commitment for free exchange of project information among the actors, for improvement and continuous improvement in procurement of design service delivery works and for fair and impartial benefits to all the DSD actors.

8.6 The Findings (Preconditions) from the Study which Necessitated the Development of the Improvement Proposals

At this developmental stage of the improvement proposals the textual and critical attributes causing the challenges identified through the research are adopted, including the following:

8.6.1 Textual information illustrating the challenges among the DSD actors and in DSD activities

This concerns challenges of the bases of adversarial business relationship in the construction industry issues such as “information flow is not very well coordinated”, “difficult to get information flow among practitioners” and “inflow of information comes with difficulty; practitioners do not work together” among others presented in Table 6.3.

8.6.2 Textual information illustrating the challenges on the SCIfs developed and constituted by the DSD actors

This concerns challenges of the effects of the adversarial business relationship on SCIfs which the DSD actors develop such as “reduces quality of SCIfs and make DSD less cost effective” and “causes delays in DSD activities, disturbing improvement in DSD time schedules” among others; presented in Table 6.4.

8.6.3 Critical attributes showing the characteristics of relationships among the DSD actors developing and constituting SCIfs

This concerns challenges of the characteristics of the adversarial relationship among DSD actors which include “lacking harmonization of professional work and good business relationships” and also being “hostile, frustrating, full of tension and conflicts” among others; presented in Table 6.5.

8.6.4 Critical attributes describing the nature of the SCIfs in the DSD activities

This concerns challenges of the nature of the SCIfs developed and constituted including disjointed, uncoordinated, fragmented and jointed (having parts that fit together and moving as a whole) among others presented in Table 6.6 in Chapter Six. From the study, the business relationship situation in developing and constituting the SCIfs are found to be in three categories: non-collaborative, less collaborative and close-to-average collaboration. The resulting effects include poor performance and lack of improvement in DSD activities. The business situations show high levels of non-collaborative working and harsh or adversarial business relationship. This business situation partly contributes to the poor nature of SCIfs developed and constituted and it leaves a huge relationship problem in the DSD activities (see

for example Hawkins, 2011). Again this relationship problem also contributes negatively to the functioning of the processes and procedures used in developing and constituting the SCIFs as results in the preceeding Section 8.6.5 show (see for example Hawkins, 2011). Therefore the results are aspects of the preconditions that necessitated the development of the improvement proposals.

8.6.5 The Functioning of the Processes and Procedures for SCIFs

Three issues are involved: functioning, business relationships and the effects of the functioning of processes and procedures in developing of the SCIFs.

8.6.5.1 Critical Attributes causing Malfunctioning of the Processes and Procedures

The study reveals that there is malfunctioning of the processes and procedures used in developing and constituting of the SCIFs. The critical attributes used in describing the malfunctioning of the processes and procedures include: “unsystematic”, “insufficient details”, “inconsistent or use of out-moded methods”. The processes and procedures for SCIFs are also described as “sub-standards with gaps or no standard or no supply chains” including the “use of weak incomplete supply chains” and “non-compliance of legislation, rules/regulations”. The critical attributes primarily show that there is non-collaborative working or obvious lack of coordination among the DSD actors. However, some limited processes and procedures are found to be “systematic” in developing some of the SCIFs. The pareto plot Figure 6.3 has distinguished the critical attributes from others presented in Tables 6.7. These are also preconditons confirmed by textual information in Table 6.8 of Chapter Six.

8.6.5.2 The Effects of the Functioning \of Processes and Procedures

It is noticed that there is malfunctioning of the processes and procedures used in developing and constituting the SCIFs. The critical attributes describing the effects of the malfunctioning of the processes and procedures used in developing the SCIFs include: “pressure on timelines causing delays” and

“difficulties in cost control- cost overruns”. Other critical attributes describing the effects of the functioning of the processes and procedures involve “insufficient share and flow of information” and “poor quality of work”. The remaining critical attributes describing the effects of the functioning of the processes and procedures are “lack of continuous smooth effectiveness and efficiency in delivery” and “difficulties in meeting delivery review/audit dates” are distinguished from the others using the pareto plot in Figure 6.4. These effects get DDC firmly grounded and deepened as they pass on or are identified in a cyclic order confirmed by the textual data obtained from the DSD actor groups and presented in Tables 6.9 and 6.10. However, such DDC cycles in developing and constituting SCIFs are detrimental to collaborative working, cordial and harmonious business relationship for the improvement of the DSD activities. To overcome these challenges the critical attributes for the right professionalism and technical knowledge are essential for the improvement of DSD activities.

8.7 Critical Attributes Identified as Drivers for the Improvement of DSD Attitudinal Behavioural and Technical Knowledge

The issues concerning the attitudinal behavioural and technical knowledge are two: professionalism and technical knowledge.

8.7.1 DSD Professionalism (Attitudes and Behaviours for Collaborative Working Relationship)

Professionalism that creates a culture of DSD actors “collective ownership” that will make them develop and constitute effective and efficient SCIFs is required in the improvement proposals to provide solution to the business relationship problem identified (see for example Hawkins, 2011). Again this kind of professionalism should involve right attitudes and behaviours, which can improve the DSD activities (see for example Mullins, 2005; Hammer, 2000). Further “collective ownership” which would let the DSD actors feel part of the processes and be responsible for the SCIFs developed and constituted throughout any project delivery is recommended.

Additionally “collective ownership” which gives the DSD actors a sense of belongingness in the development of the SCIFs and forces the actors to work to achieve a business relationship success cycle is important aspect of the focus of the improvement proposals (see for example Hawkins, 2011; Humphries and Wilding, 2004). These “collective ownership” ideas are turning points which can move as collaborative business relationship focus of the actors from one business relationship level (period) to the other. Such movement of DSD actors from one business relationship level to the other based on right applications and gains from the results of the attitudinal behavioural attributes in Table 6.11 can be assessed using the assessment conceptual framework in Figure 4.3 in Chapter Four. The assessment result can be considered a success where there is improvement in a level (period) and/or where continuous improvement in the DSD activities occur in various levels throughout the delivery (see for example Park et al, 2013).

The pareto plot in Figure 6.5 is used to differentiate critical attributes from the others, using the results presented in Table 6.11 in Chapter Six. Critical attributes obtained describing the attitudinal behavioural knowledge, which can demonstrate such professionalism include: “continuous collaboration”, “trust”, “effective communication”, “openness”, “commitment”, “respect for other DSD actors” and “self-discipline/diligence. Other critical attributes describing the attitudinal behavioural knowledge involve: “humility in the acquisition of knowledge”, “willingness for continuous coordination improvement”, “continuous professional development”, “time consciousness” and “professional integrity”. These critical attributes form the core of professionalism and are used here in the improvement proposals for the DSD actor groups’ attitudinal behavioural transformation. This kind of professionalism has potential or capacity to eliminate or reduce considerably, non-collaborative working and adversarial business relationship as shown in Figure 8.1. Additionally effective use of the attributes would also mitigate the effects of DDC and allow for fruitful collaborative working and harmonious, cordial business relationship. These situations can produce the required improvement and continuous improvement in the DSD activities.

8.7.2 Technical Knowledge for the Development of the SCIfs

This technical knowledge concerns common business issues that demand general understanding and decision for collaborative, cordial and harmonious business relationship. The technical issues are divided into four: issues that carry uncertainty in project delivery, issues that demand engineering clarifications, interpretations and explanations; issues that concern unrealistic clients and representatives' demands and relationship issues (Jaffar et al., 2011; Clements and Gido, 2006).

The pareto plot in Figure 6.6 is used to differentiate critical attributes from the others, using the results presented in Table 6.12 in Chapter Six of this study that describe examples of the technical knowledge required for the improvement of DSD activities. These include: “inter-professional focused discussions on SCIfs (chains of project documentations) at DSD workshops, seminars, fora and meetings for reviews feedback and debriefing”. It as well involves “built environment experts’ common forum for planning and programmes”; and “inter-professional business relationship management development”. Other critical attributes, describing the continuous search for all clients’ inputs and satisfaction include: “financial benefits, awards/professional fees” and “documentation and record keeping experiences”. The remaining critical attributes are “leadership, authority, ethical issues”, “securing of contractors and subcontractors design inputs” as well as decisions on SCIfs (chains of project documentations) auditing and vetting”. Proper handling of these critical attributes under the appropriate technical issues would help to overcome or reduce DDC and lead to fruitful collaborative working and harmonious, cordial business relationship which has the potential to achieve effective and efficient SCIfs for the improvement of DSD activities.

8.8 Specific Improvement strategies for DSD and its processes and procedures

At this improvement stage of the development of the improvement proposals where the pre-conditions, associated challenges and DSD improvement drivers like critical attributes for attitudinal behavioural and technical knowledge have been identified, the action theory is further used. The next step after the pre-conditions is to consider the action or series of actions to be taken (Axelsson and Goldkuhl, 2003). This

further step in using the action theory requires a choice for the intended action or series of actions to be taken (Allwood, 1995).

8.8.1 Participants Expected to be using the Improvement Proposals

It is vital at this point that DSD actors (DSD practitioners and contractors) who require transformation have a change of ‘mind set’ and take collective actions (act together) with “We-intention and We-goal.” (see for example Seebass, 2008) They should face up to the challenges identified in the pre-conditions responsibly by planning for fruitful collaborative working and business relationship. They should also plan for the additional cost that improvements will require. It is equally important that DSD actors rethink of the new working attitudes and behaviours of professionalism for the improvement of the DSD activities (see for example Hammer, 2000). The DSD actors should as well demonstrate commitment and enthusiasm for the development of harmonious, cordial business relationship to improve DSD activities. Such commitment must be beyond the funding they provide for the improvement and continuous improvement programmes (Deming, 2008). These efforts are to be planned to overcome or mitigate the effects of the pre-conditions that produce non-collaborative working and harsh or adversarial business relationship as shown in Figure 8.1. The actors include: Project managers (PM), Architects (Arc), Quantity Surveyors (QS), Services Engineers (Ser Eng.), Structural Engineers (St Eng), and Geo-technical Engineers (Geotech. Eng), Geomatics Engineers (Geo Eng), Planners (Pl) and Contractors (Cont.).

Actors, therefore, need to understand that harmonious and cordial business relationship building to improve DSD activities demand time, attention and other resources (Ekman et al., 2013). These business relationship improvement requirements may vary due to human or technical situations and other related issues (Jaffar, et al., 2011). For instance, such variations may occur because of individual actors’ differences: technological, knowledge or working output or capacity differences (Ekman et al., 2013). However, there should be concern for others such that despite whatever differences, the harmonious, cordial business relationship will thrive (Pryke, 2009). It is accepted that it may be difficult to have such a

capacity for the improvement and continuous improvement of the DSD in all situations (Ekman et al., 2013). For that matter, the situations will call for the use of facilitators. They are the ones who have capabilities and experiences that such human and technical resources are not evenly distributed around all the offices/sites or among the DSD actors and should be nurtured and used for the harmonious business relationship (Cheung and Rowlinson, 2005).

8.8.2 Place for the DSD Socialization Process

For the improvement strategies to gain the appropriate grounds in the day-to-day DSD activities, there is the need to understand the stages of DSD socialization process which the DSD actors pass through (Mullins, 2005). In any DSD complete socialization process, there are four major stages noted in the literature that the DSD actors should learn at the various working places. These stages involve: Planning, Sourcing, Making and delivering of the SCIfs as the actors go through DSD work socialization process at various DSD offices and sites as indicated in Figure 8.1 (Yeo and Ning, 2002). Figure 8.1 present step by step approach identified by Yeo and Ning (2002) in the supply chain operational reference (SCOR) model as Plan-Source-Make-Deliver building blocks shown in Figure 3.2 of Chapter Three, Section 3.2.2. These stages of the model are important to overcome the critical attributes forming the challenges (pre-conditions) and to assist the actors gradually to attain the required professionalism as well as to apply the technical issues necessary in each of the four stages as proposed by the SCOR model in the DSD socialization process. These stages in the socialization process will equip the DSD actors to understand, build capacity and gain experiences in each of the stage to overcome or reduce the non-collaborative working and harsh or adversarial business relationship. This will allow the long-term benefits to emerge for the actors and the clients in construction project deliveries (Cheung and Rowlinson, 2005).

8.8.3 Required Transformation Processes and Procedures

In these processes, additional concepts and theories which are essential for the DSD improvement processes apart from the theory of action are adopted. This is to complete the series of action required for the improvement of the DSD activities. These include the concepts of “change of mind set”, and “changes

in culture” of the DSD actors (Cheung and Rowlinson, 2005; Gouveia and Ros, 2000; Hofstede, 1982). Concerning the concept of “change of mind set”, Cheng and Rowlinson (2005) mention that before non-collaborative working and adversarial business relationship can be overcome or be reduced or be prevented, there should be a “series of actions”. The “actions” involve the DSD actors making a definite decision to work with a new “mind set”, therefore preferring continuous collaborative working/harmonious cordial business relationship to non-collaborative working/adversarial business relationship as indicated in Figure 8.1 Point B (see for example Anim, 2012; Cheng and Rowlinson, 2005).

8.8.4 Required Change of Mindset for the Improvement of DSD Activities

Based on the issues raised in Section 8.8.3 in this study, the “series of actions” requires a change of mindset to unify DSD actors at every stage of the flow process chart in Figure 8.1. This is to connect the various different professions in the design service in generating building knowledge to strengthen the development of effective and efficient SCIfs. The effective and efficient SCIfs so developed and constituted will improve DSD activities for long-term fair and impartial benefits to all the DSD actors and clients (Cheng and Rowlinson, 2005).

The change of mind set is targeted at all levels of decision-making involving DSD actors who have capacity as practitioners and contributors to SCIfs through the flow chart. — From practitioners to contractors, all should acquire the appropriate professionalism and technical knowledge to work in fairness with each other and with clients (Hatmoko and Scott, 2010; Pryke, 2009; Titus, 2005). Also, the DSD actors should persistently and increasingly seek the appropriate professionalism and technical knowledge to make DSD activities demand-driven and responsive to infrastructural needs in national and

global environments as required by the system theory (World Health Organization, 2012; Javidan et. al., 2007; Wright et. al., 2000).

These can happen through developing effective and efficient SCIFs through harmonious and cordial business relationship which can produce improvement and continuous improvement in the DSD activities.

8.8.5 Required Changes in Culture for the Improvement of the DSD Activities

The following series of actions are suitable for specific results in the firms or organisations like the DSD entity. First, there is the need to establish consistent changes in the culture of the DSD actors to reflect the appropriate professionalism required. Again there is the need for the DSD actors and the management of the entity to show commitment to a change of culture (Hammer, 2000). It is possible to take steps or adjust from one attitudinal behavioural situation to the other (Mullins, 2005). Therefore, in developing and constituting SCIFs, like all other humans, DSD actors, can make SCIFs ineffective and inefficient or otherwise. Further, the outcome of the SCIFs developed, will portray the influence of either collaborative or non-collaborative decisions, policies or beliefs of the attitudinal behaviours in dealing with all DSD activities. These influences may either cause improvements or disturb improvements (see for example Gouveia and Ros, 2000)

The DSD actors value power and have attitudinal behaviours that crave for balance of power. They also believe in individualism and are more inclined towards individualism than collectivism (see for example Gouveia and Ros, 2000). Evidence is available that shows that steps are often taken to avoid uncertainty. These are revealed in the way businesses are set up and run with close family members or supposedly faithful friends, selected, not based on performance as obtained in the textual results in Table 6.3. Additionally this issue is confirmed by the observation that “staff in most firms visited were of one ethnic group or the other”, shown in the text results of organisational profile presented in Table 6.2, in Chapter Six.

These cultural situations or issues are evident in the plans and agenda of the DSD actors. It is therefore essential that appropriate steps of rectifications are carried out or appropriate adjustments made to allow improvement and continuous improvement in DSD activities (Hofstede, 1982), most especially, in the case of some negative elements of professional autonomy, which increases DSD actors' individualism, uncertainty and lack of trust. These breed an in-ward looking, attitude devoid of trust and such situations contributes to harsh or adversarial relationship resulting sometimes in a lot of DDC (Pryke, 2009; Chan et al. 2004; Latham, 1994). Changes in the business culture to collectivism can eliminate or reduce the individualism and the negative elements of the professional autonomy. The "changes in the culture" can promote collaborative working and harmonious, cordial business relationship among the DSD actors. Again, the cultural changes discussed can provide appropriate business climates in which effective and efficient SCIfs can be developed and constituted in line with "collective ownership" discussed in section 8.7.1 of this chapter for the improvement and continuous improvement of the DSD activities required in the flowchart in Figure 8.1. The flowchart illustrates the detailed processes that DSD actors need to go through with a collaborative business relationship focus to achieve successfully the aim of the three stage improvement proposals in Figure 8.2 also in this Chapter.

By the identification of the record level or huge business relationship problem seen in the pre-conditions of this improvement proposals as revealed in accordance with the findings of the objectives of this study, there exists less to non-collaborative relationship among the DSD actors in developing the SCIfs. Additionally this business relationship situations are confirmed to be non collaborative and adversarial in character by the textual results and the critical attributes acquired through the pareto plots which link the first four objectives and point to same as adversarial business relationship. This fact of adversarial business relationship is identified to have a heavy influence on the functioning of the processes and procedures used in developing and constituting the SCIfs. For that matter no better results were shown by the critical attributes other than 'malfunctioning' of the processes and procedures. It is based on this obvious fact of non-collaborative working and adversarial business relationship situation in the DSD

activities that the flowchart in Figure 8.1 provides detailed processes of identifying, reducing, eliminating or/and preventing the adversarial situations. This processes can be developed by providing effective and efficient SCIfs processes. Further the details or steps of processes of the flowchart for effective and efficient SCIfs so developed for improvement, are planned and developed in tandem with the three stage improvement proposals and there is the need to use critical attitudinal behavioural and technical attributes in each of the steps in the processes.

8.9 Multi-Theories Direction and Guidance to DSD Transformation

Further, theories adopted alongside the action theory (AT) are the system theory, system thinking and rethinking as discussed in Chapter 4, Sections 4.2.1 to 4.2.5. These helped to construct an action oriented system theory, thinking and rethinking and a multi-theory improvement proposals for the improvement of DSD activities (Jugdev, 2004; Harriss, 1998; Seymour et al., 1997). The AT according to Roeser (2005); Allwood (1995) and Tuomela (1991) also involves the intention of the action, the form and convention, results or consequences and contexts of the action. It is on these bases that the AT is again useful for the improvement proposals, illustrating the challenges in the work (pre-conditions and other conditions).

The context in which the collective actions or series of actions involved in the study concerns the need for DSD actors to develop collaborative and good construction business relationships in developing and constituting SCIfs.

8.9.1 System Theory (ST) and the DSD Maturity Cyclic Processes

Beside the action theory, the system theory (ST) from multi-disciplinary point of view is used to continue the framework. This theory is defined as an entity, which is a coherent whole with perceived boundaries around it in order to distinguish internal and external elements (Mele, et al., 2010). The ST primarily can be used to investigate phenomena in a holistic manner to reveal its coherent nature (Mele, et al., 2010; Ng, Maull and Yip, 2009; Capra, 1997). It also identifies inputs and outputs connected to and emerging from the entity depending on whether it is closed or open; see Chapter Four, Section 4.2.4. On that basis, Mele et al. (2010) state that ST is a theoretical perspective which analyzes a phenomenon seen as a whole. For

instance, an entity like the DSD entity with perceived boundaries around it distinguishes internal and external elements such as the Ghanaian DSD environment from that of the global DSD environment.

The main concern of using the ST is to develop the improvement proposals for the improvement of DSD as indicated in Figure 8.1, is to start the improvement proposals with investigation of the business relationship challenges. That will reveal the challenges facing DSD activities in developing SCIFs as pre-condition like DDC which contribute to the nature of the SCIFs. ST is also to illustrate the kind of existing business relationship and connection among the DSD actors in the existing DSD entity as a whole, whether it is closed or open (Mele, et. al., 2010; Capra, 1997). In Figure 8.1 the study of the business relationship situation reveals DDC and tendencies to cause DDC in developing the SCIFs. The recorded influence on the nature of SCIFs in developmental issues in offices/sites is shown in Figure 8.1, “A”. The situation can move on to non-collaborative working situation and adversarial business relationship at “B”. Further, concepts like “change of mind set” in the improvement proposals at “C”, are required for business relationships changes and to form an essential link to the challenges (pre-conditions and other conditions) of the existing DSD entity as a whole as in Figure 8.1. The ST analytically allows and demonstrates how the essential “series of actions” appropriate for the required changes revealed in the study can occur (Mele, et al., 2010). These can happen through, for instance: brainstorming at workshops, seminars, fora and meetings as part of DSD socialization processes shown in Figure 8.1.

8.9.2 System Thinking (STh)

The “series of actions” for the required changes in the DSD after “change of mind set” at “C” as in Figure 8.1, involves the next stage of the multi-theory adoption of the system thinking. The STh comes from the shift in attention from the separate parts of a system to the whole (Mele, et. al., 2010; Jackson, 2003; Weinbeng, 2001; Checkland, 1997). At this point, the improvement proposals considers all the parts that can complete the changes for the improvement of the DSD activities and get the actors connected rationally to develop and constitute the SCIFs (see for example Mele et al., 2010). To get the DSD actors

connected it is hinged on two critical procedures: either the DSD actors' group is self-motivated to connect by associating together and developing collaborative DSD activities (Orgen et al., 2012a; Mullins, 2005), or using facilitators appointed or nominated from among actors to coordinate all DSD business relationship matters within the collaborative DSD activities. The facilitators should be part of a nucleus or should be central based (a steering committee or council) directing DSD programmes and agenda. In large projects, the co-existence of both are essential requirements for collaboration than in small scale projects where the former is indispensable.

The essential parts of the required changes in the improvement proposals include the five maturity periods or levels ie. traditional adversarial, transitional, short-term, medium-term and long-term as in Figure 8.1, "D" (Meng, 2010). Other parts of the required changes are the application of the critical relationship improvement factors (critical attributes) in "E" and sorting, filtering of information to make the SCIfs effective and efficient in in Figure 8.1 "F". There are revolving cyclic order of system thinking issues. The DSD actors can go through the stages in a five learning cyclic order of DSD attitudinal behavioural socialization processes. This can enable the DSD actors to become gradually and fully mature in adopting the critical relationship improvement attributes (factors) for all required changes, by moving from one mature cycle to a better improved cycle (Orgen et al., 2012a Meng, 2010). The five learning cyclic socialisation processes start at "D" followed by "E" continued to "F" and completing each cycle at "D" in Figure 8.1. There would then be a movement to the next higher cycle after assessment of maturity level attained in each movement in similar manner as in the use of the improvement assessment framework in Figure 4.3 in Chapter Four, Sections 4.3.1 and 4.3.2.1. It is necessary to understand that each cycle of STh learning comprise the parts of DSD socialisation process. This starts from a new or next maturity level at "D" followed by "E" continue to "F" in that cyclic order until the long-term level is reached finally at "D" in Figure 8.1 (see for example Orgen et al., 2013a; 2012b). In the STh learning processes, at each maturity level, information generated at that level is to be filtered through reviews and assessment at

workshops, fora and seminars. These processes are to refine or fine tune information flow to make the SCIFs effective and efficient when the pieces of information are adopted (Orgen et al., 2012a.)

8.9.3 System Rethinking Theory (RST)

For all the relevant actions or series of actions necessary for collaborative work and for successful harmonious, cordial business relationship to occur, specific strategic manner of managing the DSD entity whole should be an uncompromised priority. For that matter, leading roles, responsibilities and control among the DSD actors need proper location and allocation. This situation of proper location and allocation of leading roles and responsibilities among others, demand appropriate organization, management and administrative activities of the DSD actors in the entity. These are fundamental issues of entities, which provide them with self-organisation, of which the system rethinking theory (RST) is useful in illustrating the processes of making the system work effectively and efficiently (Mele et al., 2010; Pickel, 2007).

In multi-theory building, the system theories discussed are taken as integral part of the rethinking processes (Pickel, 2007). Additionally, in the Rethinking System Theory (RST) each system takes all other systems as its environment ie. Global and Ghanaian (see for example Pickel, 2007, 2004). In this regard a system cannot be defined only by the set of elements: structure, components and their relations to an environment. There is the need for the inclusion of the actual processes (mechanism/bond) that make the system a system, which in the complex real-world, allows for self-organisation (Pickel, 2007).

All technical feedback of non-adversarial and innovative information for project design and realization from the various actors as inflow need to be filtered (the most relevant aspect of inflow of information for

FLOWCHART FOR IMPROVEMENT OF DSD ACTIVITIES



Figure 8.1 Flowchart for improvement of DSD activities

the development of the system) before it outflows for adoption for the development of SCIfs, as shown in Figure 8.1, “F” (Orgen et al., 2013b; 2013a). At this stage, the DSD feedback sheets (see appendix A) can be useful in assembling all the design issues and other technical concerns (see for example Anim,

2012; Loo, 2003). The sheets can also quicken fast tracking of finest and ‘supposed wastes’ to be recycled, thus can be sent back from “G” to “F” in Figure 8

This can prevent or minimize the difficulty of locating “supposed/assumed waste”- less useful information in technical feedback- provided. Further, for proper functioning of the DSD entity, there is the need for a DSD central base or nucleus (a steering committee or council) that makes available finest technical feedback of non-adversarial and innovative information to all actors (see for example Anim, 2012; Loo, 2003).

The suggestion is that technical information should frequently provide information about immediate past challenges, current and future possible challenges DSD actors need to focus on. There should be collaborative working in such direction seeking technical information for project design to improve DSD activities and the built environment at large. Indeed such technical information can be made easily or readily available or accessible to the different DSD actors. For that matter, after the filtration of the information, it is incumbent on the central base or the nucleus to carry out fractional filtration as indicated at “G” in Figure 8.1 (see for example Orgen et al., 2013b; 2013a; 2012b). This is to classify the bulk finest technical information into groups according to the requirement of the different DSD professions (Orgen et al., 2013b Anim, 2012; Loo, 2003). The DSD actors’ fractionally filtered work of the technical information at “G” can enable or involve ‘We-sense, We-intentions of collectivism’ in the different groups’ content for use in the specific professions (Seebass, 2008; Gouveia and Ros, 2000; Tuomela, 1991).

Such incorporation of information from the DSD actors’ fractionally filtered finest information into different professional parts, can draw their full trust, commitment among others (see for example Meng, 2010). Thus, the contribution made can indirectly as well embrace their personal objectives, which can push the agenda for alignment of collective objectives for the development of SCIfs. This can then

naturally encourage the actors to adopt the critical attitudinal behavioural attributes (relationship improvement factors or attributes) in developing and constituting the SCIFs (Orgen et al., 2012b; Meng, 2010). Indeed, it is this kind of collaborative working and harmonious cordial business relationship based on the use of the critical relationship improvement factors or attributes to prevent or reduce adversarial relationships and improve DSD activities that improvement proposals seeks to achieve at “G”. This is required at “G” before the outflow of the information from “G” to “H” in Figure 8.1, where the various specific professions have to use and also source other required aspect of the fractionally filtered finest technical information. These include not only the DSD practitioners’ feedback and work, but also specific professional groups’ content of fractionally filtered finest technical information for the contractor’s work.

In seeking to realize the aim and objectives of this improvement proposals, it is essential to suggest at this stage that the inflow and outflow of bulk and finest technical information both filtered and fractionally filtered should follow information generated at the end of each of the five maturity cyclic levels (Orgen et al., 2013b; Anim, 2012; Mele, et. al., 2010; Loo, 2003). The bulk filtered information is turned into fractionally filtered finest information classified in accordance with various requirements of the professions and adopted by the DSD practitioners in “H” for the developing and constituting of SCIFs. The contractors at this point need to contribute in sharing their experiences i.e. buildability aspect of SCIFs and making the execution of projects real with such effective and efficient SCIFs developed at “H”.

It is essential that at this stage before the completion of the development of SCIFs audit all the technical feedback of non-adversarial and innovative information should be made on the various feedback sheets (Appendix A). Also the audit and audit report should include all other relevant information to be used at “I” in Figure 8.1, thus ensuring audit of all information and providing details of the audit feedback for continuous development of effective and efficient SCIFs (Anim, 2012; Mele et al., 2010; Orgen et al., 2012a; Loo, 2003). The subjecting of the DSD actors feedback to auditing are to be conducted as a reverse check and review on all inflow of feedback into DSD entity, which should be directed and guided

to develop effective and efficient SCIFs. Similarly, feedback on outflow of the DSD entity should come mainly from the contractors as the end users of the SCIFs. If any feedback is idle or wasted, it is transferred back from “I” to “G”. These auditing steps in the improvement of the DSD activities processes in Figure 8.1, “I” are part of the mechanisms to confirm whether there have been collaborative working and harmonious, cordial business relationship in which consequences can be adopted by all the actors. Further, an audit would enable show how the emerging SCIFs are like; whether they have no challenges and would not bring difficulties in future project deliveries as noted in previous ones (see for example Anim, 2012; Odusami et al, 2003). Where problems like: incomplete design, non-compliance of design to planning or statutory requirements and regulations among others are common occurrences, there is the need to continue with a planned regular auditing to ensure improvement.

The audit process can also consider the number of DDC that disturb the developing and constituting of SCIFs and the causes thereof. This is to find out whether there are new dimensions with newly emerging attributes that should be incorporated in the development of the SCIFs. Auditing can as well show whether methods used to resolve the DDC are preventive or reductive controls only and to investigate also whether for example, the Early Decisive Reasoning approach developed and suggested for settlement of DDC in Appendix .A is used (Orgen et al., 2012a). The Early Decisive Reasoning approach is used as DDC settlement efforts, where immediate steps are taken in the first place to build harmonious and cordial business relationship to prevent DDC through fairness (Orgen et al., 2012a). In the second place, what happens is the resolution of DDC during the process of building collaboration devoid of impartiality, which is part of the essentials to sustain the improvement processes of the DSD activities (Anim, 2012; Orgen et al., 2012a). The application areas of this settlement approach of resolving DDC as they arise are also shown in Appendix A, to enhance harmornious and cordial business relationship. Additionally, this helps to manage DDC and overcome the difficulty and complex situations for quality improvement of DSD activities as noted by Fisher (2000, pp 5) “Conflict is an inevitable fact of human existence. If we work to understand and manage it effectively, we can improve both the satisfaction and productivity of

our social relationships.”Furthermore, in carrying out successfully these auditing processes and other essentials at regular intervals, concrete evidence and assurance that there can be continuous development of effective and efficient SCIIs can be provided. Using fractionally filtered finest information of specific professional requirements from different professions’ bulk (overall) information to develop and constitute effective and efficient SCIIs can produce SCIIs of high quality as shown in Figure 8.1 “J”. The high quality of various SCIIs developed and constituted as indicated at “J”, which are effective and efficient SCIIs, can have the capacity to improve the DSD activities as in Figure 8.1, “K” which is in line with ST finality (see for example Mele et al., 2010). These high quality SCIIs can stop or reduce the frequent numerous complaints from contractors (Song et al., 2009); especially, complains that create a lot of disorder in project delivery like: delays, variation orders and subsequent DDC as the SCIIs are handed over to contractors as indicated in Figure 8.1. “L”. Such SCIIs of high quality standard can positively improve the post-contract DSD activities ie supervisions, valuations and eliminate or reduce queries among others. Therefore as mentioned by Hatmoko and Scott (2010), Titus and Bröchner (2005), Sahin and Robinson (2002), Chan and Kumaraswamy (1997), key decisions in the DSD activities depend on effective and efficient SCIIs. For the aspect of continuous improvement of the DSD activities through the improvement proposals the contractors’ experiences and observations can inevitably enhance the processes (Alhassan, 2012; Walker and Lloyd-Walker, 2012). Therefore, it is most appropriate that contractors, after the use of the SCIIs, send performance feedback from their end to the DSD practitioners from time to time as shown in Figure 8.1, from “L” to “D” for all future development of SCIIs. This should be regular DSD activity to sustain the improvement and continuous improvement aspect of the improvement proposals objectives (Song et al., 2009). The use of effective and efficient SCIIs can lead to improved project delivery all over in the built environment as in Figure 8.1, “M”. Also, by the continuous improvement process, the DSD activities can consistently be improved over time, cost and quality of project delivery. Such delivery processes can produce and portray an overall hygienic and structurally sound infrastructural development for repeated DSD business for DSD actors (see for example Orgen et al., 2011)

8.10 The Critical Transformation Procedures Based on the Study

The improvement proposals, at this point focuses on how to deal with and sustain the procedures of transformation from the previous adversarial business relationship to harmonious, cordial business relationship and be continuous.

8.10.1 The Pre-Conditions and Attitudinal Behavioural Knowledge

The pre-conditions and conditions disturbing and distorting harmonious, cordial relationship for the DSD business are the adversarial relationship, cultural difficulties and professional autonomy. These also include traditional procurement practices, as commonly used, which strengthen these challenges (Laryea, 2010; Anvuur et al, 2006). These are sometimes heightened to indicate that there is lack of attitudinal behavioural knowledge in dealing with DDC, which results in less collaborative to non-collaborative working among the DSD actors as illustrated in these studies: (Hawkins, 2011; Humphries and Wilding, 2004). As such the DDC can escalate to stalemate level.

Therefore there should also be periodic assessments of the levels of collaborative working or non-collaborative working. The assessment should as well consider at regular intervals the levels of harmonious, cordial relationship and adversarial relationship by using the DSD improvement assessment conceptual framework discussed in Chapter Four. The attitudinal behavioural knowledge is to shape DSD work attitudes and behaviours which become evident and detected in the manner in which DSD activities are conducted. Therefore, attitudinal behavioural knowledge change for appropriate professionalism required for collaborative working after using the assessment framework has the potential to develop and constitute effective and efficient SCIFs. This can be achieved through acceptable professionalism, in which the DSD actors use the critical attitudinal behavioural attributes to develop cordial relationships to obtain performance feedback, traditional non-adversarial method/review and innovative information to improve the DSD activities. Again all these are to be practised in every step of the flowchart processes in Figure 8.1.

8.10.2 Technical Knowledge Involving Performance Feedback and Other Issues

Similarly, the technical pre-conditions and conditions include the nature of the SCIFs which are disjointed, fragmented and incoherent among others. It as well involves the malfunctioning of the processes and procedures used in developing and constituting SCIFs. These issues disallow and distort improvement of DSD activities and must be some actions or chain of actions to overcome technical challenges.

Therefore, at this stage of the improvement process it concerns the technical aspect in the development of SCIFs and how they impact on the improvement of DSD activities. Four broad classifications of the technical issues are identified. The four identified issues include uncertainty in project delivery; issues which demand engineering clarifications, interpretations and explanations; issues which concern unrealistic clients 'and representatives' demands and relationship issues (Jaffar et al., 2011; Clements and Gido, 2006). It is essential to classify performance feedback, traditional non-adversarial method/review and innovative information to improve the DSD activities into one of these four categories.

Under these four categories is the technical knowledge provided by the technical attributes obtained in the study to overcome the technical challenges, especially, those technical attributes revealed and identified as critical by the pareto analysis and plotted chart. To realize collaborative working and harmonious cordial relationship among the DSD actor groups is essential to adopt attributes for some technical knowledge. This is for the development of effective and efficient SCIFs to improve the DSD activities. The critical technical attributes acquired in the study providing required technical knowledge should or can be discussed and adopted:

8.10.2.1 Technical Relationship Issues

- Inter-professional focused discussions on SCIFs (chains of project documentations) at DSD workshops, seminars, fora and meetings for reviews, feedback and debriefing.
- Built environment experts' common forum for planning and programmes

- Inter-professional business relationship management development
- Leadership, authority and ethical issues

8.10.2.2 Unrealistic clients' and representatives' demands and relationship issues

- Continuous search for all clients' inputs and satisfaction

8.10.2.3 Demand engineering clarifications, interpretations and explanatory issues, Documentation and record keeping experiences

- Decisions on SCIFs (chains of project documentations) auditing or vetting

8.10.2.4 Uncertainty in project delivery issues

- Financial benefits, awards and professional fees
- Securing of contractors' and subcontractors' design inputs

Further, the discussion on adaptation of the technical knowledge should follow the transformation processes and procedures discussed in the preceding sections. However, in the case of the use of the technical knowledge, it can be possible from the transitional period through the other periods to the long-term period. This is because during the traditional adversarial period the DSD actor groups have not agreed to work together as indicated in Figure 8.1 “A” and “B”.

In each of the remaining four maturity periods there should be acquisition and the use of some of the attitudinal behavioural and technical knowledge to make the actors become mature for the next cyclic level. This should be continuous until the long-term maturity level is reached. This also can then improve the individual and collective capacity to collaborate in harmonious, cordial relationship to develop and constitute effective and efficient SCIFs for the improvement of the DSD activities. The expected

consequences in the discussions and use of the transformation processes and procedures of the improvement proposals are now considered.

8.11 Expected Improvement and Consequences

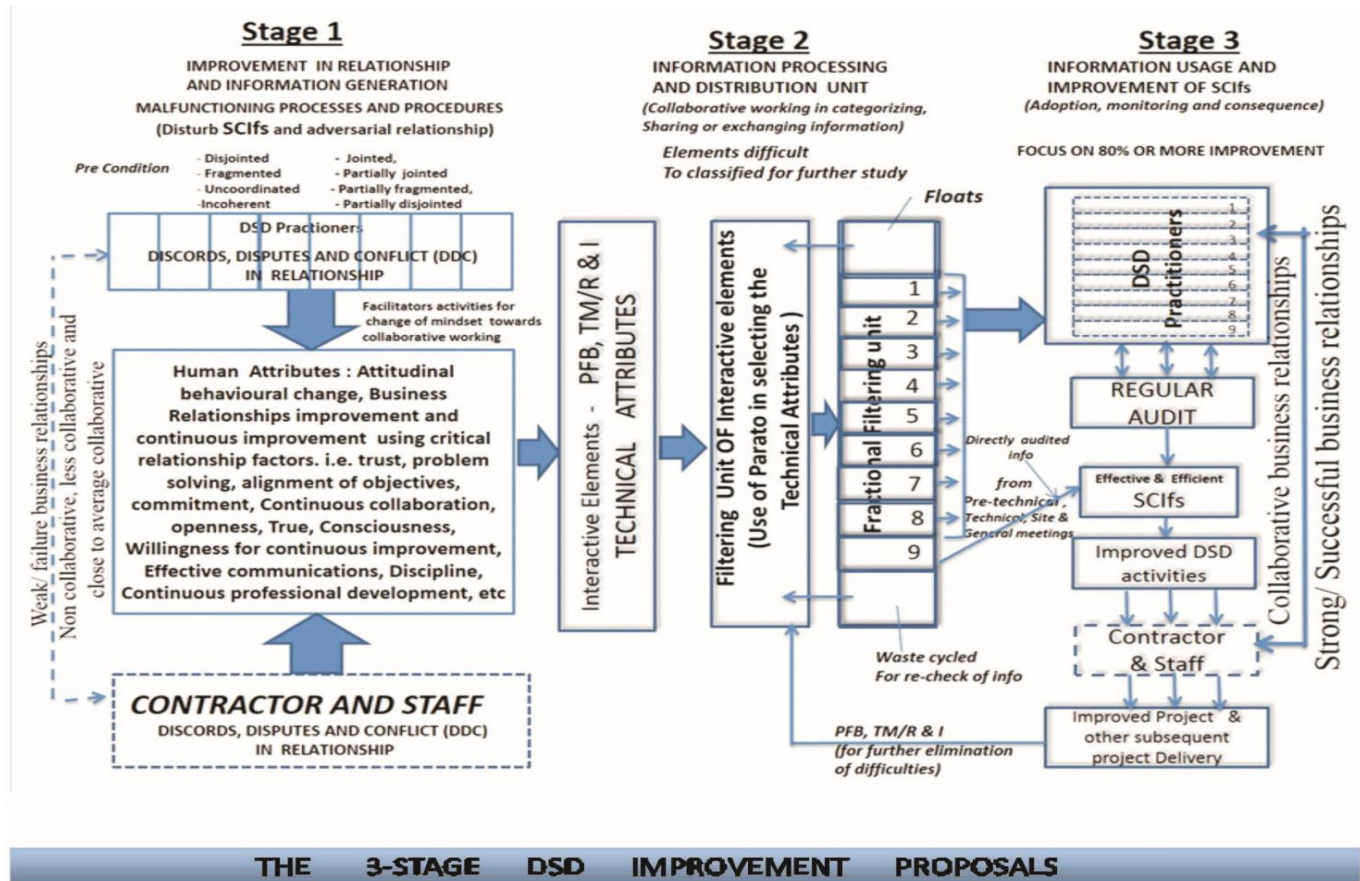
The pre-conditions, expected improvement and consequences are illustrated in the three-stage conceptual improvement proposals, under:

- i. The bases, the effects, characteristics and information generation of the adversarial business relationship and nature of SCIfs
- ii. Textual and critical attributes of information processing and distribution ie using pareto plot and
- iii. information usage and improvement of SCIfs and DSD (chains of project documentations) (Orgen et al., 2013a; 2013b). The details have been provided and explained.

8.11.1 Stage 1 the Bases, the Effects, Characteristics of the Adversarial Relationship and Nature of SCIfs, and Information Generation for Improvement of DSD Activities

The study of DSD activities show evidence that to improve the DSD finality through conceptual improvement proposals, attention should focus on the rectification of the pre-conditions. These pre-conditions (challenges) are the bases, the effects, characteristics of the nature of the adversarial business relationship causing the malfunctioning of the processes and procedures used for SCIfs, need to be rectified through the generation of information (Ssegawa-Kaggwa et al., 2013 Laryea, 2010; Tazelaar and Snijders, 2010; Anvuur et al., 2006). These preconditions which have caused the need for chains of actions to transform the DSD system reveals that DSD practitioners (sub-DSD actors) in Stage 1 in Figure 8.2 have business relationship and cultural challenges as well as autonomy to practise their professions especially in the traditional procurement system where contractor's (sub-DSD actor) inputs are not sought for design activities. These business relationships, culture and autonomy in practice are predominant challenges which also develop from the fact that people dislike to be controlled and thus engage in DDC to avoid control (Collins, 1975). In such a situation, each consulting DSD practitioner wishes to preserve

his business relationship, cultural belie/policies, professional autonomy and monopoly of his professional expertise fostering non-collaborative working and adversarial business relationships.



Critical attribute

- Inter-professional focused discussions on chain of project documentations at DSD workshops, seminars, fora and meetings for reviews feedback and debriefing Built environment expert forum - Continuous search for clients inputs and satisfaction
- Principal benefit awards and professional fees - Documentation and record keeping experiences - Leadership authority and Ethical issues - Secure contractor and sub contractor design inputs - Decisions on SCIfs -chains of projects documentation auditing

The circumstances of “I-intention” of individualism provide evidence for the bases, the effects, characteristics of the nature of the adversarial business relationship showing the nature of SCIfs and malfunctioning of the processes and procedures used for SCIfs finality identified in the study where DSD practitioners, shown in Stage 1 in Figure 8.2, produce sub-SCIfs separately in their offices (see for

example Coleman and Ostrom, 2009; Gouveia and Ros, 2000). The challenges of the SCIFs (the bonds, the mechanism that makes DSD system work as a system) finality in the study is described using the critical attributes such as disjointed, fragmented and uncoordinated among others.

The descriptions suggest the existence of non-collaborative working and adversarial business relationships which lead to DDC among DSD actors as indicated in Stage 1 in Figure 8.2. Additionally the situation also gives rise to a non-collaborative working and adversarial business relationship syndrome that creates business failure cycle (Humphries and Wilding, 2004). These apparently disallows the free flow of relevant information to the actors, thus, it creates a weak or failure of business relationships among the DSD practitioners and between them and the contractor as shown in the broken lines at the extreme left of stage 1 in Figure 8.2. (Orgen et al., 2013a). All these occur in the Ghanaian DSD environment as the study has shown.

Also, these challenges including the DSD practitioners' professional autonomy in producing sub-SCIFs seems to have strong linkage with the procurement method used. This procurement seriously fosters adversarial conditions that breed non-collaborative working of weak or failed business relationships among the DSD actors (Axt, et al., 2006; Anvuur et al, 2006; Laryea, 2010). The expected consequences of the challenges show the need to have business relationship improvement proposal strategies to

THE 3-STAGE DSD IMPROVEMENT PROPOSALS

business relationship improvement (BRI) to flourish properly among DSD actors by adopting the critical attitudinal behavioural knowledge attributes (relationship improvement attributes) obtained in the study. A revolving cyclic order of system theory and thinking issues used in the flowchart in Figure 8.1 demonstrates how the non-collaborative working and adversarial business relationship can be reduced or prevented through the application of inflow of critical attitudinal behavioural attributes level after level. Again these critical attributes applied in the system as to improve the business relationship situation from

traditional adversarial level (period) through to other levels till the final long-term level (period) is reached in a five points learning cyclic order of DSD actors attitudinal behavioural socialization process.

This attitudinal behavioural socialization is a transformation process in this improvement proposals illustrated in the flowchart that can encourage DSD actors to voluntarily relinquish some of their professional autonomy and monopoly for the useful development of BRI based on critical attitudinal behavioural attributes (relationship improvement factors) like trust, problem solving, alignment of objective and openness, effective communication among others as in Stage 1 in Figure 8.2 (see for example Meng, 2010). Indeed, there will be further development of proper flourishing of the BRI among the DSD actors from level to level. This will encourage a promotion and motivation of the active power of DSD actors to plan, programme and move into a full blown joint business efforts with We-intentions to create a win-win-win harmonious, cordial business relationship in the DSD system whole (see for example Tuomela, 1991; Seebass 2008; Mele et al., 2010). This will create a DSD environment which allows sharing and exchange of the critical technical knowledge attributes identified through the pareto plot in Figure 6.6 for the transformation process shown in Figure 8.1 which will reduce or prevent the non collaborative working and adversarial business relationship.

Additionally, in Figure 8.2 the facilitators' workshops, fora, seminars and meetings through brainstorming can enable such interaction and free flow of performance feedback, traditional non adversarial and innovative information as identified by both literature and the field study (see for example Cheung and Rowlinson, 2005). The transformation process has to continue to change the processes and procedures used in developing the SCIfs. As such, the information from both the critical attitudinal behavioural/technical attributes and design feedback including other design inputs then has to flow to the information processing point in Stage 2 in Figure 8.2. This would enable development towards an open system of thinking and rethinking as they draw information from all the other systems in the global and Ghanaian environments including that of the contractor in Figure 8.2 to achieve effective and efficient SCIfs bonds to improve DSD system whole (see for example Pickel, 2007).

8.11.2 Stage 2- Information Processing and Distribution Unit of the Improvement Proposals.

The Stage 2 of the improvement proposals is developed for information processing, grouping and distribution of the technical knowledge attributes and design inputs to the different professions for the development of SCIfs. These should be carried out at the time when the attitudinal behavioural knowledge is being applied. The acquisition of both attitudinal behavioural and technical knowledge greatly involves the DSD processes and procedures to be used to develop and constitute the SCIfs- bonds, the mechanism that should work to make the DSD system a system (see for example Pickel, 2007). The improvement of the DSD system demands that the information processing should involve all information from all systems and sub-systems for the transformation process to be complete. This includes information from all systems and sub-system within the DSD entity and from the systems that form the external global and Ghanaian environments as indicated in improvement proposals Stage 2 in Figure 8.2.

The information obtained such as critical technical attributes necessary in the transformation process in Stage 2 in Figure 8.2 are for filtrating (the most relevant aspect of the inflow for the development of the system) and fractional filtering (regrouping the relevant inflow into different professional requirements for use) before distribution (see for example Pickel, 2007). Proper filtration of the technical attributes as in Stage 2 in Figure 8.2 can sieve and deal with all elements and issues of knowledge that can prevent full development of the SCIfs. It also deals with for example, DDC prone issues, non-critical business relationship attributes and general elements of the technical knowledge which can encourage non-collaborative working and adversarial business relationship to block improvement of the DSD system whole (see for example Axt, et al., 2006; Humphries and Wilding, 2004). Other expected consequences of this filtration and fractional filtration processes will need a recording sheet. Therefore, a suggested performance feedback sheets to record workshops, seminars and all other information for sorting, upgrading and updating of information is in Appendix A (Orgen et al, 2012a). Details of fractional filtration concerning grouping of information into two categories should be; in line with respective

professions (see for example Edum-Fotwe et al. 2001). The type of information ie.technical knowledge coming from performance feedback, traditional non-adversarial method/review and innovative information, which are relevant for the improvement of the DSD activities should be readily available to actors. They are inclusions of critical technical attributes like Inter-professional focused discussions on SCIfs (chains of project documentations) at DSD workshops, seminars, fora and meetings for reviews, feedback and debriefing among others is required in the transformation processes as shown in Stage 2 in Figure 8.2.

The processes of filtering and fractional filtering of the information should be carried out in line with the DSD professional structure and components numbering one to nine in Stage 2, in Figure 8.2. The recycling of information (finding ways and means to make useful information which previously could not be used or was of no use) which seems irrelevant during processing or information which is difficult to interpret or classify as waste are made applicable. Such reasonable fine-tuning or refining are essential parts of the transformations process to achieve maximum utilization of technical knowledge obtained (see for example Pickel, 2007). Indeed, such wastage needs special attention, reasoning, experience and tactfulness to deal with as in Stage 2 in Figure 8.2. Also it is through thinking and rethinking of the processes to make boundaries of the sub-SCIfs and SCIfs permeable systems to allow re-filtration in managing the waste to obtain maximum effective and efficient use of the outcome of interactions and information flow. The proper management of the information flow should be ensured before the application or absorption of the technical attributes can be optimized (Orgen et al, 2013a; Pickel, 2007).

8.11.3 Stage 3:- Steps To Achieve Effective and Efficient SCIfs for the Improvement of the DSD Activities

The construction of the final stage of the 3-stage improvement proposals depends on the use of the action oriented system theory, thinking and rethinking (Mele et al, 2010; Pickel, 2007). This final stage draws its initial developmental strength from collective action and cultural collectivism of the DSD actors depending on We-intention, We-sense and We-goal (Coleman and Ostrom, 2009; Seebass, 2008; Gouveia

and Ros, 2000). Besides, the expected consequences focus on collective action of bringing the DSD practitioners and contractor's/organization (DSD actors) to work together in a collaborative manner translating the collective intentions into the DSD activities (Coleman and Ostrom, 2009; Seebass, 2008). The purpose of working together is to develop open systems of permeable boundaries for sharing and contributing technical knowledge acquired through the use of the attributes obtained from the field study like built environment experts' common forum for planning and programmes, continuous search for client inputs and satisfaction, securing of contractors' and subcontractors' design inputs etc. as in Section 8.10.

These will result in developing effective and efficient SCIfs finalities. The finalities, will be possible through proper interaction of using the critical technical attributes presented and discussed. The interaction will involve effective exchange and free sharing of fractionally filtered inputs involving ie technical performance feedback, traditional non adversarial and innovative information abstracted from records of workshops, seminars, fora, meetings and from DSD feedback sheets, see Appendix A for a sample (see for example Greenwood and Wu, 2012; Hawkins, 2011; Meng, 2010; Cheung and Rowlinson, 2005). This technical information is applied and absorbed in two separate channels in stage 3 in Figure 8.2. One is directly to the contractor/staff after fractional filtration of information (non-design-related inputs) from DSD practitioners which are not design-related issues but will enhance contractors' performance as in Stage 3 in Figures 8.2; for instance, materials, labour and plant related issues and particularly how the DSD practitioners will be guiding the contractor in the project execution using SCIfs. The other aspect is the bulk information (design-related inputs), from DSD actors which are to be absorbed and used by the DSD practitioners to develop and constitute the SCIfs. The regular auditing should follow as in Stage 3 in Figure 8.2 and 8.1 of the flowchart after the absorption and use of the technical information (see for example Hawkins, 2011). These critical attributes are to be used by the DSD practitioners to develop and constitute effective and efficient SCIfs in Ghana as shown in Stage 3 in Figure 8.2. After the absorption and use of the critical attributes in developing the SCIfs, they should pass through regular audit by small DSD actor group (nucleus) representing all the different professions

covered in the study. The auditing should also follow the steps shown in the transformation processes of this improvement proposals to confirm all aspects of the SCIIs which have benefited from technical knowledge following the processes of the DSD systems (Mele et al., 2010). The audit should also cover the development of 'the DSD systems based on mechanism, structure, components and environments in which SCIIs are developed into required finalities for fair and impartial benefit for all the DSD actors (Orgen et al, 2013a; Pickel, 2007; 2004).

The expected consequences of the application and adoption of both attitudinal behavioural and technical knowledge arise on the basis that, adjustments in the current traditional procurement practices can voluntarily develop as strong business relationships grow among the actors in Stage 3 in Figure 8.2. The application and adoption of both behavioural and technical knowledge can be used to develop approach to prevent non-collaborative work and adversarial business relationship. Additionally, such a situation will enable full acceptance and commitment to harmonious cordial business relationship management concepts as explained in the transformation processes in the flowchart in figure 8.1. These consequences of the actions in this improvement proposals are possible as both critical attitudinal behavioural and technical attributes are applied for strong/successful business relationship bonds between the DSD practitioners and the contractor shown in Stage 3 in Figure 8.2. Through these critical attributes, the transformational processes in this improvement proposals can successfully gain hold and hang on to a collaborative business relationship, which can prevent/reduce or eliminate the adverse effects of the construction business relationship. Such collaboration in business relationship will harmoniously and cordially link the DSD practitioners and contractor together to exchange and share all relevant inputs of both attitudinal behavioural and technical knowledge for strong/successful business relationship as indicated in Stage 3 in Figure 8.2 (Pickel, 2007, 2004; Humphries and Wilding, 2004). Other consequences of developing a bond of successful business relationship is that the transformation processes will change the nature of the SCIIs like disjointed, fragmented and others to jointed effective and efficient SCIIs as in Stage 3 in Figure 8.2. Moreover, the link of strong/successful business

relationships of exchanging and sharing both attitudinal behavioural and technical knowledge will help to overcome the malfunctioning of business processes and procedures. The functioning challenges of the processes and procedures can be overcome not only through strong/successful business relationship but also review development, and sustainable optimum relaxation of DSD actors' professional autonomy (Humphries and Wilding, 2004). It is in this light that proper application of these DSD developmental issues in this improvement proposals can produce effective and efficient SCIFs for the expected improved of DSD activities as shown in Stage 3 in Figure 8.2. These can result in construction business relationship success cycle, which can continue to improve project delivery to realize fair and impartial benefits for all the DSD actors.

8.12 Summary

The DSD improvement proposals cover three important stages in the study of the design service delivery activities as shown in Figure 8.2. Stage One considers the challenges of constructing non-collaborative working and adversarial business relationship among the DSD actors and between them and the contractor/staff. Besides, the stage also looks at the bases, the effects, the characteristics of the nature of the adversarial business relationship causing nature of SCIFs and malfunctioning of the processes and procedures used for SCIFs, as major DSD activities difficulties in generating information to transform these situations. The Stage Two focuses on how information acquired can be properly and fully processed and distributed for maximum utilization in developing and constituting effective and efficient SCIFs. This concerns the handling filtering and fractional filtering processing of information to avoid use of waste (inferior inputs) and floating of information that is difficult to classify under particular DSD profession are recycled for regrouping as indicated in Figure 8.2. In Stage Three of the improvement proposals information is received and used. This is basically attitudinal behavioural and predominantly technical knowledge derived from the critical attributes of both knowledge obtained from the field study. The attitudinal behavioural knowledge is used to build collaborative business relationship which forms a strong successful business relationship links among the DSD practitioners and also between practitioners and the contractor/staff as in Figure 8.2. This kind of harmonious, cordial business relationship among the

DSD actors will encourage optimum to maximum use of the technical knowledge to achieve effective and efficient SCIFs, which pass through regular audit to attain that status required. Such effective and efficient SCIFs with strong successful business relationship among the actors will make the working definition used in the improvement proposals and the entire study functional. The definition becomes functional in the sense that whatever it's content, demand has been realized including the anticipated transformational processes that can produce improved DSD activities for contractor/staff to achieve subsequent improved projects as in Figure 8.2.

The working definition used in constructing the improvement proposals and the study needs some concrete steps to enable the DSD and its actors to work together to become self-organized both in behaviour and at the work of developing SCIFs for the improvement of the DSD activities. It is also for mutual benefits (win-win-win) of getting the DSD system to be fair and impartial to all concerned. These anticipations draw into the study the multi-theory, action oriented system theory, thinking and rethinking to direct and guide the study. Also, the theories are methods of finding out constantly whether they are applied systematical in project delivery as discussed in this improvement proposals. The theories as well are provided for shaping of the design stages as appropriately required, for the use of the critical attitudinal behavioural and technical attributes obtained in the field study. Using multi-theory reasoning as a guide and the basis for the DSD improvement and continuous improvements, the consequences are bound to be successful if systematically applied and monitored continuously (see for example Pickel, 2007, 2004; Humphries and Wilding, 2004).

CHAPTER NINE

CONCLUSIONS AND RECOMMENDATIONS

9.1 Chapter Outline

This chapter reflects on the research objectives one after the other. It looked at whether they have been achieved or not, how they were achieved and the findings obtained for each objective. The focus of the presented discussions on the results for each objective have been provided, these were followed by the influence of the multi-theories in the construction of the improvement proposals. Again, how the improvement proposals could work, its importance, challenges noticed, associated transformational stages and expected improvement have been briefly illustrated. The recommendations on implications for practice have been outlined. In ending the chapter, possible areas where implementation of the findings and the improvement proposals could be carried out have been briefly indicated.

9.2 Achievement of Research Objectives

In all, the six research objectives have been achieved and were put into various categories of results obtained from the DSD qualitative data. The related categories which answer a particular research question were put together and presented as a cluster named or placed under the research objective label relating to that research question:

9.2.1 General Methods used to Achieve All the Objectives

A qualitative research was identified as appropriate and have been used in the study. In-depth interviews involving descriptive (narrative) study was used to gather data to answer the research questions. The in-

depth study of the issues and the measuring instrument used for the data collected guided and directed the field research, which was analyzed to answer the objectives. The non-probability purposive non-proportional quota sampling was most suitable for the study and it was applied in the selection of DSD participants for the field study. Additionally, a five-point eligibility criteria was set for the selection of DSD participants (interviewees). The sample frame eligibility criteria set drew into the research some finest DSD experts in Ghana who have rich experience and familiar with DSD professional practice.

Access to the participants throughout the study was obtained due to contacts with professionals who have links with some DSD professionals, and this access opportunity was extensively explored. Other gatekeepers who offered useful access assistance were the executive secretaries of the various professional associations such as Ghana Institute of Architects (GIA), Ghana Institution of Surveyors (GhIS), Ghana Institution of Engineers (GhIE), Ghana Geotechnical Society and Institution of Planners.

Qualitative face-to-face in-depth interviews were conducted among 45 interviewees, 5 from each of the 9 different DSD professions including the contractor organisations in the DSD actors' universe population using an interview guide with semi-structured closed and opened ended questions. Further, the forty-five (45) DSD actors (participants- interviewees), 5 from each of the (9) different professions were selected for the full in-depth interviews for generalization (Yin, 2003). The opinions or views in the data were gathered on the research problem, aim and objectives. The data was transcribed verbatim and put together in the most appropriate manner. In all, the data collection lasted three and half months from 3rd April to 17th July, 2013.

9.2.2 Research Technique used to Achieve Objective One, Two, Three and Four

In the first four objectives, the conventional qualitative content analysis was used as there was insufficient theory and little relevant literature on the research issues. The conventional approach provided the type of analysis which allowed the categories, the labels of the categories and clusters to emerge from the data as inductive categories and clusters appropriate for new emerging issues and concepts. The qualitative

analysis involved reading the transcribed data verbatim several times, coding and putting under different themes or related issues repeated occurrence of words and phrase patterns which form attributes (themes) from the data. The attributes were later sorted into broad emerging views of one, two or three categories under clusters and labels related to the issues formulated and studied from the data transcribed. The results of the analysis of the data were used to answer or satisfy the objectives as textual findings or attributes (factors).

Additionally for objectives three and four, the emerged attributes were also analyzed using the summative qualitative content analysis approach to arrive at the proportions (frequencies) of the usage of the attributes in the data, which have been put in tabular forms. Further, analysis of the results of the categories of attributes describing the characteristics of the adversarial business relationship and nature of SCIFs were conducted using the pareto analysis. The summative content analysis produced the frequencies of the attributes and the pareto analysis helped to rank the attributes and select the critical ones that were the essential basis for the interpretations of the results and strategic planning of the improvement proposals to improve the DSD activities.

9.3. The Bases of Adversarial Business Relationship in the DSD Activities of the Construction Industry

The issue concerning objective one was achieved. This issue was to understand the theoretical and conceptual bases of adversarial business relationships in the DSD activities of the construction industry. The textual results obtained indicated that the DSD actors worked as individuals revealed in statements such as “They do not work under one umbrella but rather work as individual specialists”. This statement provided understanding of a conceptual notion or idea among others. Similarly some other statement like “Most documentation is not appropriately obtained” suggested that some laid down principles/steps or regulations were often not followed. This therefore provided understanding of a theoretical notion or reason about regulations which were flouted. Further these and many other textual bases in the results

provided understanding of why and how harsh and adversarial business relationships prevailed or developed among the DSD practitioners and between them and the building contractors.

9.3.1 Methods and Analysis used to Achieve Objective One

The methods used in the gathering and analyzing the DSD for the objective one followed the research method used in achieving the first four objectives discussed above. The content analysis, conventional approach was used through out to obtain the textual results of bases of the adversarial relationship.

9.3.2 Main Findings of Objective One:

The main findings were presented under one heading showing the **bases of adversarial business relationship in the DSD activities of the construction industry**

9.3.2.1 The Bases of Adversarial Business Relationship in the Construction Industry

Objective one provided textual data for the bases of the adversarial business relationship conceptual issues like “information flow is not very well coordinated”; “difficult to get information flow among practitioners” and “inflow of information comes with difficulty; practitioners do not work together”. Also, “there are no initial or pre-meetings before design and there are insufficient professional (DSD actors) consultations in developing SCIfs and many others in Table 6.3 of Chapter Six. These were the issues which revealed the bases of non collaborative working and adversarial business relationship. They pointed to three categorizations of business relationships. The categories shown in findings were non-collaborative, less collaborative and close-to-average collaborative; resulting in poor performance and lack of improvement in DSD activities.

9.3.3 Focus of Discussion for Objective One

In considering objective one and carefully following the explanations, reasons provided in the results for the bases of **adversarial business relationship shown to be occurring in** developing and constituting the SCIfs suggests there were relationship challenges. Beside, the phrases used to describe the **adversarial business relationship** by the DSD participants (interviewees), point to lack of co-operation and co-

ordination in DSD activities. Further, the conclusions that were drawn from the explanations, reasons and interpretations of the text data obtained as the results show business relationship situations in developing and constituting the SCIFs in Ghana which were noticed to be predominantly non-collaborative than collaborative. The results of the in-depth interviews confirm the issues of record levels of adversarial relationship.

9.4 The Effect of CBR Situation on SCIFs which the DSD Actors Developed and Constituted

Objective two was to find out how the construction business relationship situation affected SCIFs which the DSD actors had developed and constituted in Ghana. The objective of exploring the effects of the construction business relationship situation on SCIFs which the DSD actors had developed and constituted in Ghana was achieved. The study showed that the CBR situation had a lot of effects on SCIFs and DSD activities. The effects of the CBR situation on the SCIFs and the DSD activities noted included delays, reduced quality of the SCIFs and the DSD design products and cost ineffectiveness of the SCIFs and the DSD products. Some of the effects also involved creating difficulties in inflow and outflow of project information which was required for SCIFs development. Other CBR situation effects were disturbance of information sharing that disallowed effective development of SCIFs and prevented a holistic approach in developing and constituting SCIFs.

9.4.1 General Methods and Analysis used to Achieve Objective Two

The methods used to achieve objective two were the same as the general methods used in achieving objective one as illustrated above. The difference was revealed in the analysis. Only the conventional qualitative content analysis approach explained earlier in the analysis of objective one was used. This is because, a careful probe of objective two revealed that text results offered full views of the CBR situation and the effects on the SCIFs and the DSD activities from participants with less repetitive issues in the narrative data. Objective two had one category which was: “the effects of construction business relationship on the SCIFs and the DSD activities”. This category of textual data for objective two was

achieved as a single result under clusters labelled as, “the conceptual and theoretical effects of Construction Business Relationship situation on SCIfs in the DSD activities”.

9.4.2 Main Findings of the Objective Two

The main findings were presented under one heading showing the effects of the CBR situation.

9.4.2.1 Effects of CBR Situation on the SCIfs DSD activities

Evidence provided illustrated that CBR had predominant effects like causing several delays in DSD activities and disturbing improvement in DSD time schedules.

The study showed that there were instances of reduced quality of DSD design products making SCIfs cost-ineffective. Other effects included lack of continuous improvement in quality and cost effectiveness of DSD actors’ products which encouraged shoddy works and caused drawbacks in holistic improvement of DSD activities. These CBR effects also encouraged unhygienic and haphazard infrastructure development.

Most of the DSD actor groups were of the view that CBR effects disturbed effectiveness and efficiency of SCIfs, blocking expansion and improvement in project delivery. Further, according to participants, the effects disturbed information sharing and disallowed effective development of SCIfs due to a lot of confrontational issues that affected the improvement of the quality of SCIfs. Also, the use of a holistic approach in developing and constituting SCIfs was prevented. These affected standards and ignored important details which led to the prevention of meaningful improvement in quality, cost and time control of DSD activities in the project life cycle. These effects included incomplete SCIfs which were ineffective, inefficient and substandard, affecting the improvement of DSD activities by ignoring proper processes, procedures and willingness to learn to adopt changes. Unstable development from poor or abused methods and manners of constituting SCIfs which also hampered improvement of the DSD activities through wrong knowledge acquired in other design, was also among the effects. Difficulties in inflow and outflow of project information required for internal cohesion among the actors for effective

and efficient development of the SCIFs, were also evident. These disturbed improvement of DSD control of time and cost due to non-compliance to regulations, rules and other legal issues.

However, according to views of few DSD participants, the CBR situation affected in some limited ways the improvements of quality in the DSD activities. It was noted that some value for money SCIFs were developed and constituted through collaborative master programmes. The data further showed that situations were better managed or different where competent DSD actors improved the DSD activities. Again, it was captured that in some situations, the DSD activities improved through reduction of errors to achieve lower cost and save time. Also, some isolated situations fostered the right frame of mind for free exchange of project information to improve DSD products of SCIFs in legal and cost control terms.

9.4.3 Focus of Discussion for Objective Two

The findings of the study point to the fact that information sharing among members, which is key to effective and efficient supply chain management of projects, was often distorted and disallowed. DSD actors providing SCIFs for decision-making, which affects planning, executing, controlling and closing of projects, were not working in collaboration and did not have a harmonious, cordial business relationship among them. Lack of these relationships affected smooth information flow and information sharing and performance of DSD actors which caused lot of delays, which disturbed or destroyed completely, timelines, quality and cost control of project delivery. These effects finally left the built environment littered with unhygienic and haphazard infrastructural developments.

However, according to the findings, there were limited collaborative work and less adversarial business relationship situation among the DSD actors. The SCIFs consisting of chains of project documentations such as drawings, bill of quantities, specifications, contract conditions, spot levels, geotechnical reports, explanations and clarifications, form the basis of all activities in a project, did not follow standardized formats and many were incomplete. Again there were some positive effects of the existing CBR situation on DSD activities captured in DSD actor groups' findings. Some of the SCIFs developed and constituted

had value for money with records of improvements in the quality of DSD activities through collaborative master programmes. These positive effects may be due to employment of competent DSD actors who worked to reduce errors, achieved lower costs and saved time through fair amount of cooperation in an open system, as theorized under the system theory. The actors may have had the right mind set to do regular consultations for free exchange of project information to develop and constitute effective and efficient SCIFs for the improvement of the DSD activities. These were possible in some collaborative work and less adversarial business relationship situation among DSD actors, which would result in improvement of DSD activities.

9.5 The Empirical Understanding of the Characteristics of the Adversarial Relationship among DSD Actors especially in the Light of the Difficult Economic and Business Operating Environment.

This objective of looking for the empirical understanding of the characteristics of the adversarial relationship among **DSD actors** was achieved. From the findings the attributes of data indicated that the characteristics of the adversarial business relationship was harsh, stressful and hostile. Statement such as “Lack of harmonization of professional work and good business relationships” and “Hostility, frustration, tension and conflict” these suggested that the characteristics was not cordial but rough and difficult in nature. Also some of the attributes like “Lack of Interdependencies and sustainability” pointed to the fact that there was individualism or no cooperations in business activities among the DSD actors and there was no quality improvement in DSD activities. Similarly another attribute such as “low motivation” among others suggested that the characteristics of the adversarial relationship did not encourage hard work in the DSD business.

9.5.1 Methods and Analysis used to Achieve Objective Three

The methods used to achieve objective three were similar to the methods used in achieving objective one as illustrated in Sections 9.2.1 and 9.2.2. The difference was in the analysis. Not only was the conventional qualitative content analysis approach explained earlier in the analysis of objective one used but also the summative and pareto analysis were employed. These were necessary because an in-depth

examination of objective three showed that tabulated attributes findings provide full views of the characteristics of the adversarial business relationship in developing the SCIFs and the DSD activities from participants with less repetitive issues in the narrative data. Objective three had attributes which had phrases revealing several characteristics of the business relationships as adversarial. Such phrases include: “lack of harmonization of professional work and good business relationships”; ‘hostility, frustration, tension and conflicts’; ‘lack of interdependencies and sustainability’ these categories of characteristics of objective three were achieved as findings under the clusters labelled “Attributes describing the Characteristics of the existing construction business relationship” and “Critical attributes describing current CBR situation” showed the main characteristics of the business relationships nature among the DSD actors obtained in the study.

9.5.2 Main Findings of the Objective Three

The main findings were presented under one heading showing the characteristics of the adversarial business relationship situation in developing the SCIFs.

9.5.2.1 The Characteristics of CBR

In this objective the characteristics of the adversarial business relationship situation in developing and constituting of SCIFs was investigated. This aspect was carried out by first studying the characteristics of the construction business relationships among the nine DSD actor groups, which has a strong link with the nature. In the study, twelve attributes were obtained. Eight of them were found to be critical based on Pareto chart analysis and the plot carried out. Attributes gathered revealed the characteristics of the existing CBR situation. The attributes included critical (predominant) ones like ‘lack of harmonization of professional work and good business relationships’; ‘hostility, frustration, tension and conflicts’; ‘lack of interdependencies and sustainability’; ‘mixed relationships of affiliates and training mates’ relationships’.

Again, from the attributes showing the characteristics of the nature of the CBR, it was evident that ‘lack of harmonization of professional work and good business relationships’ accounted for 14%; ‘hostility,

frustration, tension and conflicts' accounted for 14%; 'lack of interdependencies and sustainability' accounted for 13%. All showed non-collaborative working. The others like 'mixed relationships of affiliates and training mates' relationships' accounted for 9%; 'low motivation; no command structure'; 'harsh system of falsification of documents and greed as well as misinterpretation of documents by DSD actors accounted for 7% each. They were not different from the former ones. Additionally out of these eight critical attributes identified using the pareto plot in Figure 6.1 of Chapter Six as attributes describing the current CBR situation in Ghana, seven are negative attributes. These negative attributes with total frequency of 69% point to business relationship challenges of non collaborative working and adversarial relationships among the DSD actors.

9.5.3 Focus of Discussion for Objective Three

The characteristics show that the existing construction business relationship situation was mainly adversarial or harsh where actors were more individualistic, inward-looking and showed little or no concern in employing other professionals for collaborative activities. DSD actors preferably established more single professional firms than collective firms. These development of firms was not due to chance but actors were predictably drawn into such situations by the inherent desire to protect their interest and values that caused them to refuse to collaborate. They also wished to have freedom from control rather than collectivism that would let them lose some professional autonomy. It was found that the non-collaborative adversarial business relationship situation is also partly due to the extended family system which sometimes might end the existence of the firm and the uncertainty of future implications or outcomes of collectivism.

9.6 The Nature of the Supply Chains of Information Flow (SCIfs) and the Construction Business Relationship Situation among DSD Actors in Developing and Constituting Scifs

Objective four which seeks to find the nature of SCIfs developed and constituted was achieved. Eight attributes that showed the nature of the SCIfs were identified. The nature of the SCIfs were mostly described as being disjointed', 'fragmented', and 'uncoordinated'. The other attributes describing the

nature of SCIFs are different from the main ones identified. These include 'jointed', 'partially jointed', 'partially disjointed', 'partially fragmented' and 'incoherent'. Among the eight attributes describing the nature of SCIFs in the data, only two attributes like 'jointed', and 'partially jointed' described the nature of the SCIFs as collaborative.

These, among others, were identified from the study.

9.6.1 Main Findings of Objective Four:

The main findings of objective four were put under headings as the nature of the SCIFs

9.6.1.1 The Nature of the SCIFs

Three critical attributes were found to have been predominantly used to describe the nature of SCIFs. These were disjointed, which accounted for 36%, fragmented and uncoordinated accounted for 16% each. These three attributes constituted a total frequency usage of 68% which described the nature of SCIFs. This indicated that developing and constituting SCIFs involved high levels of non-collaborative working in the DSD activities. New insights which emerged concerning the nature of SCIFs from the study involving attributes like 'partially jointed' (9%), 'partially disjointed' (9%), and 'partially fragmented' (4%), were not found in the literature.

9.6.1.2 Focus of Discussions for Objective Four:

The nine different DSD actor groups' descriptions of the nature of SCIFs indicated the main activities of DSD actors and that the SCIFs had a lot of non-collaborative and adversarial business relationship challenges. The nature of the existing SCIFs' had challenges, which the attributes like disjointed, fragmented and others describing the SCIFs revealed. These challenges demonstrate the depth of distortion and consequences of disallowing free exchange of information for effective and efficient development of the SCIFs. These challenges recorded high percentages in the study, which suggests that they contribute to the unhygienic and haphazard project delivery in Ghana. The study had shown that not all DSD actors prefer professional independence and the culture of working towards individualism that avoided

collectivism. The culture of collectivism positively supported collaborative activities and the employment of experts from other professions. But the level of collaboration indicated by both the nature of the SCIfs and the CBR critical attributes was limited. In that sense, all the three critical attributes describing the nature of SCIfs and the eight critical ones describing the nature of the CBR summed up to 68% and 78% respectively. These critical attributes of both SCIfs and CBR offer textual indication and the high occurrence figures confirmed non-collaborative working and adversarial business relationship among the DSD actor groups. Therefore, it is illustrated that the DSD actors had no common association to review and develop plans and procedures to improve the CBR, to make SCIfs effective and efficient. For instance, an aggregation of the attributes providing full or partial indication of non-collaborative, adversarial business relationship among DSD actors like disjointed (36%), uncoordinated (16%), fragmented (16%), partially disjointed (9%), partially fragmented (4%) and incoherent (2%) accounted for a total of 83%.

To gain inputs from best practices of well-developed SCIfs of the-supra-systems in the global environment as recommended, the system theory was applied. This was aimed at developing improvement proposals to transform the current SCIfs situation in Ghana. The system thinking and more of rethinking involving a paradigm shift from the parts to the whole system of interactions that would result in integration, collaboration and collectivism was employed in the study. Thus, there would be interactive platforms providing opportunities for feedbacks, reviews and the sharing of information to improve DSD activities in the construction industry.

9.7 Investigate How the Processes and Procedures used in Developing and Constituting SCIfs Function to Affect DSD Activities in Ghana.

Objective Three is about investigating how the processes and procedures used in developing and constituting SCIfs function to affect the DSD activities in Ghana. This has been achieved.

The investigation revealed eleven attributes describing how the processes and procedures used in developing and constituting SCIfs function. The narrative results of the DSD actor groups of the functioning of the processes and procedures predominantly involved five attributes. These five attributes were 'unsystematic', 'insufficient details'; 'inconsistent or use of outmoded methods', sub-standards with gaps or no standard for supply chains' and 'use of weak incomplete supply chain'.

Other attributes that emerged to describe how the processes and procedures used in developing and constituting SCIfs function were: 'systematic', 'non-compliance with legislation, rules and regulations', 'overlapping scope of work', 'poor programming and planning', 'lack of good leadership' and 'after-thought activities'. The eleven attributes which were used to describe the functioning of the processes and procedures, were reinforced using textual views from the findings of the interviews of DSD actors interviews results. The textual views from the DSD actor groups strengthened the descriptions provided concerning how the processes and procedures used in developing SCIfs function. The functioning of processes and procedures, were found to be unsystematic and inconsistent lacking sufficient details and were used for sub standard SCIfs with less programming, planning and with a lot of non-compliance to legislation, regulations and rules.

9.7.1 Methods and Analysis used to Achieve Objective Five

Methods used involved literature review, setting criteria for the selection of DSD participants, non-probability sampling and qualitative data collection approaches as explained under objective one were followed. However, the method of analysis of the data differed. The directed qualitative content analysis was used instead of the conventional content analysis approach used previously for objectives one and two. The approach was also essential and appropriate as there were identified gaps in previous research concerning the phenomenon of developing and constituting SCIfs for the improvement of DSD activities. Some of these gaps in the literature, which were identified, concerned objective six and part of objective seven. The relevant literature reviewed failed to disclose any research on “how the processes and procedures used in developing and constituting the SCIfs function in the Ghanaian construction industry”

as was in the issue of the study in this research. Another was “the technical knowledge required of the DSD actors for a collaborative business relationship management framework to improve DSD activities”.

The directed qualitative content analysis approach was used for the processes and procedures identified. Both the known and emerged attributes were also analyzed using summative qualitative content analysis approach to arrive at the proportions (frequencies) of the usage of the attributes in the data in tabular forms as in the analyse of objectives one and two. The results of the analysis of the data were used to answer or satisfy objective three as textual findings and attributes, with proportions (frequencies) in tabular forms. The analysis of the results of the category of attributes which describe the way processes and procedures used in developing and constituting SCIfs function was conducted using the pareto analysis. This analysis helped to rank the attributes and select the critical ones that were essential for strategic planning of the improvement proposals for the improvement of DSD activities. A similar procedure had been followed to achieve the other category “Effects of the functioning of the processes and procedures used in developing and constituting SCIfs on DSD”.

9.7.2 Main Findings of the Objective Five

The main findings were put under two sub headings as the functioning of processes and procedures used in developing and constituting SCIfs and the effects of the functioning of the processes and procedures used in developing the SCIfs.

9.7.2.1 How the Processes and Procedures Used in Developing and Constituting SCIfs Function (sub-cluster one)

The study presented in sub-clusters one of objective five eleven different attributes that the nine DSD actor groups used to describe how the processes and procedures used in developing and constituting SCIfs functioned. Five of the attributes were predominantly used. These included 'unsystematic and insufficient details' with frequency of 15% each; 'inconsistent or use of outmoded methods and sub-standards with

gaps or no standard for supply chains' accounted for 13% each; and 'use of weak incomplete supply chain' with frequency of 12%. The five attributes outlined accounted for a total of 68%. The other attributes, used to describe how the processes and procedures used in developing and constituting SCIfs functioned were: 'systematic' (7%); 'non-compliance with legislation, rules and regulations' (7%); 'overlapping scope of work' (6%); 'poor programming and planning' (6%); 'lack of good leadership' (4%); and 'after-thought activities' (4%).

A probe into the findings of the different DSD actor groups results for the case of objective six revealed that the functioning of processes and procedures used for SCIfs, were unsystematic and inconsistent. They also lacked sufficient details and produced sub-standards SCIfs involving few different DSD actor groups, with less planning and programming, avoiding compliance to legislation, rules and regulations.

9.7.2.2 Effects of the Functioning of the Processes and Procedures used in Developing and Constituting the SCIfs on DSD – (sub-cluster two)

In sub-cluster two of the findings of the nine DSD actor groups, eleven different attributes were found, which describe the effects the processes and procedures used in developing and constituting SCIfs have on design service delivery in Ghana. The four main attributes found were 'pressure on timelines causing delays' accounted for 23% and 'difficulties in cost control - cost over runs' accounted for of 22%, 'insufficient share and flow of information' with frequency of 12%, and 'poor quality of work' with frequency of 10%. Some of the remaining seven attributes were 'lack of continuous, smooth, effective and efficient delivery' and 'difficulties in meeting delivery review/audit dates' with frequency of 7% each. Others include 'lack of technical inputs and records keeping' and 'too much professional autonomy and slackness' with frequency of 6% each, 'slippage of project schedules and uncertainty fluctuations', 'undercutting contract price' and 'destroys project objectives' accounted for 4%, 2% and 1% respectively.

A probe into the findings of the different DSD actor groups for the issue of objective five demonstrate that, the situation produced difficulties in cost control and timelines of DSD activities due to insufficient

share and inflow/outflow of project information and too much professional autonomy with inefficiencies in attitudinal behaviours towards work.

9.7.2.3 Focus of Discussions for Objective Five

The focus of the discussions was on how processes and procedures used in developing and constituting SCIfs function and the effects on the DSD activities. In the study, smooth information sharing among members was seen as key to effective supply chain management of all projects (see for example Hatmoko and Scott, 2010; Titus and Bröchner, 2005). Insufficient share and flow of information led to the issue of poor quality of work. The inputs of some DSD actor groups in developing and constituting SCIfs were either not fully allowed or not used at all to develop and constitute SCIfs. These DSD actor groups were mostly ignored, preventing improvement in DSD activities.

It was identified that for business processes and procedures to be recognized as suitable for the business functions of the various sub-SCIfs, they were supposed to function effectively and efficiently in developing properly the final product i.e. the SCIfs (see for example ISO, 2008). The SCIfs in any construction project delivery ideally should be effective and efficient (see for example Pryke, 2009). Lack of effective and efficient SCIfs results in poor quality work, lack of expansion, cost and time overruns (see for example Hatmoko and Scott, 2010; Titus and Bröchner, 2005). Similarly, it was found that situations caused wastage in all phases of project delivery (see for example Hatmoko and Scott, 2010; Pryke, 2009; Titus and Bröchner, 2005; Chan and Kumaraswamy, 1997). The findings of the study show that the functioning of the current processes and procedures used in developing and constituting SCIfs had adverse effects on design service delivery activities. Thus, there is no proper functioning of the processes and procedures. There was the need for proper and consistent functioning of the processes and procedures to achieve the desired consequences or the intended results like effective and efficient SCIfs. However, the processes and procedures currently used seem to lack these principles. The common DSD processes and procedures seem to be non-existent. For that matter, the situation creates attitudinal behavioural and technical challenges like ethical issues, uncertainties in project delivery and interpretation difficulties in

managing DSD activities (see for example Jaffar et al, 2011; Fugar and Agyakwah-Baah, 2010; ISO, 2008; Hammer, 2000).

Hawkins (2011) and Mullins (2005) stated that the proper functioning of the processes and procedures were absolutely dependent on the business relationship among the DSD practitioners and between them and the contractors. Also, the DSD actors managing the processes and procedures were faced with non-collaborative and harsh or adversarial business relationship (see for example Orgen et al, 2012a; Laryea, 2010; Anvuur et al, 2006). This business relationship challenge disturbed and distorted all project processes and procedures, consequently ending in complete loss of project objectives (see for example Ramus and Birchall, 2006). The findings from the study of how the processes and procedures used in developing and constituting SCIFs functioned and its effects, predominantly presented attributes that signified improper functioning of processes and procedures. The findings also illustrated the fact that the improper functioning of processes and procedures used in developing and constituting SCIFs had a corresponding high percentage negative effects on the improvement of the DSD activities. In view of these, the current study had provided empirical data on how the existing processes and procedures used in developing and constituting SCIFs function, which the literature lacked, to provide a basis for the development of a common standardized best-practice.

9.8 Attitudinal Behavioural and Technical Knowledge Required of the DSD Actors

Objective Seven, which is to find out attitudinal behavioural and technical knowledge required of the DSD actors for the development of a collaborative business relationship management improvement proposals to improve the DSD activities was achieved in two parts (sub-issue).

9.8.1 Sub-Issue One - Attitudinal Behavioural Knowledge Required of DSD Actors for a Collaborative Business Relationship Management Improvement Proposals

From the study, the nine DSD actor groups' identified twenty-three attributes forming attitudinal behavioural knowledge required for collaborative business relationship among DSD actors. Following ranking with the aid of Pareto analysis, the attributes 'continuous collaboration' came first. This was

followed by 'trust', 'effective communication'; 'openness', and 'commitment', 'respect for each DSD actors' and 'self-discipline and diligence'.

Moreover, the study shows that 'humility in the acquisition of knowledge', 'willingness for continuous coordination improvement', 'continuous professional development' and 'time consciousness', were among the critical attributes identified as attitudinal behavioural knowledge required of DSD actors. Other attitudinal behavioural knowledge attributes were 'professional integrity', 'joint problem solving' and 'realization for change' among others. These of lower ranking, were identified as required for collaborative business relationship among DSD actors to improve DSD activities.

9.8.2 Sub-Issue Two -Technical Knowledge Required of DSD Actors for a Collaborative Business Relationship Management Improvement Proposals

From the study, the nine DSD actor groups identified fifteen attributes as required for technical knowledge for the development of collaborative business relationship among DSD actors. “Inter-professional focused discussions on SCIFs (chains of project documentations) at DSD workshops, seminars, fora and meetings for reviews, feedback and debriefing”, repeatedly emerged as the topmost technical knowledge required for collaborative business relationship. Other attributes such as “built environment experts’ common forum for planning and programming”, “inter-professional business relationship management development”, “continuous search for all clients’ inputs and satisfaction” as well as “financial benefits, awards and professional fees” were also required.

“Documentation and record keeping experiences” was identified as technical knowledge required for collaborative business relationship among DSD actors. Additionally, four attributes,- “leadership, authority and ethical issues”, “securing of contractors and subcontractors design inputs”, “decisions on SCIFs (chains of project documentations), auditing/vetting” and “time, quality, cost effectiveness of DSD in using SCIFs (chains of project documentations)” were also required for collaborative business relationship. In addition, three attributes: “regular decisions, discussions on common roles to prevent

adversarial relationships”, ‘use of up-to-date, acceptable processes, procedures technology to achieve functionality of the SCIfs’, and “implementation strategies in line with laws, bye-laws, rules and regulations”-were similarly identified for collaborative business relationship. Two other attributes - “produce catalogues on common DSD errors for the improvement of DSD” and “determination to produce standardized SCIfs by all acceptable means including study tours”- were also required of DSD actors.

9.8.3 Methods used to Achieve Objective Six

Generally, the methods including literature review, the criteria set for the selection of DSD participants, non-probability sampling and qualitative data collection approaches were used in the same way as used for Objective One. The directed qualitative content analysis was used instead of the conventional content analysis approach used previously for Objectives One, Two, Three and Four.

The directed content analysis approach was used in coding straightway based on both predetermined and undetermined attitudinal behavioural codes of words and phrases. The predetermined codes were analyzed alongside the undetermined codes. The analysis was conducted in such a manner as to guard against bias and to prevent grouping of the coded words and phrases under different attributes of interest, other than attitudinal behavioural ones. Also, the predetermined codes helped to ensure that the analysis carried out prevented omissions of new codes, subcategories or categories which emerged. The directed approach was very useful to capture all possible occurrences covering the phenomenon under study. This approach therefore, was essentially employed in the research to capture all attitudinal behavioural occurrences found in the data specifically, to capture all possible circumstances such as emotions and reactions from the DSD actor groups’ data on attitudinal behavioural knowledge required to develop and constitute the SCIfs to improve DSD activities.

The coding allowed for all new insights to emerge. This way of coding increased the trustworthiness and credibility of the approach used to obtain the results for subcase one of the study, “The attitudinal behavioural knowledge required of DSD actors for a collaborative business relationship management framework to improve DSD activities” The findings show attributes obtained qualitatively with proportions (frequencies) of occurrence of each attribute for the sub-issue. The directed analysis approach was supported with the summative content analysis which guided the summation and interpretations of the proportions (frequencies) of the attributes obtained for the improvement proposals to satisfy the first part of Objective Six.

For the technical knowledge, the directed content analysis was used. It was used for subissue two, “The technical knowledge required of DSD actors for a collaborative business relationship management improvement proposals to improve DSD activities” The directed content analysis approach allowed and made use of vital initial information concerning the attributes of interest in the relevant literature. In this analysis, the attributes of interest associations or links with the various words and phrases in the data were considered. The approach was also essential and appropriate in identifying gaps in previous research concerning the phenomenon of developing and constituting SCIfs for the improvement of the DSD activities. A specific gap in the literature identified an issue concerning part of objective six which the relevant literature reviewed failed to disclose was the issue of the study “technical knowledge required of the DSD actors for a collaborative business relationship management improvement proposals to improve DSD activities”

Several readings helped to identify all related technical concepts and issues linking well with previous research in the relevant literature on one hand. On the other hand, a careful search through the DSD data also revealed new insights of words and phrases which were linked to issues and concepts relating to technical knowledge. These words and phrases were coded. The related codes were grouped under different themes. The proportions of the repeated occurrence under different headings of the related codes

of words, phrases patterns form attributes (themes) obtained from the data based on their properties. The attributes were later sorted into broad known and new emerging views of one, two or three categories under clusters, labels related to the subissue formulated and studied from the DSD actors data based on their properties. Both the known and emerging attributes were also analyzed using summative qualitative content analysis approach to arrive at the proportions (frequencies) of occurrence of the attributes in the data. The results of the analysis of the data were used to answer or satisfy objective seven as findings and attributes with proportions (frequencies).

Further, analysis on both results of “The attitudinal behavioural and technical knowledge required of DSD actors” was conducted using the pareto analysis. This analysis helped the ranking results of both the attitudinal behavioural and technical attributes. The pareto analysis showed the highly ranked attributes to be selected as critical ones essential for strategic planning of the improvement proposals for the improvement of DSD activities. Similar procedures were followed in both subcases.

9.8.4 Main Findings of Objective Six

The findings of Objective Six are of two parts involving attitudinal behavioural and technical knowledge

9.8.4.1 Attitudinal Behavioural Knowledge

Twenty-three attributes were identified as attitudinal behavioural knowledge required for collaborative business relationship among DSD actors. The predominant attribute identified was “continuous collaboration”, which was most frequently used and accounted for 12%, followed by “trust”, “effective communication” and “openness” accounting for 8% each, and “commitment”, “respect for each DSD actors” and “self-discipline and diligence” accounting for 7% each. Further, “humility in acquisition of knowledge” accounted for 6%, “willingness for continuous coordination improvement” and “continuous professional development” accounting for 5% each were also identified as attitudinal behavioural knowledge required of DSD actors.

Other attitudinal behavioural knowledge such as “time consciousness”, “professional integrity”, “joint problem solving” and “realization for change” among others, with frequencies ranging from 4% to 1% were less frequently identified as required for collaborative business relationship among DSD actors to improve DSD activities. The Pareto plot of the attributes described the attitudinal behavioural knowledge required for collaborative business relationship among DSD actors was useful for ranking the attributes. The plot also helped in selecting the critical ones for remedying the situation.

9.8.4.2 Technical Knowledge

Fifteen attributes were identified as required technical knowledge for the development of collaborative business relationship among DSD actors. The main attribute was “Inter-professional focused discussions on SCIFs (chains of project documentations) at DSD workshops, seminars, fora and meetings for reviews, feedback and debriefing”, accounted for 15%. It emerged as the most repeated technical knowledge attribute required for collaborative business relationship. This was followed by other attributes “built environment experts’ common forum for planning and programmes” (14%), “inter-professional business relationship management development” (11%), “continuous search for all clients’ inputs and satisfaction” (9%), “financial benefits, awards and professional fees” (7%) and “documentation and record keeping experiences” (7%).

Again, it was shown that four attributes “leadership, authority and ethical issues”, “securing of contractors and subcontractors design inputs”, “decisions on SCIFs (chains of project documentations), auditing/vetting” and “time, quality, cost effective DSD using SCIFs (chains of project documentations)” accounting for 6% each were also required for collaborative business relationship.

Additionally, three attributes “regular decisions, discussions on common roles to prevent adversarial relationships”, “use of up-to-date, acceptable processes, procedures/ technology to achieve functionality of the SCIFs”, and “implementation strategies in line with laws, bye-laws and regulations” accounting for

3% each were also required for collaborative business relationship. Two other attributes, “produce catalogues on common DSD errors for the improvement of DSD” accounted for 2% and “determination to produce standardized SCIfs by all acceptable means including study tours” accounted for 1%, were also required for DSD actors collaborative working and good business relationships.

9.8.5 Focus of Discussions for Objective Six

“Trust”, “openness” and “respect for other DSD actors” were identified as required for collaborative business relationship among DSD actors. Most of DSD actor groups also identified these attributes: “continuous collaboration”, “effective communication” and “self-discipline and diligence” as useful. Additionally, almost all of them identified “commitment”, and all except Geotechnical Engineers identified “humility in acquisition of knowledge” as critical. The fact that most of the DSD actor groups identified the above attributes indicate the importance and appropriateness of the attributes for the improvement of collaborative business relationship among DSD actors. The appropriate technical knowledge required for collaborative business relationship among DSD actors was for the improvement of DSD in Ghana. The information provided by the DSD actors in this study suggest their in-depth awareness of the technical issues confronting DSD activities in Ghana. The use of the attributes identified in this study would engender a robust collaborative working among the DSD actors. This would also enable essential, harmonious and cordial business relationships to be realised for the development of effective and efficient SCIfs in the construction industry. The results also illustrate the need to foster collectivism as a cultural dimension for business relationship improvement among DSD actors.

The results from the study confirm some of the literature claims and show evidence of new insights. Also, for the cordial, harmonious and collaborative business relationship to function properly within the

DSD organizations, the adoption of both attitudinal behavioural and technical attributes was recommended. The consistency in adopting the attributes depend on appropriate professionalism and technical interactive elements required and appropriately used at each of the five maturity levels. Within the five maturity periods, involving adversarial, transitional, short term, medium and long term periods, there should be steady increase of 'We-intention of collective goals'; reduction of professional autonomy and increasing desire to use the attributes.; which would allow quality collaborative business relationship to function harmoniously from period to period in the entity. These kinds of business situations and suitable application of the action oriented system theory, system thinking and rethinking, could allow the development of an effective and efficient SCIfs for the improvement and continuous improvement of DSD.

9.9 The Improvement Proposals and how they Work

The DSD improvement proposals start with investigation of how the SCIfs were developed and constituted and also about business relationship challenges. The improvement proposals were constructed to deal with the construction business relationship (CBR) and processes/procedural challenges different DSD actor groups face in developing and constituting SCIfs. These were pre-conditions like DDC which caused non collaborative working and adversarial business relationship and contributed to the disjointed and unsystematic nature of the SCIfs identified by the study and the multi-theory (multi-theorisations) used.

9.9.1 Challenges Noticed

The identification of non-collaborative working and adversarial business relationship situation revealed DDC and tendencies which caused DDC in developing the SCIfs. The influence of these on the nature of SCIfs and developmental issues i.e. CBR were recorded in offices/sites and used to direct and guide the focus of proposals for the improvement of the DSD activities.

9.9.2 Transformation Links

Moreover, concepts like “change of mind set” was incorporated into the improvement proposals as they were required to change the recorded existing non-collaborative working and adversarial business relationships. A concept was used to create awareness of the recorded situations and to form an essential link between the challenges and transformation of the DSD actors’ thoughts concerning the SCIfs development. To succeed, brainstorming at workshops, seminars, fora and meetings as part of DSD socialization processes were suggested and expected to be continuous.

9.9.3 Multi-theory Application

The next stage was to understand the multi-theory adoption of the system theory, thinking and rethinking. The system theory was used in the improvement proposals to probe the recorded challenges as open or closed and to find the extent of the situation. That helped to strengthen and explain stages of transformation processes introduced in the improvement proposals.

System thinking (STh) came from the shift in attention from separate parts of a system to the whole. At this point, the improvement proposals considered all the parts that could complete the changes in DSD actors work of improving the DSD activities and also to get the actors connected rationally to develop and constitute effective and efficient SCIfs.

9.9.4 Steering Issues of the Improvement Proposals

To get the DSD actors connected to work collaboratively hinged on two critical facts and procedures, either the DSD actors being self-motivated connect by associating together or developing collaborative DSD activities (see for example Mullins, 2005), or, the use facilitators appointed or nominated from among DSD actors to coordinate all DSD business relationship matters within the collaborative DSD activities. Another important fact was the amount of work (size of project) and the field of work (speciality) a particular professional area where work had to be managed. In that sense, it was more relational, most appropriate and logical to allow a coordinator from that profession for easy and quick

information flow to achieve optimum performance. The facilitators appointed for extremely large project should be part of a coordinating nucleus or central based (a small steering actor group) directing business relationship DSD programmes and agenda. In the development of SCIfs for small projects the former procedure is indispensable, but in SCIfs for large projects, all should be allowed (see for example Cheung and Rowlinson, 2005; Smyth and Fitch, 2009).

9.9.5 Transformation Process and the DSD Maturity Cyclic Order

At this stage of the improvement proposals, the actors were expected to change through the application of the attitudinal behavioural and technical knowledge as they gradually developed SCIfs for projects. It was expected in each SCIf, that for a project, challenging issues recorded would progressively die or fade out or disappear from traditional adversarial to transitional, transitional to short-term, short-term to medium-term and medium-term to long-term as the attitudinal behavioural and technical knowledge were applied (see example for Meng, 2010). These required changes are applied and checked continuously in a cyclic order during any DSD activity until real permanent transformation is reached in the long-term. Sorting and filtering of information obtained from workshop, fora, seminars and meetings fine-tuned or refined the information flow for the development of effective and efficient SCIfs to improve the DSD activities. Revolving cyclic order was sustainable in a system thinking manner.

The DSD actors could go through the stages in a five-point learning cyclic order of DSD attitudinal behavioural socialization processes as illustrated in Figure 8.1 in Chapter Eight. This could enable the DSD actors to become gradually and fully mature in adopting the attitudinal behavioural and technical knowledge attributes obtained in the study and used in the improvement proposals. This involved five-point learning cyclic socialization processes as a revolving cyclic order required and explained in Figure 8.1 in Chapter Eight.

9.9.6 Information Flow Tracking and Maximum Utilization

Feedback sheets (see sample in Appendix A) could also be used to quicken fast tracking of fine-tuned and finest information and leave the “supposed wastes” to be recycled. Thus there could be efficient use of information flow to prevent rejection of the information by finding the appropriate use. This could prevent or minimize the difficulty of locating “supposed/assumed waste”- less useful information in technical feedback is provided in the improvement proposals.

Also, fractional filtering was used to classify the bulk of finest technical information into groups’ content according to the requirement of the different DSD professions (see for example Orgen et al., 2013b; 2013a; 2012b). The DSD actors’ fractionally filtered technical information (the most relevant aspect of inflow of information for the development of the SCIfs) which could enable ‘We-sense, We-intentions of collectivism’ which would lead to collaborative business relationship in developing the SCIfs. Critical relationship improvement factors or attributes which made up the attitudinal behavioural knowledge was used to prevent or reduce non-collaborative working and adversarial relationships to improve DSD activities that framework development required for free outflow of project information.

9.9.7 Information Flow Checking and Maximum Appropriate Utilization

At this point, details of the audit were provided. The feedback sheets could be subjected to DSD actors auditing, conducted as a reverse check and review of all inflow of feedback or concerns raised in workshops, seminars and the like. The auditing was essential for directed and guided application of audited information flow to develop effective and efficient SCIfs for the improvement of DSD.

Further, if any feedback was not utilized or was wasted, it was transferred back for in-depth study and placed in an appropriate order for work. One unique aspect of the improvement proposals was that information flow was made regular, available, accessible and was hardly discarded. These auditing steps in the improvement of the DSD activities processes were part of the mechanism to confirm whether particular levels of collaborative DSD activities had been achieved.

9.9.8 Expected Improvement

Using fractionally filtered finest information (inflow of the best information for at least optimum development of the SCIfs and to improve the DSD system) of specific professional content from the different professions would help to develop and constitute effective and efficient SCIfs, which could produce SCIfs of high quality finalities for improved project delivery. The high quality of various SCIfs finalities developed and constituted as indicated would lead to cost, time and quality effectiveness. Continuous development of effective and efficient SCIfs would have the capacity to improve the DSD activities in line with good ST finality (see for example Mele et al, 2010; Pickel, 2007). Hatmoko and Scott (2010); Titus and Bröchner (2005); Sahin and Robinson (2002); Chan and Kumaraswamy (1997) assert that outcomes of key decisions in the DSD activities depend on effectiveness and efficiency of SCIfs. Therefore, high quality standard SCIfs could positively improve the post-contract DSD activities ie supervision, valuations and eliminate or reduce queries and claims among others. In the improvement proposals, contractors were to provide due role in the development and use of the SCIfs. Performance feedback from the observations at their end was to be treated with a sense of urgency hardly found for future development. This was because they were the only actors that received and used the design from the DSD practitioners from time to time. This would help to achieve DSD objectives regularly and sustain the improvement and continuous improvement objective of the improvement proposals (Song et al., 2009).

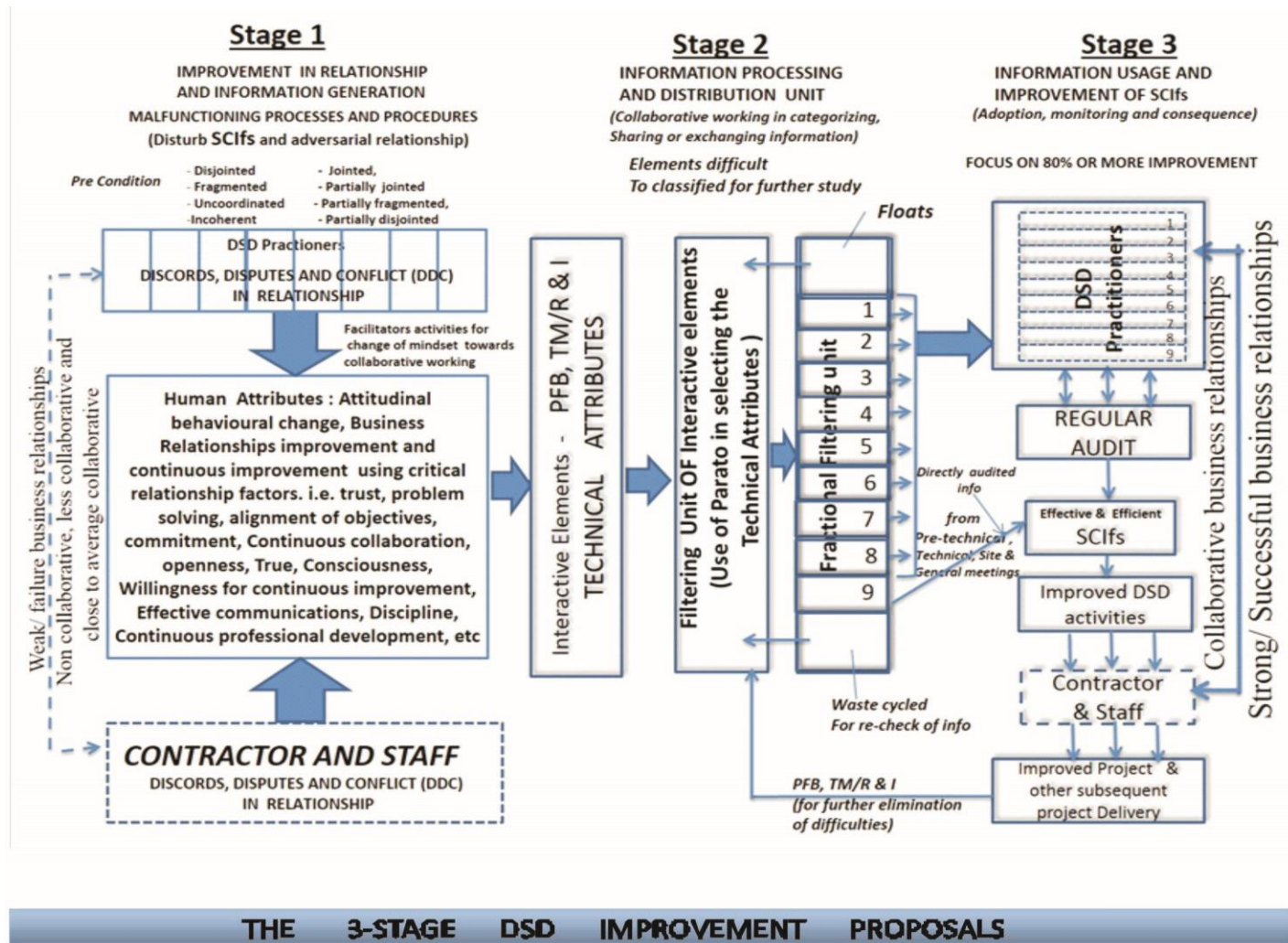
Indeed, it was noted that proper recognition of contractors' contributions in DSD were essential for harmonious and cordial business relationship in developing effective and efficient SCIfs, which could lead to improved projects delivery all over in the built environment. Again, such contributions through the continuous improvement process, could consistently improve DSD activities in time, cost and quality of project delivery.

9.10 Importance of the Improvement Proposals

The improvement proposals were developed on four grounds. These included the pre-conditions (See challenges in the Stage One in Figure 9.1) which were the bases, the effects, characteristics of the adversarial business relationship causing nature of SCIfs and functioning of the processes and procedures used for SCIfs (chains of project documentations). According to the findings of the study, the bases and the effects of CBR offer text data and the characteristics of the CBR provided attributes with critical ones that confirm non-collaborative and adversarial business relationship among the DSD actors (practitioners and contractors). Further the nature of SCIfs for key decisions in construction were also identified in the study as disjointed, fragmented and uncoordinated among others (see for example Hatmoko and Scott, 2010). It is also understood from the study that there are improper functioning of the processes and procedures used in developing and constituting SCIfs. These disturb the effectiveness and efficiency of the SCIfs, which affect the improvement of DSD activities (see for example Laryea, 2010; Brown, 2008. Anvuur et al, 2006). These issues are challenges (See, Stage One in Figure 9.1) that confront and disturb several construction project delivery chains in different ways and at various places (see for example Jaffar, et al., 2011; Yiu and Cheung, 2006; Odusami et al, 2003) The importance of the improvement proposals is that it incorporates a probe into these recorded challenges and introduces processes and procedures that involve theories which if followed could overcome the three challenging situations identified. Additionally, the improvement proposals illustrates how those theories can be applied in practices and the expected consequences instituted as they are not previously identified in the relevant literature.

Proper application of the improvement proposals in practice would improve the DSD actors' professionalism through gradual development from one maturity level to the others and permanently establish long-term business relationships with other actors (see for example Hawkins, 2011). Business

relationship being critical to a number of issues would directly open the DSD entity to inflow and outflow of relevant information for effective and efficient development of SCIfs as recommended in the improvement proposals (See Stage Two in Figure 9.1). This would make SCIfs cost-time-and-quality effective by eliminating DDC and subsequently poor conceptual designs. Also, effective and efficiently developed nature of SCIfs would eliminate or reduce queries and claim of variation orders (series of variations) which increase cost, waste time and affected quality of projects.



Critical attribute

- Inter-professional focused discussions on chain of project documentations at DSD workshops, seminars, fora and meetings for reviews feedback and debriefing Built environment expert forum - Continuous search for clients inputs and satisfaction
- Principal benefit awards and professional fees - Documentation and record keeping experiences - Leadership authority and Ethical issues - Secure contractor and sub contractor design inputs - Decisions on SCIfs -chains of projects documentation auditing

Figure 9.1 The 3-Stage DSD Improvement Proposals

Above all, the DSD improvement proposals constructed would improve construction business relationship (See Stage Three in Figure 9.1). It would serve as a preventive measure for non-occurrence of DDC and that would save huge sums of money and time spent on lawsuits (see for example Owolabi, et al, 2014; Hawkins, 2011). Effective and efficient SCIFs could transform the unhygienic, haphazard and unsound building structural development littered in some areas of the built environment. It would cause properly organized infrastructural development to occur.

Further, the 3-stage improvement proposals in Figure 9.1 illustrates how both attitudinal behavioural and technical issues are essential and have been used together to address the challenges pose by the pre-conditions of this proposals. Thus the improvement proposals provide dual strategic approach towards reduction or elimination of non-collaborative working and its effects on DSD work (developing and constituting SCIFs) by using the technical knowledge attributes on one side. And additionally, on the other side, using attitudinal behavioural knowledge attributes to remedy the harsh or adversarial business relationships situations among DSD actor groups.

The improvement proposals could be used for academic work to improve teaching and learning of how to change attitudes and behaviours of actors and would-be actors for collaborative activities in DSD entity (see for example Hawkins, 2011; Humphries and Wilding, 2004; Hammer, 2000). The improvement proposals could also serve as a platform for further research into construction business relationship studies in other areas in construction and beyond the construction industry.

9.11 Recommendations and Further Research

The study centres on the title “The Nature of Adversarial Relationship in Design Service Delivery in Ghana, Effects on Supply Chains Information Flow and a Business Relationship Management Proposals for Improvement”. This title was further researched into using six objectives including development of

proposals for improvement. The objectives achieved capture the following issues: understanding the theoretical and conceptual bases of adversarial business relationship in the construction industry, the effects of adversarial business on the SCIFs including a qualitative inquiry to provide empirical data of the characteristic of the adversarial relationship. Again, the remaining objectives covered the nature of the SCIFs developed and constituted for project delivery, the functioning of the processes and procedures used to develop the SCIFs and the attitudinal behavioural and technical knowledge required of the DSD actors to improve the DSD. These involve the development of the SCIFs- the main work of the DSD actors as well as the business relationship among the actors in which the SCIFs is developed and its effects on the DSD activities. The SCIFs (supply chains of information flow) is an aspect of the construction supply chain management.

As Pryke (2009, p32) explains, construction supply chain management “can be regarded as process of strategic management of information flow, activities, tasks and processes involving various networks of organisations and linkages (upstream and downstream) throughout a project life cycle.” The information flow management expressed in the statement concerns the main work of the DSD actors in developing and constituting SCIFs. This is to generate and prevent waste of key information flow for decision making to other construction supply chains and networks in the construction industry (Edum-Fotwe et al. 2001).

These explanations illustrate and confirm that construction supply chain management involve other supply chains apart from the supply chains of information flow (SCIFs) (Hatmoko and Scott, 2010). Other construction supply chains include the supply chains of materials, labour, plant and equipment including temporary work (Hatmoko and Scott, 2010). These other construction supply chains have characteristics which could show the nature of those supply chains. They also have actors who handle the various stages on the chains dealing with each other. The supply chains also use processes and procedures to perform their functions. Hence, the attitudinal behavioural and technical knowledge of the actors would be required. In view of these, the following recommendations are made for further research.

9.11.1 Business Relationship Issues

It is recommended that the construction business relationship (CBR) among the actors on the other supply chains like clients and contractors; DSD practitioners and subcontractors; clients and subcontractors to name a few, are to be investigated and the real relationship situations identified for the continuous improvement of DSD activities. As Hawkins (2011) expresses in his research, business relationships are increasingly accepted as developing key success factors, without which, construction or any other business could not thrive in the long-term or be long-running. Indeed, it is essential therefore that the business relationship effects on the other supply chains such as clients and contractors; DSD practitioners and subcontractors, clients and subcontractors, materials, labour among others be investigated. These will help to identify all relationship challenges which will disallow or disturb the free exchange of information for improvement and continuous improvement of the functions of the construction supply chains (see for example Owolabi et al, 2014; Jiang, et al, 2012; Hawkins, 2011).

9.11.2 Nature of the Chains

The other construction supply chains like materials, labour and plant/equipment chains should be investigated. The focus should be on their nature and the effects of their nature on their functions to show if they could influence DSD activities. The investigations into the nature should be conducted to reveal the characteristics, strengths and weaknesses in the supply chains to enable improvement strategies to be planned and applied. Also, it is recommended that the causes of the nature shown be studied to prevent the reoccurrence of the causes to disturb supply chains. 9.10.2

9.11.3 The Processes and Procedures used for the Supply Chains

Another aspect that the study has shown is the need for further studies on the processes and procedures used for the other supply chains function and how they can affect the improvement of DSD activities. Indeed, there is the need for regular investigation as these processes and procedures change very often, very fast and they affect the business functions of the construction entities or organisations (see for

example Brown, 2008). The investigations would reveal the strengths and weaknesses of the processes and procedures used, so that they would be structured and restructured to suit the required intentions of use and to achieve the targets and goals set for their usage (see for example Introduction and Support Package, ISO, 2008). Therefore, it is recommended that research be conducted into all processes and procedures adopted for the other supply chains, in order to discard or ignore ineffective and inefficient ones and adopt the ones with promising results. Also, to achieve the aim of these research recommended area of engaging in outsourcing of detailed information concerning the other supply chains, processes and procedures for rigorous research should be conducted (see for example Tattersall, 2013).

9.11.4 Attitudinal and Behavioural and Technical Issues

Further research into attitudes and behaviours of actors dealing with other supply chains is required for the improvement of CBR and the functions of the other supply chains such as materials, labours chains and others. Such further studies will help to improve the overall CBR among actors involved in the construction supply chain management. Evidence available has shown that changes in technology, systems and strategies without change of ‘mind set’ cannot do the task of changing attitudes and behaviours, which cause non-collaborative and adversarial relationships among actors and between parties in business (Yiu and Cheung, 2006; Axt et al., 2006; Harvard Business Review, 2006). For that matter, attitudinal behavioural changes through a change of ‘mind set’ are necessary (see for example Cheung and Rowlinson, 2005) to eliminate or prevent non-collaborative working and adversarial business relationship or business relationship failure cycle (Humphries and Wilding, 2004).

According to Hawkins (2011) and Mullins (2005), there are also attitudes that are linked to thoughts which are difficult to see or understand. Therefore, insofar as attitudinal behavioural knowledge issues are very important in bringing and increasing benefits of collaborative business relationships (see for example Hawkins, 2011; Harvard Business Review, 2006; Cheung and Rowlinson, 2005), this knowledge area require further studies. Moreover, research in this area should involve not only the business relationship

among the DSD actors (DSD practitioners and between them and contractors) who develop SCIfs, but should embrace others like CBR between clients and contractors, clients and DSD practitioners, among DSD practitioners and subcontractors, contractors and subcontractors, contractors and suppliers among others.

9.11.5 Implementation

It is recommended that the implementation should be carried out with proper study of the research objectives, details of framework and findings of the study. It could be carried out by individual DSD firms or organisations where the different professional group would like to amalgamate or form a consortium. Indeed it should be used among the stakeholders, especially representatives from the DSD actor groups should study and adopt the systems and strategies presented in the framework and findings. Institutions such as Ghana Institute of Architect (GIA), Ghana Institution of Engineers (GhIE), Ghana Institution of Surveyors (GhIS), Ghana Geotechnical Society among others could have common workshops and seminars to deliberate on how to plan and programme for collaborative DSD national agenda or forum. This would open the way for a national DSD coordinating committee or council for regulating, guiding and guarding their interest of developing and constituting the SCIfs in Ghana.

Further, research institutions such as Building and Road Research Institute (B.R.R.I) could help implement the recommendations. Research departments of universities, University Colleges and Polytechnics which have the capacities, could put the systems and strategies presented in the findings to work to improve DSD practices and that may lead them into further research.

Others groups which could also make use of the findings are the AESL, PWD, Metropolitan and District Assemblies. The findings, if carefully understood and applied systematically, would provide consistent and continuous improvement in DSD activities within the various establishments identified. It would raise the standard and image of the establishments for national and international repeat and referral businesses.

9.12 Contributions

The literature reveals that the construction industry is fragmented and this accounts for its poor performance over the years (Pryke, 2009; Bresnen, 2007; Baiden et al. 2006). It is noticed further that construction relationships and activities are disjointed, distorted and lack improvement; as learning processes are not made to include the practice of taking performance feedback and experiences from properly executed designed projects and applied to other design service delivery (Anim, 2012; Loo, 2003). Also, there are uncoordinated, inconsistent management issues and instructions leading to DDC and its effects (Ssegawa-Kaggwa et. al., 2013; Jaffar, et. al 2011; Odusami et al, 2003). The business relationship situation in literature is noticed to be non-collaborative and harsh or adversarial (Laryea, 2010; Anvuur et al, 2006; Yiu, and Cheung 2006). These have existed without or with less improvement not only in business relationships, but also causing doubts in the functioning of the processes and procedures used for DSD activities (Jaffar, et. al 2011; Fugar and Agyakwah-Baah, 2010; Introduction and Support Package (ISO), 2008; Hammer, 2000). These challenges in the construction industry are found to be generalized for all the construction supply chains and networks. Therefore it will be an endless research, if not impossible, to study or investigate the challenges of these several supply chains and networks, as they generally exist and persist in the industry. Again, though the literature reveals that the nature of the construction industry is non-collaborative, full of adversarial business relationship with uncoordinated, inconsistent management processes and procedures which exist in various activities there is no empirical data to support and explain the claims.

The current study concerning the different DSD actor groups and their activities of developing and constituting SCIfs has provided concrete empirical evidence of these challenges. These specific studies of the challenges (pre-conditions) such as the bases, the effects and characteristics of the adversarial business relationship, the nature of SCIfs developed including the functioning of the processes and procedures used in developing the SCIfs produced number of contributions. Besides, the attitudinal behavioural and

technical knowledge required for improvement have contributed findings that are unique to the DSD activities in Ghana.

The findings are to close a research gap. These findings call for in-depth probing of DSD situations. The specific gaps the study seek to close concerns the bases, effects and characteristics of business relationship among DSD actors (the SCIFs producers and users- the different DSD actor groups). Again another major part of the research gaps include the investigation of group of key supply chains of information flow (SCIFs) which lacking in the literature.

The contributions made are evident as DSD actor groups who work as individuals with particular ethnic cultural practice and setups came to light during the interviews. Out of the thirty-six private organisations visited, twenty-eight were owned by individual DSD actors. In addition, most of the staff engaged in these private organisations were of one ethnic group or the other. These together provided evidence that the DSD actor groups were more of the individualistic stance than collectivist. However, these situations like individualistic culture and professional autonomy (freedom to operate as expert) are some of the reasons for the bases which encourage mistrust, non-collaborative working and adversarial relationship. The study therefore has shown that DSD actors prefer individual ownership of organisations rather than the collective ownership. A collectivist stance which looks for more of collective ownership of organizations or what it can offer to the business environment creates strong ties between actors (Bredillet, 2009). Such business relationship strong ties between/among DSD actor group are recognised as suitable situation for improvement of business relationships. These business relationship situation, cultural and social setting according to Turina et al. (2008) provided unique background evidence and identity for the DSD different degree (levels or periods) of business relationship, non-collaborative working, and state of the functioning of processes and procedures used for SCIFs put forward in the findings.

9.12.1 Nature of the Construction Business Relationship (CBR)

Contributions made comprise the descriptions on the construction business relationship (CBR) which provided the bases, effects and the characteristics of the CBR as had been confirmed by the study to be non collaborative and adversarial. These became apparent through identification of some attributes such as: lack of harmonization of professional work and good business relationships accounted for (14%); hostility, frustration, tension and conflicts (14%); lack of interdependencies and sustainability accounted for (13%). All these obviously pointed to and provided understanding of a non-collaborative working and adversarial business relationship situations existing among the DSD actors in developing and constituting the SCIfs. The others like mixed relationships of affiliates and training mates' relationships accounted for (9%); low motivation accounted for (7%); no command structure accounted for (7%); harsh system of falsification of documents and greed accounted for (7%); misinterpretation of documents by DSD actors accounted for (7%) were not anything different from the former ones and all were mostly critical attributes among others. The study reveals that the business relationship existing among the DSD actors in developing and constituting SCIfs range from 'no collaboration to close-to-average collaboration' depending on how the supply chain of information flow was formed.

9.12.2 Nature of the SCIfs

Therefore, there is the need to conduct a research on specific supply chain; the supply chains of information flow (SCIfs). This is identified as an important researchable area where DSD actors take key decisions in DSD activities for the construction industry. Contributions made by this research study are evident, in that, specific proportions of attributes such as disjointed, accounted for 36%, fragmented, 16% and uncoordinated 16% has emerged from the study to describe the nature of the SCIfs developed and constituted. The percentage total accounted for 68% obtained from these three attributes described the nature of the SCIfs, which suggests high levels of non-collaborative working in the DSD activities. Also, new insights which are not available in the literature like 'partially jointed' (9%), 'partially disjointed' (9%), and 'partially fragmented' (4%) emerged from the study describing the nature of SCIfs. These illustrate the incomplete forms of the nature of SCIfs that are possibly used for project delivery.

Proportion of the SCIFs is described with the attribute jointed, (9%). This suggests that there is some limited amount of proper collaboration and complete chains formation for DSD activities as well.

9.12.3 Functioning of the Processes and Procedures

Another contribution offered through the research is the different attributes describing the functioning of the processes and procedures used to develop and constitute SCIFs. These attributes were not found in existing relevant literature. Eleven different attributes had been obtained from the study that describe the functioning of the processes and procedures used in developing the SCIFs.

Five of the attributes were predominantly used. These included 'unsystematic' and 'insufficient details' with frequency of 15% each; 'inconsistent or use of outmoded methods' and 'sub-standards with gaps or no standard' for supply chains' with frequency of usage being 13% each; and 'use of weak incomplete supply chain' with frequency of 12%. The five attributes outlined had a total of 68% frequency of usage. The other attributes which emerged to describe how the processes and procedures used in developing and constituting SCIFs function were 'systematic' (7%); 'non-compliance with legislation, rules and regulations' (7%);, 'overlapping scope of work' (6%); 'poor programming and planning' (6%);, 'lack of good leadership' (4%); and 'after-thought activities' (4%).

The main contributions relating to the effects of the functioning of the processes and procedures used in developing and constituting the SCIFs on the DSD activities found through the research are: the attributes describing the effects include 'pressure on timelines causing delays' with frequency of usage of 23%; 'difficulties in cost control, which may result in for instance in cost overruns' with frequency of usage of 22%, 'insufficient share and flow of information' with frequency of 12%, and 'poor quality of work' with frequency of 10%. Other attributes involved 'lack of continuous, smooth, effective and efficient delivery' and 'difficulties in meeting delivery review/audit dates' with frequency of 7% each. Other included 'lack of technical inputs and records keeping'; 'too much professional autonomy and slackness' with frequency of 6% each. Also there were 'slippage of project schedules and uncertainty fluctuations', 'undercutting contract price' and 'destroys project objectives' accounted for 4%, 2% and 1% respectively.

Other parts of the main contribution to the effects of the functioning of processes and procedures illustrated that the functioning was unsystematic and inconsistent, that lacked sufficient details and were used for sub standards SCIFs with less programming and planning; avoiding compliance to legislation regulations and rules.

9.12.4 Attitudinal Behavioural and Technical Knowledge

The major contribution made by the study is the identification of the challenges and unearthing of the attributes connected with the challenges. The areas that the challenges are found in include the nature of the SCIFs, business relationship situation in developing and constituting the SCIFs and the functioning of processes and procedures used for the SCIFs. The challenges are preconditions or conditions found to be disturbing and distorting the DSD activities.

These preconditions and conditions necessitated the transformational aspect of the research involving the study of the attitudinal behavioural and technical knowledge required which provided below for development of a framework to improve the DSD activities. A improvement proposals is that which seeks to bring proper collaborative relationship in the processes and procedures used in developing and constituting the SCIFs. Again, it is a improvement proposals expected to provide harmonious cordial business relationship for effective and efficient SCIFs, which will improve the DSD activities.

9.12.4.1 Attitudinal Behavioural Knowledge

In all, twenty-three attributes were obtained in the studies which described attitudinal behavioural knowledge required for collaborative business relationship **among** DSD actors. Seven out of these were already in the literature. These include 'continuous collaboration', which is most frequently used, accounting for 12%, followed by 'trust', 'effective communication' and 'openness' accounting for 8% each as well as 'commitment', 'joint problem solving' and 'respect for each DSD actors' accounting for 7% each. The new attributes contributed through the study included 'self-discipline and diligence' (7% each).

Also, 'humility in acquisition of knowledge' (6%), 'willingness for continuous coordination improvement' and 'continuous professional development' (5% each) were identified as part of the attitudinal behavioural knowledge required of DSD actors for collaborative work. Other contributions to the attitudinal behavioural knowledge are 'time consciousness', 'professional integrity', and 'realization for change' among others, with frequencies ranging from 4% to 1% were less frequently identified as required for collaborative business relationship among DSD actors to improve DSD activities.

9.12.4.2 Technical Knowledge

Fifteen attributes were identified as technical knowledge required for the development of collaborative business relationship among DSD actors. These were not assembled in literature where limited information was available. The main issues that evolved concerning this knowledge area were 'Inter-professional focused discussions on SCIFs (chains of project documentations) at DSD workshops, seminars, fora and meetings for reviews, feedback and debriefing', accounted for 15%, most repeatedly emerged as the technical knowledge required for collaborative business relationship. This was followed by attributes such as 'built environment experts' common forum for planning and programmes' accounted for 14%, and 'inter-professional business relationship management development' accounted for 11%, 'continuous search for all clients' inputs and satisfaction' with frequency of 9%, 'financial benefits, awards and professional fees' accounted for 7%, and 'documentation and record keeping experiences' accounted for 7% were also identified as technical knowledge required for collaborative business relationship among DSD actors.

Further contributions include attributes like 'leadership, authority and ethical issues', 'securing of contractors and subcontractors design inputs', 'decisions on SCIFs (chains of project documentations), auditing/vetting' and 'time, quality, cost effective DSD using SCIFs (chains of project documentations)' (6% each) were also required for collaborative business relationship.

Other remaining attributes accounting for 3% each include 'regular decisions, discussions on common roles to prevent adversarial relationships', 'use of up-to-date, acceptable processes, procedures/ technology to achieve functionality of the SCIfs', and 'implementation of strategies in line with laws, bye-laws and regulations.' These were required for collaborative business relationship. Attributes like 'produce catalogues on common DSD errors for the improvement of DSD' accounted for 2% and 'determination to produce standardized SCIfs by all acceptable means including study tours' accounted for 1% were also required of DSD actors.

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List of Abbreviation

Arc	-	Architect
BRM	-	Business Relationship Management
BRI	-	Business Relationship Improvement
BR	-	Business Relationship
CBR	-	Construction Business Relationship
CP	-	Professional development
C/St Eng	-	Civil/Structural Engineers
DSD	-	Design Service Delivery
DDC	-	Discords, Disputes and Conflicts
ECI	-	Early contractor involvement
Geotech	-	Geotechnical Engineer
GGCC	-	Ghana Government Conditions of Contract
Geo Eng	-	Geomatics Engineers
GCI	-	Ghanaian construction industry
PFB	-	performance feedback
PI	-	Planner
PM	-	Project Manager
PPA	-	Public Procurement Authority
QS	-	Quantity Surveyor
RST	-	rethinking system theory
RBP	-	relationship-based project procurement
SCIf	-	Supply chain of information flow (chain of projection documentation
SCIfs	-	Supply chains of information flow
Sub-SCIf	-	sub-supply chain of information flow (a single profession on the supply Chain of information flow
ST	-	System theory
STh	-	System thinking
Ser Eng	-	Service Engineer
TA	-	theory of action
(TM/R)	-	Traditional Non-Adversarial Methods/Review
(I)	-	Innovative Information

APPENDIX A

Appendix Table 1 APPENDIX A: DSD PRACTITIONERS/PEERS FEEDBACK SHEET

ON DSD ACTIVITIES FOR IMPROVEMENT OF DSD

PROJECT TITLE:..... **SHEET NO:**.....

DATE:..... **PROJECT LOCATION:**.....

EXPECTED COMPLETION DATE OF CONTRACT:.....

CATEGORY OF DSD – PRACTITIONER WORK UNDER DISCUSSION	SPECIFIC AREAS OF PROJECT COMPONENTS, ELEMENT, ITEMS, MATERIALS AND PLANT UNDER DISCUSSION	FEEDBACK, TRADITIONAL NON-ADVERSARIAL AND INNOVATIVE INFORMATION ON DSD ACTIVITIES		
		Feedbacks (Observations)	Traditional Non-Adversarial Information (Methods normally adopted)	Innovative Information (Ingenious Suggestions)

Name of DSD Practitioner:.....

Signature:.....

Profession:.....

Source: Orgen, et al. (2012a)

Appendix Table 2 CONTRACTORS' FEEDBACK SHEET

ON DSD ACTIVITIES FOR IMPROVEMENT OF DSD

PROJECT TITLE:..... **SHEET NO:**.....

DATE:..... **PROJECT LOCATION:**.....

EXPECTED COMPLETION DATE OF CONTRACT:.....

CATEGORY OF DSD – PRACTITIONER WORK UNDER DISCUSSION	SPECIFIC AREAS OF PROJECT COMPONENTS, ELEMENT, ITEMS, MATERIALS AND PLANT UNDER DISCUSSION	FEEDBACK, TRADITIONAL NON-ADVERSARIAL AND INNOVATIVE INFORMATION ON DSD ACTIVITIES		
		Feedbacks (Observations)	Traditional Non-Adversarial Information (Methods normally adopted)	Innovative Information (Ingenious Suggestions)

Name of Contractor:..... -
Source: Orgen, et al. (2012)

Signature:.....

FURTHER APPLICATION OF THE ACTION THEORY

The purpose of using the AT is to develop a conceptual framework useful in illustrating the understanding of literature facts and concepts on an action chain (Seebass, 2008; Roeser, 2005; Tuomela, 1991). The AT is fashioned in typical form as Precondition/condition→ action→result/effect. Thus first, the contribution is to illustrate effectiveness of series of actions oriented focused for the development of a conceptual diagrammatic framework for the improvement of the DSD activities using relevant empirical and theoretical literature information. Second, the illustration shows how both external agents (facilitator/staff) could render felicitous extension actions and the internal agents (DSD actors) exhibiting voluntary action to cause a unique function of the framework. Third, the logical reflective flow is provided by filling a gap in the literature with medium-term maturity period for effective and efficient business relationship improvement and continuous improvement. That is to allow a smooth brief movement from medium-term into the long-term maturity improvement period, which will be possible to ensure continuous improvement of the DSD activities.

ii. In addition, low business relationship improvement and continuous improvement for free flow of performance feedback, traditional non adversarial and innovative project information could be achieved to improve DSD activities as Figure 1 is dependent on: The deductions from relevant literature which helps in the introduction of ‘major and minor results/effects’ have become an extension of the AT (Seebass, 2008; Roeser, 2005).and MGT in the development of the framework (Leedy and Ormrod, 2005). That contribution in the use of ‘major and minor results/effects’ has assisted in filling three gaps in the literature used in building up the framework. Besides, ‘major and minor results/effects’ are used to distinguish between literature results/effects which are labelled ‘major’ from that of the ‘contributory gap filling results/effects’ which closes the gaps and are labelled ‘minor’ in the framework as in Figure 1. When an action has been executed on a major effect, major or minor result or secondary effect is expected. Therefore, non-collaborative working and adversarial relationship is a major result/effect due to the existence of DDC among the DSD actors. Realisation for change, identification of benefits for change and willingness for change are minor primary results (minor results, an extension of AT and MGT) which come as a result of action on ‘major result’ as in Figure 1 (Seebass, 2008; Roeser, 2005) Similarly, ‘change of ‘mind set’ of the DSD actors is a major effect which hinges on understanding, acceptance and application of the critical relationship improvement factors (Cheung and Rowlinson, 2005;) Those in Figure 1 are minor secondary results coming from the action executed on a ‘major effect’ through the facilitator guide at workshops, seminars, fora and meetings coupled with DSD actors (agents’) internally motivated action (by freedom of will). The AT procedures and processes are followed repeatedly to the last effect (for improvement and continuous improvement of the DSD activities) as shown and labelled in Figure 1 (Seebass, 2008; Roeser, 2005; Tuomela, 1991).

iii. The maturity level periods

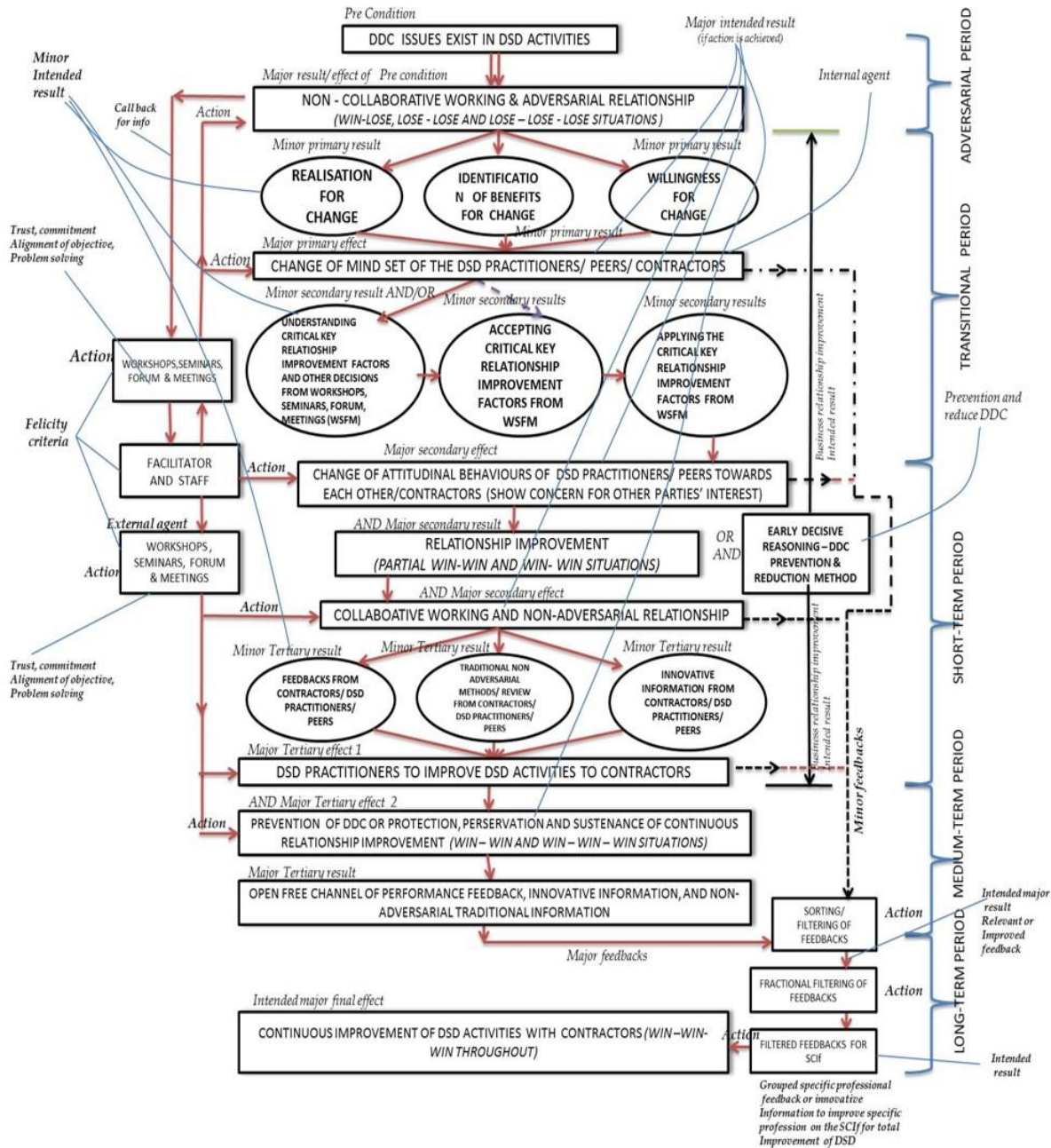
The maturity level periods of 5-stages, would have to share the project duration or the project life cycle period in an arithmetic order of progression. That is to allow lengthy collaborative working and business relationship periods for the later maturity level periods than the earlier ones in descending order as in Figure 1 to consolidate maturity growth to be attained at various stages. Every period/stage in the framework has some useful activity to be performed for an increase in collaborative working, business relationship improvement and for gradual reduction of DDC or to achieve an early prevention and continuous prevention of latent DDC levels. In all the relevant literature surveyed, researchers work with three business relationship levels namely: adversarial, short-term and long-term periods (SEI, 2009, 2006; OGC, 2002; Paulk et al, 1993).

Meng (2010) introduces the transitional period based on the spectrum of business relationship improvement used. Yet by the complexity of DDC as part of human issues which generate a lot of other issues and situations such as non-collaborative working, adversarial business relationship and serious I-intentions for single sense goal setting in SCIf work rendered it ineffective and inefficient. Also, the fact that the adversarial business relationship had existed since time immemorial as a traditional norm which has affected building projects in known and unknown forms. Such conditions and preconditions called for: i. a systematic gradual approach for one or two objectives/results oriented step-by-step framework. ii. the need to do periodic assessment of DDC reduction level, the level of performance feedback, traditional non adversarial and innovative information for improvement purposes required as in Figure 1 iii. the fact that Meng (2010) only worked on business relationship improvement but the current work covers improvement of service based on improvement of business relationship which demanded more gradual step for the required change. That is carried further for the improvement of DSD activities which make it more critical and crucial. It indeed, calls for an in-depth study and detailed evaluation of quality criteria of the data for analysis. A contribution here is the introduction of medium-term period between the short and long term periods for the concepts development of the framework, moving the maturity levels from four to five. The situation was based on the complexity of human attitudinal behaviours and other issues discussed.

The construction of the framework depended on the following maturity periods: adversarial period, transitional period, short-term period, medium-term period and long-term period as indicated in Figure 1. The maturity periods are also felicity criteria of the AT for the framework to a

chieve stage by stage attitudinal behavioural transformation DSD actors from adversarial business relationship to improved and continuously improved business relationships for the improvement of DSD activities as in Figure 1 (Seebass, 2008; Roeser, 2005; Tuomela, 1991). Developing and attaining business relationship improvement through collaborative working practices, for growth in various relationships, from one level of business relationship to a higher relationship level period would result in the reduction of DDC among the DSD actors through workshop, seminars, fora and meetings see Figure 1.

BUSINESS RELATIONSHIP CONCEPTUAL FLOWCHART FOR DSD COLLABORATIVE ACTIVITIES



(Source Orgen et. al.(2012b)

Appendix A, Figure 1 Business Relationship Conceptual Flowchart for DSD Collaborative Improvement Activities

The business relationship improvement and continuous improvement expectations are that the DSD actors' attitudinal behaviours through a change of 'mind set' will improve in business relationship and move actors from adversarial period to the transitional period (SEI, 2009; 2006; Cheung and Rawlinson, 2005; OGC, 2002; Paulk et al, 1993). That business relationship improvement will continue through to short-term, medium-term and then to the long-term by gradual reduction of DDC as relationships improved. Indeed, the DDC levels will be inversely proportional to business relationship improvement as the, purpose laden (intentions laden), series of actions occurred. Those therefore would cause We-intentions of joint goals to set in to break down the adversarial business relationship. They will also create a forward movement in the action chain (series of actions) towards win-win-win situation (concern for others) and prevent DDC rather than the I-intentions of single goal, which lack collective (social) sense, leading to lose-win or lose-lose-lose results/effects (Pryke, 2009).

The concern for others' success is an inherent characteristic of the We-intentions of the collective dimension of the action theory involving We-sense and We-success. Besides, the business relationship improvement will be attained through the action chain. That should involve facilitating meetings, fora, seminars and workshops to brainstorm, discuss, develop action plans and programmes and to make conscientious efforts to use the critical relationship factors (Cheung and Rawlinson, 2004; 2005) as indicated in Figure 1.. Those relationships, brainstorming and discussions should include the (30Rs) of various marketing strategies to make DSD practitioners and contractors proper marketers to work for increased market share for construction projects products, repeat and referral business during project execution (Gummesson, 2001). That achievement can be possible only through We-intentions for joint goal to improve DSD activities. Also, for a robust and smooth DSD processes the Early Decisive Reasoning (EDR) of the DDC, settlement guidelines are to be used as felicity criteria to prevent, preserve and sustain business relationship improvement procedures integrated in project delivery. It will be an effort that will set collaborative working practices high in the traditional procurement processes using the facilitator (Cheung and Rowlinson, 2005).

Early Decisive Reasoning for settlement of DDC in the management of the construction supply chains of information flow (SCIfs) and other networks.

In Early Decisive Reasoning (around the logic table strategy) there is/are face-to-face consultations, discussions, dialogue and systematic conclusions. These are drawn based on process of thinking about all the facts needed to arrive at a fact, action, event or judgment that will end in a particular fair result; preserving collaboration and improvement in relationship between two contending parties or among the parties. Also conclusions drawn should achieve conditions suitable for improvement and continuous improvement in business relationship. Besides, as Locke noted, if all men were guided by pure reason they would all see the same law (Ebestein, 2003) As this is to the contrary, therefore, to overcome this incident, judgment given under Early Decisive Reasoning must be reasonable and fair and have the capacity of achieving sustainable business relationship improvement always in/to the right minds of majority of the DSD participants. This is settlement or resolution method developed for the framework through

literature review and consultation of two DSD practitioners which will be appropriate for resolving DDC problems in the DSD activities. These assembled literature relationship improvement fasts are undergoing an action research to confirm their reliability.

Developed from (Pryke, 2009; Yeung et al., 2007; Axt, et al., 2006; Cheung and Rowlinson, 2005; Levi, 1949)

Main Guidelines for reducing the level/s of Escalating DDC among/between Actors on the Supply Chain of Information flow (SCIf) and to preserve relationship improvement to improve DSD.

Suggested approach put forward is 'Early Decisive Reasoning' is for settlement of DDC, preservation of business relationship improvement and continuous improvement of the EDSD activities. The method requires the following:

- Appointment of a secretary to record minutes of proceedings during hearing by the office of facilitator.
- The facilitator should guide and sensitized the contending actors on the critical key business relationship factors not to flout them from time-to-time but to focus on relationship improvement through out the hearing as they present their case.
- Other DSD practitioners either of client's or contractor's organization can be appointed to serve on the panel for the hearing by the facilitators office. But must be neutral and Early in the DDC issues that have erupted. The appointment should be confirmed by the contending actors on SCIf to sit in the hearing of DDC and assist in the decision making during proceedings for settlement.
- Panel members (DSD practitioners) in a hearing should not be less than three (3) or more than five (5) excluding the secretary who should be neutral in recording the proceedings of the hearing and should have no vote.
- The concerns of the DDC parties should be public or presented and recorded accordingly.
- The facilitator and other panel members should find out why those issue/s and commodity/ies have caused DDC and therefore creating contentious business environment.
- Any observation made by the facilitator and panel members about what might have triggered the DDC between/among the contending actors should be made public and confirmed individually by the DDC parties.
- There should be a separate consultation to find out the individual demands and wishes for settlement if necessary.
- Use deductive decisive reasoning*, that is by deduction and reasoning through the issues presented in the hearing, the facilitator and the panel members should decide and draw a conclusion/s which would hold, become final decision/s and as well preserve and strengthen relationship improvement and continuous improvement; given all set of relevant facts (premises) through out the hearing/proceedings.
- Through inductive reasoning also the facilitator and panel members could expand on the conclusion/s which is true or truth, not false or falsehood if and only if it will preserve

relationship improvement and continuous improvement during and after the hearing and proceedings.

- As a seal and sign of a successful business relationship improvement and continuous improvement of DSD activities, for every DDC hearing and proceedings, the individual key contending actors should write a simple statement pledging to demonstrate through attitudinal behaviour their unflinching support for collaborative working and non-adversarial relationship for the improvement of DSD activities to contractors based on the critical key relationship improvement factors.

***Note:**

Valid deductive proceeding should ensure those conclusion/s are true if the premises are true. Truth cannot be determined with certainty. Thus the facilitator and the panel must generally and carefully reason about the content of the proceedings; and remember that the main object of the hearing/proceedings are relationship improvement and continuous improvement for feedback/s, innovative and traditional non adversarial information to improve DSD activities to contractors. The transfer or the sharing of information to improve the DSD activities will be facilitated and regulated by the use of the feedbacks sheets in Appendix A.

General Guidelines for Hearing of Escalating DDC among/between Actors and for Preservation of Relationship Improvement and Continuous Improvement on SCIfs to improve DSD to contractors.

- Free forum should be provided for all for an 'EarlyDecisive Reasoning' hearing of DSD activities DDC, except under special circumstances that it should not be public; so that other DSD actors on the SCIf can be educated on how business relationship improvement and continuous improvement can be achieved during and after settlement of DDC.
- The contending actors on the SCIf and all other members present at hearing should be very mindful of the primary motive of the hearing: to preserve and achieve relationship improvement and continuous improvement during and after settlement.
- The facilitator and the other panel members should endeavour to understand clearly the concerns of each DDC party the valuable issue/s or the commodity/ies of contention.
- Attitudinal behaviours should always be monitored by the facilitator and panel members to help achieve hearing and proceedings devoid of pretense.
- At least one meeting before the hearing of DDC should be held by the facilitator and his staff to try to settle DDC before it escalates
- Clarity and transparency should be the hallmark of all hearing proceedings and processes used. This is in order for an understanding to prevail among/between contending parties for easy acceptance of the panel decision in a view to develop a trusted business relationship improvement and continuous improvement.
- The indirect participation of the DSD practitioners involved in the project should be encouraged to resolve any ambiguity in proceedings at forum, so as to build a policy document for similar or different DDC issues or problems for business relationship improvement and free flow of information.
- Also there should be a practical build up mechanism which would form an indispensable policy for collaborative working and relationship improvement business environment.
- There should be continuous reasoning from case to case or issue to issue as 'Early decisive reasoning' that all the DDC parties can accommodate and accept as a proper and successful resolution of the DDC; which will impact positively on collaborative working relationship improvement environment; for the improvement of DSD activities to contractors.

- The decision/s of the panel including the facilitator should be through proper, systematic reasoning, decisive, indisputable and with indispensable dynamism of fairness and quality decision/s resulting or evolving from DDC hearing/proceedings. This kind of decision/s should as well fully embrace and incorporate the critical key relationship improvement factors to achieve collaborative working, relationship improvement and continuous improvement at the end of settlement of any DDC. That kind of decision/s would be very much accepted as 'Early Decisive Reasoning' hearing/proceedings decision.
- There should be constant urge to document proceedings before, during and after an eruption and settlement of DDC. Proper records will in turn be a guide of decisive reasoning approaches used for similar and different DDC which will assist in future Early Decisive Reasoning hearing and decision/s making. The guide will as well indicate how the critical key business relationship improvement factors were used to achieve 'change of mind set' of the contending parties during and after the settlement. Also how it will enable relationship improvement and continuous improvement for free flow of feedback/s, traditional non adversarial and innovative information as will be recorded on feedback sheets in appendix A. for improvement of DSD activities to building contractors in Ghana. The feedback/s records will as well help the assessment of the levels of business relationship improvement and maturity level/s within a particular period of the project execution Both the main and general guidelines are being subjected to an action research to find out how it works in real practice.

As indicated in the introduction, the study focused on management, the concept of a paradigm shift from adversarial behaviours towards more collaborative practices which have their conceptual origins in relational contracting (Smyth and Fitch, 2009). Therefore attitudinal behavioural issues, origins, nature, causes, levels, intensities and categorizations have been discussed including the different forms of DDC which create the non-collaborative and adversarial business relationship. Finally, how to shift from the adversarial business relationship to more collaborative practices have been rounded up in the 'Early Decisive Reasoning guidelines and the induction of the DSD 'feedback sheets in appendix A for records of free flow of information to improve the DSD .activities

APPENDIX B

APPENDIX B: QUESTIONNAIRES

Department of Building Technology,
Kwame Nkrumah University of Science
and Technology,
Kumasi, Ghana, West Africa.
16th April, 2013.
Mobile No. : 0276097940 or 0263985252

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Dear Sir/Madam,

REQUEST FOR PERMISSION TO CONDUCT INTERVIEW

I am Nanyi Kobina Orgen, a PhD student in the Department of Building Technology, Kwame Nkrumah University of Science and Technology, Kumasi.

I write to request for permission to conduct an interview on the topic:

‘The Nature of Adversarial Relationships in Design Service Delivery in Ghana, Effects on Supply Chains Information Flow and a Business Relationship Management Proposals for Improvement’

Could you please state the time I should meet you for the interview on the attached ‘Interview appointment notice form’

Thank you

Yours faithfully,

N. K. Orgen

INTERVIEW APPOINTMENT NOTICE FORM

Report on/...../.....
Date Time location

.....
Name of interviewee Signature

.....
Profession Date

Tel. No.

Name of interviewer: **N. K. Orgen** Tel. No: **0276097940 or 0263985252**

Introductory information

The research topic is ‘**The Nature of Adversarial Relationships in Design Service Delivery in Ghana, Effects on Supply Chains Information Flow and a Business Relationship Management Proposals for Improvement**’ Upon its successful completion it will yield a number of benefits to participants.

The participants (interviewees) will gain advantage of useful research outcomes at the completion of the study. These benefits include advantage of a **Proposals** that can be used to guide improvement and continuous business relationship management improvement among professional colleagues. Design Service Delivery (DSD) assessment and improvement conceptual framework developed through the study will assist practitioners and contractors to appraise and improve their business activities and attract more prospective clients. The improvement achieved in quality, time and cost is expected to draw repeat and continuity in business relationships which are for business sustenance and construction job security. The participants will have a copy of the summary of recommendations to improve their practices.

The study, of DSD activities cover the work of professionals (DSD practitioners) trained in project management, architecture, civil engineering, quantity surveying, geomatics engineering, services engineering, geotechnical engineering, planning and general contracting who produce and use information flow (documentations) for construction project delivery. It also includes the developing, constituting and handling of information from initiation, planning, executing, controlling to closing of a project.

We are conducting this study to establish how to achieve effective and efficient supply chain of information flow (chain of project documentations) through business relationship management for the improvement of the DSD activities in the Ghana.

All information supplied would be treated as very confidential. Only aggregated findings will be submitted to the appropriate authorities.

Your participation in this qualitative study is required for the validity and reliability of the findings. You are considered as highly cherished respondent and we will be grateful if you could answer these few questions.

We very much appreciate in advance your cooperation in this regard. If you have any questions and contributions about this research, please contact us at nkorgen@ymail.com or through 0276097940 or 0263985252

Thank you in advance for your assistance in this research study.

N. K. Orgen (student interviewer)

DSD Actors' Personal Data

Please tick the appropriate answer:

1. Which of the following professions do you belong to?
 - a) Project Manager
 - b) Architect
 - c) Civil Engineering
 - d) Service Engineering
 - e) Quantity Surveyor
 - f) Planner
 - g) Geotech. Engineering
 - h) Geomatics Engineering
 - i) Contractor

2. Which of the following age categories do you fall within?
 - a) Below 31
 - b) 31-40yrs
 - c) 41-50yrs
 - d) 51-60yrs
 - e) Above 60years

3. Please select your highest , level of education?
 - a) Professional Diploma
 - b) Bachelor's Degree
 - c) PGD/Master Degree
 - d) Doctorate Degree
 - e) Others (please state).....

4. Indicate your professional qualification status
 - a) Professional Member
 - b) Corporate Member
 - c) Fellow Member
 - d) Technician Members

5. For how long have you worked in the construction industry?
 - a) Less than10yrs
 - b) 10-19yrs
 - c) 20-29yrs
 - d) 30-39
 - e) Above 40yrs

**Kwame Nkrumah University of Science and Technology
School of Graduate Studies**

College of Architecture and Planning

Department of Building Technology

TOPIC:

‘The Nature of Adversarial Relationships in Design Service Delivery in Ghana, Effects on Supply Chains Information Flow and a Business Relationship Management Proposals for Improvement’

Section A. Work of practitioners, contractors and their business relationships
Please permit me to ask you some questions about your work and business relationships

1. What type of business relationship exists among the DSD practitioners in developing supply chain of information flow?

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2. How would you describe the nature of business relationship that emerges when producing supply chain of information flow for project delivery?

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3. What type of supply chain of information flow (chain of documentations) exists among the Design Service Delivery (DSD) practitioners?

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4. Please how would you describe the processes in which the DSD practitioners produce the chain of documentations for building project delivery?

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5. Please how would you describe the detailed procedures in which the DSD practitioners develop the chain of documentations for building project delivery?

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6. To what extent do the business relationships among practitioners affect the effectiveness of the supply chain of information flow (chain of documentations) for improving the DSD activities?

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7. To what extent do the business relationships among practitioners affect the efficiency of the supply chain of information flow for improving the DSD activities?

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8. What contribution do contractors make in DSD practitioners activities in developing chain of documentations for project delivery?

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9. How would you describe business relationship existing between DSD practitioners and contractors?

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10. Do the nature of business relationship between DSD practitioners and contractors affect improvement of Design Service Delivery (DSD) activities?

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11. How do the nature of business relationship between DSD practitioners and contractors affect the improvement of Design Service Delivery (DSD) activities?

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Section B. Details of construction business relationship.

Now please help me to understand some of your business difficulties by answering the following questions:

12. What type of construction procurement is commonly used by the DSD actors in producing and using of supply chain of information flow (chain of documentations) in your project delivery?.....

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13. What are some of the DSD actors' business relationship problems associated with the type of procurement used in producing and using of the supply chain of information flow for the improvement of the DSD activities?

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14. Please have you been experiencing adversarial business relationship in your construction activities or line of duty?
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15. Please outline some examples of the nature of the adversarial issues encountered in producing and using the supply chain of information flow?
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16. How do the adversarial relationships in producing and using of supply chain of information flow affect the improvement of DSD activities?
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17. Do you know of any business relationship approach that can be used to minimize the adversarial issues in producing supply chain of information flow? If yes please briefly describe the approach.
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18. Do you experience non-collaborative working in the processes of producing the supply chain of information flow among the DSD practitioners?.....
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19. Do you experience non-collaborative working between DSD practitioners and contractors in the use of the supply chain of information flow?
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20. Please provide some of the non collaborative business relationships effects on producing the supply chain of information flow for DSD activities.

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Section C. Business interactions and DSD improvement

Please I would like to ask you the following questions on business interactions and design service delivery improvement

21. What interactive information strategies or methods or systems in the procurement used assist the DSD actors to constitute the supply chain of information flow (chain of documentations)?

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22. Do you have any interactive elements, procedures or policies which are commonly used in improving your project Delivery?

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23. What business relationship management attitudes are required of DSD actors to achieve improvement and continuous improvement in the DSD activities?

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24. Please describe learning business relationship management attitudes required of the DSD actors in improving DSD activities?

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25. What business relationship management behaviours are required of DSD actors to achieve improvement and continuous improvement in DSD activities?

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26. Please outline business relationship management learning behaviours required of DSD actors for improvement of the DSD activities?
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27. Do you have business relationship management policy or guidelines among DSD actors for improvement of your project delivery?
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28. If your answer to question 27, is yes, Please briefly describe the business relationship management policy or guidelines in use?
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29. Please rate in percentage (%) the extent of usage of the policy by the DSD actors in conducting Design Service Delivery (DSD) activities?

Thank you for the assistance.

Validation Questions

1. Please, would the DSD actors (practitioners and contractors) who will be using the improvement proposals have chance in contributing or providing inputs freely? If yes,
How?
Or Why?
2. Please, would the DSD actors have the chance to give any relevant design comments (both critical and non-critical design and design related comments) in developing and constituting the SCIIs- chains of project documentations in using the improvement proposals? If yes,
How ?
Or Why?
3. Please, would the DSD actors have the opportunity to provide their technical inputs on time and before developing and constituting the final SCIIs for effective and efficient use of resources? If yes,
How ?
Or Why?
4. Please, would the constructions business relationship (CBR) situation improve through the steps put forward in the improvement proposals? If yes,
How ?
Or Why?

5. Please, would the processes and procedures used in developing and constituting SCIfs improve and continue to improve design service delivery (DSD) through using the improvement proposals? If yes,

How ?

Or Why?

6. Please, could the concepts and other issues in the improvement proposals be applied for developing and constituting other SCIfs? If yes,

How ?

Or Why?

APPENDIX C

APPENDIX C: LIST OF PUBLICATIONS

CONFERENCE PAPERS

1. Orgen, N. K., Ahadzie, D. K., Ayarkwa, J. and Badu, E. (2011). An integrated Relationship and Supply Chain Management Framework for Improving Engineering and Design Service Delivery to Building Contractors in Ghana *In: laryea, S., Leiringer, R., and Hughes, W. (Eds) Procs West Africa Built Environment Research (WRBER) Conference, 19 -21 July 2011, Accra, Ghana, 119-129*
2. Orgen, N.K., Ahadzie, D.K., Ayarkwa, J. and Badu, E. (2012a) Adversarial Relationship in Construction Engineering Design Service Delivery: Discords, Disputes and Conflicts. *In 1st International Conference on Infrastructure Development in Africa (ICIDA - 2012), 22nd -24th March, 2012a*
3. Orgen, N.K., Ahadzie, D.K., Ayarkwa, J. and Badu, E. (2013a) Conceptual Models for Assessing Adversarial Business Relationship and Improvement of The Engineering and Design Service Delivery (EDSD) In Ghana *In 2nd International Conference on Infrastructure Development in Africa (ICIDA 2013), 17th - 19th March, 2013, University of Johannesburg, South Africa.*
4. Orgen, N.K., Ahadzie, D.K., Ayarkwa, J. and Badu, E. (2012b). An integrated Supply Chain Relationship Management Conceptual framework for improving Engineering and Design Service Delivery (EDSD) to Building Contractors in Ghana. *In: largea, S., Agyepong, S.A., Leiringer, R., and Hughes, W. (Eds) Procs 4th West Africa Built Environment Research (WABER) Conference, 24 -26 July 2012, Abuja, Nigeria, pp.1189-1204.*
5. Orgen, N. K, Ahadzie, D.K., Ayarkwa, J. and Badu E. (2013b) Contextualising the Methodology for Developing a Framework for improving construction Design Service Delivery in Ghana, In: Laryea, S. and Agyapong. S. (Eds) Procs 5th West Africa Built Environment Research (WABER) Conference 12-14 August, 2013 Accra Ghana, 307-319.

PUBLISHED JOURNAL PAPERS

1. N. K. Orgen¹, D.K. Ahadzie², J. Ayarkwa³, E. Badu³, (2013) Journal of Construction Project Management and Innovation Vol. 3 (1): 480-497, 2013 ISSN 2223-7852 © Centre of Construction Management and Leadership Development 2013. **Conceptual Models for Assessing Adversarial Business Relationship and Improvement of Engineering and Design Service Delivery (EDSD) in Ghana**
2. N. K. Orgen, J. Ayarkwa, D.K. Ahadzie, E. Badu, (2015) Engineering Management Research, Vol.4, No.1;13-29, 2015 ISSN 1927-7318, published by Canadian Center of Science and Education, **Effect of Construction Business Relationship Situation on Design Service Delivery in Ghana**

3. N. K. Orgen, D.K. Ahadzie, J. Ayarkwa, E. Badu, (2015) Journal of Civil Engineering and Architecture Research, Vol.2, No. 6, 708-723, 2015, Ethan Publishing, **The Nature of Supply Chain and Business Relationship in Construction Design Service Delivery in Ghana**

PAPER SUBMITTED TO THE UNDER STATED JOURNAL

The following is the title of another publication produced from the research and sent to the under stated journal:

Investigating the functioning of processes and procedures used in developing the supply chain of information flow and their effects on the Design Service Delivery in Ghana – sent to Journal of Construction Project Management and Innovation.