# ANTECEDENTS OF SUPPLIER RELATION QUALITY IN THE GHANAIAN CONSTRUCTION SUPPLY CHAIN

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# ABSTRACT

Effective and efficient management of suppliers within a supply chain is an essential requirement for improving organisational performance within construction companies. However, factors inherent within the supply chain of supplier-buyer exchanges such as culture, politics, dependence and trust may influence supplier relationship quality (SRQ). This research therefore seeks to identify the influence that these factors have upon SRQ in the Ghanaian construction industry and develop a conceptual framework that explains the interconnectivity between them. A literature review is used to develop a conceptual framework of the antecedents influencing supplier relationship quality. Primary 'perception' data obtained from 152 building material suppliers is used to test the proposed model using Partial Least Squares (PLS). Findings reveal that culture, politics, dependence and trust have a significant influence on relationship quality in supply chain collaborations amongst purchasers and suppliers of building materials. While politics has a strong influence on dependence, it also generates a negative influence on SRQ and trust. The research confirms the positive effect of trust and dependence in SRQ management and extends understanding of the influence of culture and politics. Practical implications suggest that managers of building material suppliers should focus upon building trust and dependence and be discouraged from over-reliance upon politics and political affiliations as a basis for long-term relationship building.

**KEYWORDS**: Supplier Relationship Quality, Supply Chain Management, Partial Least Squares Analysis, Ghanaian Construction Industry.

#### **INTRODUCTION**

Embedding supplier management philosophies into supply chains is critically important for construction contractors as it can influence company performance (Berry, 1995; Hennig-Thurau, Gwinner, & Gremler, 2002). These philosophies range from selecting the right supplier to building a strong relationship (Prajogo, Chowdhury, Yeung, & Cheng, 2012). Selecting the right supplier is usually influenced by factors such as product or materials selection, materials quality, cost and the knowledge and experience of both buyer (contractor) and consultant working together to achieve the project goal (Prajogo *et.al.*, 2012). Customers or buyers expect their suppliers to uphold known standards of product quality, service, distribution, promotion and partnering within that industry (Narayandas & Rangan, 2004). Consequently, managing supplier relationship quality (SRQ) has gained considerable academic and industrial attention in other fields and industries. For example, in business, research has attempted to identify the antecedents and multi-dimensional nature of SRQ (Lee, Lee, & Li, 2012; Li, Ford, Zhai, & Xu,

2012 ) as well as its impact upon business performance (Kim & Hsieh 2003; Oly Ndubisi, 2007; Srinivasan, Mukherjee, & Gaur, 2011). Jiang, Yu, Zhou, Liu, & Zhao (2011a) examined the mapping of supplier-buyer relationships within the United Kingdom (UK) and observed that trust and dependence impacts upon the effectiveness of SRQ dimensions such as commitment, communication, satisfaction and long-term orientation. However, within developing countries such research is limited, particularly within the context of the construction industry (Batt & Rexha, 2000; Wasti & Wasti, 2008; MacDuffie, 2011; Jiang et.al., 2011a). Kuada (2010) suggests that this observed paucity of research may be due to apparent disparities in economic and environmental profiles between both developed and developing countries. Moreover, none of the aforementioned studies have considered the influence of culture, dependence, politics and trust on SRQ, particularly in the context of the construction industry in a developing country. This research therefore aims to address this current deficiency by examining these variables, identifying their influence on SRQ in the Ghanaian construction industry and developing a conceptual framework that explains the interconnectivity between them. To achieve these goals a partial least squares structural equation modelling (PLS-SEM) approach was utilised to model the perceptions of building suppliers.

# **RELATIONSHIP QUALITY IN THE CONSTRUCTION SECTOR**

SRQ is often regarded as an important marketing concept that is composed of several key components reflecting the overall nature of relationships between companies and their customers (Hennig-Thurau *et.al.*, 2002). These components include: cooperation (Baker, Simpson, & Siguaw, 1999); opportunism (Dorsch, Scott, & Scott, 1998); customer orientation (Palmer & Bejou, 1994); seller expertise (ibid); conflict, willingness to invest and expectation to continue (Kumar, Friend, & Gilula, 1995); information sharing; trust; communication; commitment; and long term relationship orientation (Lages, Lages, & Lages, 2005; Jiang *et.al.*, 2011a). Hennig-Thurau *et.al.*, (2002) emphasised that SRQ should highlight the relational benefits that occur between two parties, which include: social benefits and special treatment benefits (Li *et.al.*, 2012).

According to Lages et.al. (2005, p. 1044) SRQ "reflects the intensity of information sharing, communication quality, long-term orientation and satisfaction with the relationship between two or more parties." Within the construction industry, contemporary research into SRQ has emphasised four primary dimensions of SRQ constructs, namely: (i) satisfaction; (ii) commitment; (iii) communication; and (iv) long-term orientation (Kim & Hsieh, 2003; Mouzas, Henneberg, & Naude, 2007; Ivens & Pardo, 2007; Jiang, Henneberg, & Naude, 2011b). In this paper, SRQ is defined as the extent to which the interactions and transactions between two or more parties in a supply chain yields a perception of higher levels of satisfaction, commitment, effective communication and a desire for long-term relationship building. Jiang et.al. (2011a) contends that a strong perception of inter-dependence within a supplier relationship, leads to long-term sustainable partnerships by providing a fertile environment for fostering interpersonal trust. Through this approach, initial asymmetries within the interaction patterns can be redressed (Handfield & Bechtel, 2002). While trust and dependence may vary in terms of their impact upon supplier management, they are indispensable in sustaining the quality of relationship throughout a supply chain (Narayandas & Rangan, 2004; Gulati & Sytch, 2007).

Achieving almost optimum solutions by considering resource consumption and project duration is an aim of recent research. In this way, multi-constraint optimisation algorithms are

proposed. This approach, presented by Beißert, König and Bargstädt (2007), was able to generate valid execution schedules considering different construction requirements and execution constraints. Beißert, König, & Bargstädt (2008) applied a simulation approach on the basis of constraints, which they called Greedy Randomized Adaptive Search Procedures (GRASP). GRASP is a meta-heuristic technique that generates valid and optimal solutions rapidly. Another optimisation model applied in scheduling linear construction projects is a genetic algorithm-based multi-objective optimisation that was introduced by Senouci & Al-Derham (2008).

#### **CONCEPTUAL FRAMEWOK AND HYPOTHESIS**

A conceptual framework that identifies the antecedents influencing SRQ are proposed in Figure 1. SRQ is represented as a second-order, multi-dimensional construct which is reflected in four key dimensions or measurements: (i) commitment; (ii) communication; (iii) satisfaction; and (iv) long-term orientation of both suppliers and buyers. A second-order construct can be a mixture of both formative and reflective indicators of the principal second-order construct. In this paper, politics, trust, dependence and culture are modelled as formative constructs whiles communication, commitment, satisfaction and long term orientation are underlying sub-dimensions which reflect SRQ and each of them is distinct from the other. Thus, while the formative indicators affect the second order construct of SRQ, the reflective indictors are modelled as the effects of the second order construct of SRQ. However, second order constructs encompass both reflective and formative measurement at their first and second order levels. A multi-dimensional construct according to Law, Wong, & Mobley, (1998, p. 750) is a "higher-level construct that underlies its dimensions" or measurements.

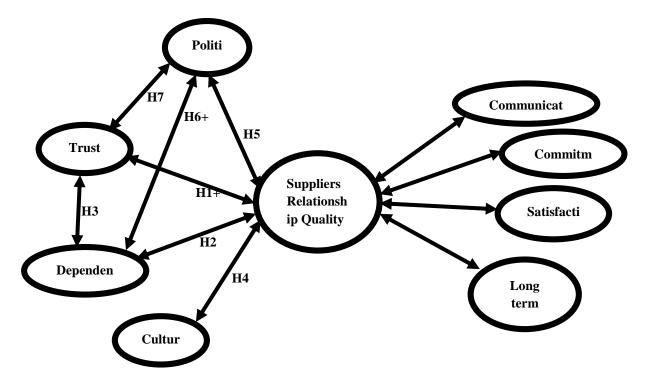


Figure 1: Conceptual framework and hypotheses

Note: Communication, commitment, satisfaction and long term orientation are underlying sub-dimensions of RQ, each of which is distinct from the other.

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The measurements are distinctive and are usually connected to the higher-level construct through a single theoretical concept (Roy, Tarafda, Ragu-Nathan, & Marcillac, 2012). Edwards (2001) postulates that multidimensional constructs normally do not have a separate existence without dimensional components. The independent variables that impact upon SRQ are: dependence; political affiliations; cultural orientation; and trust of both suppliers and buyers. The relationship among these independent variables is now examined.

### **Trust and Relationship Quality**

Trust can be defined as the belief that the seller or supplier is motivated to act in the buyer's or customer's best interest and would not act opportunistically (Anderson & Narus, 1990; Anderson & Weitz, 1992). Trust is demonstrated when a buyer or customer believes a supplier is credible, trustworthy and benevolent - in turn, this creates relationship efficiency which encapsulates sustainable commitment, satisfaction and effective communication throughout the supply chain (Fang *et.al.*, 2014). As trust builds between supplier and buyer, the buyer becomes increasingly willing to share confidential information and support relationship growth (Theron, Terblanche, Boshoff, & Spyropoulou, 2015). Therefore, the following hypothesis is proposed:

H<sub>1</sub>: A buyer's trust in a supplier will have a significantly positive effect on the quality of supplier-buyer relationship in the construction industry.

# **Dependence and Relationship Quality**

Dependence in a supplier relationship exists when either critical benefits are received by one (or more) party(ies) or a strategically important partner is difficult to replace with an alternative market source (Tellefsen & Thomas, 2005). Under such a scenario, the dependent party often values the relationship and actively seeks to maintain it (Razzaque & Boon, 2003). However, strategic important partners may seek to dictate the terms and conditions of such relationships (Valta, 2013). When dependence is strong in a supplier-buyer relationship, at least one party strives to develop and retain strong relationship ties (Shin, Dovidio, & Napier, 2013). These arguments generate a second hypothesis, namely:

H<sub>2</sub>: A mutually beneficial 'dependence-based' relationship between buyer's and a supplier will have a significantly positive effect on the quality of supplier-buyer relationship in the construction industry.

#### **Dependence and Trust**

When suppliers and buyers invest in a relationship, they become more motivated to develop the relationship in order to protect, maintain and reap maximum benefits arising thus, leading to high levels of cooperation, dependence and trust (McQuiston, 2001). Therefore, it can be hypothesized that:

H<sub>3</sub>: A mutually beneficial 'dependence-based' relationship between buyer's and a supplier will have a significantly positive effect on the level of trust in a supplier-buyer relationship in the construction industry.

# **Culture and Relationship Quality**

Culture represents a collective programming of the mind which distinguishes members of one group or category (of people of organisation(s)) from another (Caprar, Devinney, Kirkman, & Caligiuri, 2015). It represents a set of attitudes, values, beliefs and behaviours shared by groups of people; often communicated from one generation to the next (Spencer-Oatey, 2008; Matsumoto & Juang, 2012). Ethnicity represents a powerful sub-culture (Beugré & Offodile, 2001) and in Sub-Saharan, West African region, ethnicity exerts a strong influence upon business relationships (Berman, 2010). Specifically, people of the same tribe and ethnic background are able to better identify, communicate and trade with each other, and are more likely to choose business partners from within their own ethnic culture (Lieberman & McClendon, 2013). This leads to the next hypothesis, namely:

H<sub>4</sub>: A buyer's cultural affiliations with a supplier will have a significantly positive effect on the quality of supplier-buyer relationship in the construction industry.

# **Politics and Relationship Quality**

Corporate political behaviour is inextricably linked to business strategy development and may be proactive or reactive dependent upon the prevailing competitive landscape (Mizruchi, 1990). Oliver and Holzinger (2008 p.498) suggest that strategic political management is a "set of strategic actions that firms plan and enact for the purpose of maximizing economic returns from the political environment." Firms typically adopt either a transactional or relational approach (Diani & McAdam, 2003; Lawton, McGuire, & Rajwani, 2013) where: a transactional approach refers to a relatively short-term exchange relationship or interaction; and a relational approach denotes a long-term exchange relationship (Jessop, 2001). In the context of a construction supplier-buyer relationship, suppliers may choose suppliers based on strong political affiliations and associated benefits - these might include gaining political favour or winning new business. This trait of strong political affiliation is particularly relevant in West African countries (and more specifically, Ghana) where often corruption is prevalent. Hence, buyers with strong affiliation to the prevailing government-in-power, attract suppliers who seek to improve upon the SRO in order to achieve strategic goals and objectives. However political bias can influence business relationships and exert a culture of corporate abuse that is detrimental to other business partners (Lawton et.al., 2013). Consistent with this, it can be hypothesised that:

H<sub>5</sub>: A buyer's political affiliations will have a significantly negative effect on the quality of supplier-buyer relationship within a supply chain.

#### **Politics, Dependence and Trust**

To secure long term political support from political parties, construction and building materials firms develop transactional and relational methods of adding value to their corporate political activities (ibid). However, studies suggest that although corporate political activity is a useful tool to improve financial performance (Hillman, Kiem, & Schuler, 2004; Bonardi & Keim, 2005), trust and longer-term profitability tends suffers at the expense of politics (Hadani & Schuler, 2013). This is because a supplier investment in corporate political activity (CPA) is negatively associated with market performance (ibid). Firms that place former public officials on their boards, experienced inferior market and accounting performance when compared to

firms without such board members. This predominantly results from an inability to enjoy political favour whenever a change in Government occurs. Since government support and political affiliations are ephemeral in developing countries such as Ghana, they cannot sustain longer term business development. Thus, supplier-buyer relationships founded on politics, political activities and affiliations, can negatively influence supplier management. Therefore, it is further hypothesised that:

- H<sub>6</sub>: A buyer's political affiliations will have a significantly positive effect on dependence in a supplier-buyer relationship in a supply chain.
- H<sub>7</sub>: A buyer's political affiliations will have a significantly negative effect on trust for supplier-buyer relationship a supply chain.

#### **RESEARCH APPROACH**

This research is motivated by a positivist paradigm, which suggests that knowledge can be discovered in measurable terms (Saunders, Lewis, & Thornhill, 2012). This requires that all constructs (such as politics, culture, SRQ and trust) are well-defined and measured using established statistical measurements in order to gain empirical knowledge about the proposed relationship between the constructs. The study's population consisted of Ghana's leading suppliers of building materials suppliers. The construction industry in Ghana is dominated by small and medium sized enterprises (SME) (Ayarkwa, Danso, & Amoah, 2010; Bondinuba, 2012) and in particular, suppliers within the materials supply sub-sector are spread throughout the country. However, the Association of Construction and Building Material Suppliers Union hold inadequate secondary data on the total number of their suppliers - hence, the exact population of suppliers was impossible to determine. Therefore, a convenient sample of 200 building material suppliers was utilized using opportunity (or 'convenience') sampling which is a non-probability sampling method where participants are selected based on naturally occurring groups (i.e. suppliers). In order to collect high quality data that reflects both suppliers' and buyers' opinions and improve sample representativeness, a perception questionnaire survey was distributed within the central business districts of Kumasi and Accra, Ghana. These cities include the majority of building material suppliers and SME construction firms in Ghana (Ahadzie, 2007; Badu & Owusu-Manu, 2010).

The questionnaire was pre-tested via a pilot study on a random sample of 10 suppliers (Fink, 2003). A physical copy of the questionnaire was posted to each supplier for review and constructive comment and follow-up telephone calls made to elicit feedback after a two week period; based upon their review adjustments were made to create a more effective data collection instrument. The final questionnaire produced a perception orientated data collection instrument; results emanating from such are reliant upon the participants' experience, knowledge and judgement; future work may be required to determine whether such tacit knowledge is indeed a reality. The final amended survey questionnaire and introductory cover letter were randomly distributed via surface mail as a hard copy to 200 managing directors/ owners of leading building material suppliers, and data was collected over a six week period. A consent form was also used to seek permission from the respondents and provide assurances of anonymity and confidentiality. A total of 152 usable questionnaires were returned, representing a 76% response rate; this high response rate was attributed to follow up telephone calls made to participants within the selected sample. A five-point Likert item scale was used to measure variables for the research constructs (Klaus, 2014).

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CONSTRUCTS	CODE	MEASUREMENT ITEMS	SOURCE	
	TR1	Supplier being open in dealing with buyers.		
	TR2	Supplier is concerned about buyers' welfare When making important decisions.		
Trust	TR3	Buyers know that their suppliers would respond with understanding when share their problem with them.	Kumar <i>et.al.</i> , (1995); Jiang <i>et.al.</i> , (2011a); and	
	TR4	Buyers can count on their suppliers to consider how their decisions and actions will affect them.	Hwang <i>et.al.</i> , 2013.	
	TR5	Buyers are confident with their supplier's ability to fulfill whatever agreements		
Development	DEP1	Buyers would face difficulty in replacing a supplier if relationship was discontinued.	Ganesan (1994); Kim, and Hsieh, (2003); and	
Dependence	DEP2 DEP3	This supplier is crucial to our business. Buyers would suffer greatly if they lost a supplier.	Hwang et.al., (2013).	
	POL1	Buyer'srelationship with a supplier is significantly		
Politics	POL2	influenced by the political affiliation of the supplier. Political factors are important to buyers in dealing with a supplier in the construction business.	Self-developed.	
	CUL1	Buyers' relationship with a supplier is significantly influenced by the cultural or ethnic affiliation of the		
Culture	CUL2	supplier. Cultural or ethnic factors are important to buyers in dealing with a supplier in the construction business domain.	Self-developed.	
	SAT1	Buyer's personal working relationship with a supplier is satisfactory.		
	SAT2	Buyers financial performance from the relationship with a supplier is satisfactory	Jap and Ganesan (2000); Selnes and Sallis (2003);	
Satisfaction	SAT3	Buyers'investments of resources in a relationship (e.g. time and money) have paid off well.	and Chatterjee (2004).	
	SAT4	Buyers are satisfied with the financial gains from their business relationship with a particular supplier.		
	CMT1	Even if buyer could, they would not drop a supplier		
	CMT2	because they like being associated with them. Buyers want to remain as members of a supplier's network because they genuinely enjoy their relationship with them.	Kumar <i>et.al.</i> , (1995); Anderson and Weitz	
Commitment	CMT3	Showing positive feelings towards a supplier are a major reason most buyers continue working with their suppliers.	(1992); and Ivens and Pardo (2007).	
	CMT4	Buyers dedicate whatever resources it takes to do business with their supplier.		
	COM1	Buyers always keep the supplier informed about events or changes that may affect the supplier.		
Communication	COM2	Buyers share much information with a particular supplier if it can be of help.	Valta, (2013); and Jiang <i>et.al.</i> , (2011a).	
	COM3	Buyers exchange information with a particular supplier frequently and informally, not only according to a pre- specified agreement	Jung er.ur., (2011a).	
	LTO1	Maintaining a long-term relationship with a supplier is important to buyers.		
Long-term Orientation	LTO2	Buyers focus on long-term goals in most supplier relationship.	Jiang <i>et. al.,</i> (2011b); and Hwang, Chung, & Jin,	
Cricitation	LTO3	Buyers expect a supplier to be working with them for a long time.	(2013).	

#### Table 1: Constructs and measurement items

The scale ranged from 'strongly disagree' to 'strongly agree' and was coded 1 to 5 respectively. In all, the measurement items for the eight multi-item constructs had 27 items that were derived from previous studies and modified to suit the research context as shown in Table 1. In this regard, SRQ was a second-order multi-dimensional construct which consists of four first-order multi-dimensional constructs namely, commitment, communication, satisfaction and long-term orientation. The other constructs in the model were culture, politics, dependence and trust.

### DATA ANALYSIS AND RESULTS

Data was analysed using descriptive statistics and partial least squares structural equation modelling (PLS-SEM) approaches available in SPSS 16.0 and SmartPls 2.0 respectively (Ringle, Wende, & Mill, 2005). The questionnaire recorded respondents' demographic data such as: age of the firm, annual turnover in US dollars and their area of operations (Table 2). This data provided a general background of the respondents and context for interpreting the study's findings.

	Background Data	Percentage
Gender	Male	89.5 %
Gender	Female	10.5 %
	Less than 5 years	21.1 %
Years of	Between 6 to 10 years	31.6 %
experience	Between 11 to 15 years	34.2 %
	Between 16 to 20 years	13.0 %
-	Building and construction materials and tools suppliers	2.6 %
Type of business	Building and construction material suppliers	76.0 %
business	Building and other material suppliers	21.0 %
	Between 5,000 to 10,000	21.0 %
Annual	Between 10,001 to 15,000	26.0 %
Turnover	Between 15,001 to 20,000	21.1 %
	Above 20,000	31.0 %

#### Table 2: Background data

From Table 2, 89.5% of respondents were males and 10.5% were females, and amongst the total sample, 21.1% had operated as a construction and building materials supplier for less than 5 years; 31.6% between 5 - 10 years; 34.2% between 11 - 15 years; and 13% had over 20 years of experience. This implies that the majority had relatively limited experience (between 5 - 15 years) of the supplier relationship experience. In terms of the sub-sector of operations, only 2.6% of respondents had been involved in the supply of construction and building materials, and tools. The majority (76%) operated in the construction and building material supply business and 21% dealt in building and other material supplies. For income generation, 21% of respondents earned an annual income between USD7,000 and USD10,000; 26% earned between USD10,001 - USD15,001; 21.1% earned between USD15,001 - 20,001; and 31% earned above USD 20,000.

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#### Assessment of the Structural Model and Sample Size

PLS-SEM sought to test the hypothesized relationships among the constructs in the conceptual model (Figure 1); this was deemed an appropriate approach because of the study's deterministic focus (Chin, 2010). For sample size determination in PLS-SEM, Hair, Ringle, and Sarstedt, (2011) proposes 'the rule of ten', which recommends ten times the largest number of structural paths directed at a particular latent construct in the structural model. In this research, the highest number of structural paths directed at the latent construct (SRQ) was four. Hence, a minimum of 40 cases were required; this figure was exceeded by the 152 respondents who participated in the study. The Smart PLS 2.0 software was set to 5,000 bootstrap samples to enable an estimate for the significance of the t-values. For the PLS-SEM analysis, a two-step approach of estimating the measurement is adopted. The first step involved the evaluation of the PLS-SEM model by examining the outer model in order to validate the measurement. Astrachan, Patel, & Wanzenried, (2014) argue that the first step approach is a way of assessing the relationships between the constructs and their indicators in a model as in Figure 2. The second step involves the examination of the inner model which was possible after the reliability and validation of the outer model.

# Measurement of the Model Reliability and Validity

Construct reliability was measured via item loadings with a minimum acceptable value of 0.50 and through Cronbach's alpha with a minimum acceptable level of 0.7 (Straub, Boudreau, & Gefen, 2004; Hair, Black, Babin, & Anderson, 2010; Hair *et.al.*, 2011). Table 3 reveals that the constructs have item loadings higher than the recommended 0.50, whilst Table 4 highlights that all Cronbach alphas are above 0.70; these figures indicate that the multiple measures are highly reliable for the measurement of each construct.

Construct validity assesses the degree to which a measurement represents (and logically connects) the observed phenomenon to the construct through fundamental theory (Hair Jr, Hult, Ringle, & Sarstedt, 2013). It is assessed through convergent validity and discriminant validity (Hair *et.al.*, 2010). Convergent validity is measured through: (i) average variance extracted (AVEs) which should have minimum loading of 0.5; and ii) composite reliability (CR) which should exceed an acceptable minimum of 0.70 (ibid; Hair Jr. *et.al.*, 2013). From Table 4, all AVEs are above the 0.50 threshold indicating that items for each construct together explain adequately the constructs they represent, supporting the convergent validity of the derived measures. Moreover, the CR values for all constructs range from 0.84 to 0.96 exceeding the acceptable requirement of 0.70 confirming convergent validity of the measurement (outer) model.

The discriminant validity was deemed adequate since the square root of the AVEs (in the diagonal) is greater than their respective inter-construct correlations in Table 4 (*ibid*). Additional support for discriminant validity is achieved via inspection of the cross-loadings (Table 3) which indicate that the measurement items for each construct load is higher on their respective constructs than the load on other constructs (Chin, 2010; Hair *et.al.*, 2011). These confirm that the measurement items explain adequately their respective constructs more than they do explain other constructs in the structural model. Given that construct reliability and validity conditions of the measurement model are acceptable, the next step sought to assess the psychometric properties of the structural (inner) model.

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	СМТ	СОМ	CUL	DEP	LTO	POL	SAT	TRUST
CMT1	0.721	0.449	0.379	0.582	0.353	0.332	0.243	0.550
CMT2	0.910	0.593	0.261	0.735	0.557	0.131	0.406	0.524
CMT3	0.887	0.602	0.130	0.469	0.581	0.081	0.539	0.404
CMT4	0.713	0.593	0.305	0.459	0.583	-0.070	0.476	0.574
COM1	0.441	0.675	-0.155	0.299	0.203	-0.304	0.587	0.504
COM2	0.581	0.873	0.161	0.466	0.421	0.026	0.419	0.409
COM3	0.643	0.864	0.347	0.486	0.419	0.088	0.507	0.543
CUL1	0.264	0.228	0.951	0.457	-0.090	0.826	-0.092	0.229
CUL2	0.336	0.110	0.965	0.457	-0.026	0.821	-0.077	0.260
DEP1	0.633	0.378	0.479	0.952	0.152	0.431	-0.018	0.666
DEP2	0.705	0.561	0.355	0.921	0.264	0.177	0.199	0.827
DEP3	0.586	0.520	0.513	0.936	0.103	0.454	0.061	0.679
LTO1	0.724	0.468	-0.112	0.266	0.903	-0.253	0.734	0.398
LTO2	0.492	0.393	0.011	0.153	0.847	-0.258	0.484	0.227
LTO3	0.312	0.170	-0.018	-0.032	0.768	-0.110	0.254	0.018
POL1	0.087	-0.089	0.863	0.317	-0.241	0.963	-0.331	0.016
POL2	0.164	-0.025	0.803	0.396	-0.261	0.972	-0.263	0.039
SAT1	0.310	0.450	-0.113	-0.055	0.448	-0.227	0.744	0.289
SAT2	0.344	0.472	-0.049	0.007	0.605	-0.386	0.767	0.252
SAT3	0.591	0.616	-0.026	0.243	0.486	-0.264	0.865	0.422
SAT4	0.340	0.335	-0.106	0.034	0.445	-0.042	0.738	0.110
TRU1	0.326	0.452	-0.020	0.353	0.334	-0.302	0.509	0.671
TRU2	0.596	0.495	0.287	0.597	0.151	0.205	0.237	0.749
TRU3	0.319	0.362	0.053	0.249	0.225	-0.343	0.381	0.609
TRU4	0.571	0.451	0.336	0.826	0.258	0.305	0.105	0.751
TRU5	0.441	0.448	0.216	0.707	0.157	0.059	0.204	0.892

**Table 3: Item Loading and Cross Loadings** 

Table 4: Construct reliability and discriminant validity

	СМТ	СОМ	CUL	DEP	LTO	POL	SAT	TRU	RQ	AVE	CR	CA
СМТ	0.813								0.875	0.660	0.885	0.824
СОМ	0.693	0.809							0.829	0.655	0.849	0.730
CUL	0.316	0.171	0.958							0.918	0.957	0.911
DEP	0.688	0.523	0.477 -	0.937					0.803	0.877	0.956	0.930
LTO	0.647	0.440	0.058	0.188	0.841					0.707	0.878	0.799
POL	0.132	- 0.056	0.859	0.372	- 0.260	0.967				0.936	0.967	0.931
SAT	0.524	0.614	- 0.087	0.091	0.634	- 0.304	0.780		0.814	0.609	0.861	0.785
TRUST	0.621	0.597	0.256	0.778	0.298	0.029	0.360	0.741		0.549	0.857	0.791

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Notes: square roots of AVEs are in the diagonal; correlations are below the diagonal; AVE-Average variance extracted, RQ – RQ, CR- Composite reliability, CA – Cronbach's alpha

#### **Results of Relationship Quality as a Second-Order Construct**

SRQ is conceptualized as a reflective second-order factor described by the four first-order latent variables. As indicated in Tables 3 and 4, each of the first order variables had a high factor loading, namely: commitment (0.87); communication (0.82); satisfaction (0.81); and long-term orientation (0.80). Each of the loadings was significant at the 0.001 level. This implies that each of the first-order constructs is a significant underlying factor in the measurement of SRQ as a second-order construct.

#### **Results of the Structural Model**

In PLS-SEM, a structural model's validity is assessed through the strength of regression weights, *t*-values, *p*-values for significance of t-statistics as well as the effect sizes of independent variables on the dependent variables (Chin, 2010; Hair *et.al.*, 2011). The results illustrate that all the six out of the seven hypotheses were supported by the data (Table 5). For the predictors of SRQ, the trust of a buyer on a supplier will have a significantly positive effect on SRQ ( $\beta = 0.220$ , t = 2.594, p < 0.050) which goes to support hypothesis H<sub>1</sub>.

Relationship	Regression Weight	Standard Error	<b>T-Statistics</b>	p-value	Remarks
RQ -> CMT	0.875	0.006	138.487	0.000***	Significant
RQ -> COMM	0.829	0.017	48.115	0.000***	Significant
RQ -> LTO	0.803	0.014	56.272	0.000***	Significant
RQ -> SAT	0.814	0.021	39.469	0.000***	Significant

#### Table 5: Test of RQ as a second-order construct

Notes: \*\*\* significant at 0.001

Buyer's dependability on a supplier will influence SRQ positively ( $\beta = 0.322$ , t = 4.406, p < 0.001) and thus supports hypothesis H<sub>2</sub>. Moreover, culture which made the second greatest significant contribution in the prediction of SRQ ( $\beta = 0.465$ , t = 7.701, p < 0.001) goes to support hypothesis H4; this finding suggests that cultural affiliation is influential in a West African context but the reasons for this require further research. For example, such work should seek to clarify whether such affiliation is based upon loyalty, dependence or trust. However, politics exerts significantly negative influence on SRQ with the greatest regression weight among the independent variables ( $\beta = -0.663$ , t = 9.204, p < 0.001) which also support hypothesis H5. Among the independent variables, the results indicate that trust of a buyer in a supplier relationship is positively influenced by the dependence situation in the supplier relationship to a greater extent ( $\beta = 0.890$ , t = 73.430, p < 0.001) which does not support hypothesis H3. However, trust of a buyer on a supplier is negatively influenced by their political affiliations ( $\beta = -0.302$ , t = 10.714, p < 0.000), which then support hypothesis H7. Nonetheless, politics positively affects dependence in supplier relationship and thus lend support to hypothesis H6. It appears that a supplier's political affiliation has a much stronger influence on

SRQ than culture, trust and dependence. As depicted in Figure 2 together, culture, politics, dependence and trust explains 42% of the SRQ dynamics in the Ghanaian construction sector.

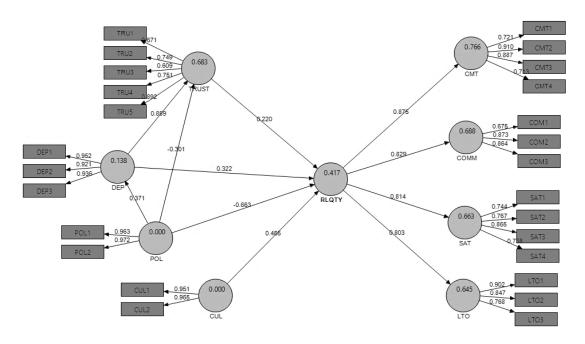


Figure 2: Results of hypothesis testing and predictive power analysis

#### **Predictive Power Analysis**

The R-Square measures the predictive power of the structural model. The predictive power of each independent variable to their respective dependent variables was conducted by eliminating each independent variable in question one at a time in an iterative manner. The effect size is estimated as:

$\frac{R^2}{R^2}$ included $-R^2$ exluded	(	1)
$1-R^2$ included	(	1)

	Hypothesized Relationship	Regression Weight	Standard Error	<b>T-Statistics</b>	p-value	Remarks
H1	TRUST ->RQ	0.220	0.085	2.594	0.010*	Supported
H2	DEP ->RQ	0.322	0.073	4.406	0.000***	Supported
Н3	DEP -> TRUST	0.890	0.012	73.430	0.000***	Supported
H4	CUL ->RQ	0.465	0.060	7.701	0.000***	Supported
Н5	POL ->RQ	-0.663	0.072	9.204	0.000***	Supported
H6	POL -> DEP	0.372	0.040	9.413	0.000***	Supported
H7	POL -> TRUST	-0.302	0.028	10.714	0.000***	Supported

Table 6: Results of hypothesis testing and predictive power analysis

Note: \* significant at 0.05, \*\*\* significant at 0.001

The effect size of each of the independent variables is presented in Table 6. The following are guidelines for interpreting effect sizes: < 0.02 is no effect;  $\ge 0.02$  is a small effect size;  $\ge 0.15$  is a medium effect size; and  $\ge 0.035$  implies is a large effect size (Murphy, Myors, & Wolach, 2014).

From Table 7, the model as a whole predicts about 42% of SRQ, indicating a large effect size. This implies that all the dependent variables (culture, politics, dependence and trust) collectively predict a strong SRQ.

Models	Dependent variables	R <sup>2</sup> included	R <sup>2</sup> excluded	f²	Remarks
	RQ	0.417	N/A	N/A	Large effect
Full model	TRU	0.683	N/A	N/A	Large effect
	DEP	0.138	N/A	N/A	Large effect
Model without TRU	RQ	0.417	0.402	0.026	Small effect
M.L.I. M. (DED	RQ	0.417	0.395	0.038	Small effect
Model without DEP	TRU	0.683	0.001	2.151	Large effect
M. L.L. M. (DOL	RQ	0.417	0.330	0.149	Small effect
Model without POL	TRU	0.683	0.642	0.129	Small effect
Model without CUL	RQ	0.417	0.373	0.076	Small effect

Table 7: Predictive power analysi	Table 7:	Predictive	power	analysis
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Notes: Effect size: 0 - none, 0.02 - small, 0.15 - medium, 0.35 - large (Cohen, 1988), N/A - Not applicable.

However, the individual predictive power of trust and dependence is ( $R^2 = 0.683$  and 0.138) respectively. This suggests that trust has a large effect whiles dependence has a medium effect size. Overall, culture, dependence and trust without politics has a small effect size in predicting SRQ ( $f^2 < 0.15$ ). However, the contribution of dependence to trust is a medium effect size ( $f^2 > 0.35$ ) while that of politics on trust is a small effect size ( $f^2 < 0.15$ ).

# **OUTCOMES AND IMPLICATIONS**

Theoretically, this paper makes three very important contributions. First, the findings confirm that SRQ is a multi-dimensional construct consisting of four primary components. Secondly, the study proves that SRQ in the developing country of Ghana is significantly influenced by relational antecedents of trust and dependence thus, lending support to the findings of similar research in other developed countries (Hennig-Thurau *et.al.*, 2002; Jiang *et.al.*, 2011; Lages *et.al.*, 2005; Mouzas *et.al.*, 2007; Kim & Hsieh, 2003; Ivens & Pardo, 2007). Thirdly, this study makes a unique contribution by extending the relationship antecedents of culture and politics to SRQ. Such knowledge will help scholars and professional practitioners to fully conceptualise the antecedents of SRQ especially in Sub-Sahara Africa. In particular, it emphasises the short-lived positive influence of political affiliation and its negative influence on trust and the overall SRQ in such a strategic industry like construction (Refer to Table 8).

New knowledge emanating from this work can be conveniently grouped into three thematic groups. First, the findings imply that trust and dependence are indispensable concepts that significantly influence SRQ. Management of construction and building materials firms should therefore build trusting relationships with business clients and customers. Management staff should be trained and developed to demonstrate trustworthiness in all construction business

dealings in order to sustain business partners' confidence and engender an environment suitable for a long-term profitable relationship. Suppliers of construction materials, products and services operating in developing countries should also understand that despite regulatory frameworks being in their infancy, business customers or buyers expect professionalism and for project specifications to be met. Second, the findings suggest that overreliance on politics and political influences in choosing and maintaining supplier relationship can have a devastating effect on SRQ. Whilst politics and political activities should be factored into construction business strategies for managing supplier relationships, it is important for suppliers to focus on discouraging the use of political affiliations as basis for developing longterm business relationship with business partners. In Ghana, political affiliation has been a blunt instrumental for building business relationships, especially for government projects. Such does not encourage sustainable longer-term business relationships. Hence, suppliers must build business relationship based on the notion of value creation and delivery to business partners, society and other relevant stakeholders (Gummerus, 2013; Gummesson, 2014; Oly Ndubisi, 2004, 2007; Vargo & Lusch, 2008). These findings would explain why Ghanaian construction and building materials firms with existing government contracts sometimes become insolvent or face project suspension whenever there is a change in government (Donkor, 2011). Third, the findings suggest that culture and ethnic affiliation influences SRO; albeit further clarification research is needed is this area. Therefore, the industry, government and society need to consider innovative ways of breaking down these social boundaries so that the most suitable individual or firms wins potential contract not the ones of the right ethnic origin.

Hypothesis	Hypothesized Relationship	Independent Variables	Dependent Variables
$\mathbf{H}_{1}$	TRUST -> RQ	TRUST	RQ
$H_2$	DEP -> RQ	DEP	RQ
H3	DEP -> TRUST	DEP	TRUST
$H_4$	CUL -> RQ	CUL	RQ
H5	POL -> RQ	POL	RQ
$\mathbf{H}_{6}$	POL -> DEP	POL	DEP
<b>H</b> 7	POL -> TRUST	POL	TRUST

Table 8: Relationship between the hypothesis, independent variables and dependent variables

#### **CONCLUSION**

It could be concluded that, in addition to trust and dependence, importance of non-relationship factors such as cultural and political affiliations among suppliers and buyers of construction materials and services in the Ghanaian construction industry have a significant influence on SRQ. Also, the empirical evidence of the relevance of trust and dependence in supplier management from a Ghanaian perspective has been revealed as key in improving the supplier-buyer SRQ. Contrary to popular opinion and conventional business wisdom, the paper further suggest that politics in particular has the greatest negative influence upon the supplier-buyer relationship. This negative influence is amplified in Ghana where ephemeral political control and corruption are inextricably interwoven with the country's culture.

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While this paper makes important contributions to theory and SRQ management in the Ghanaian construction industry, it is however constrained in terms of the variables captured and geographical constraints. Hence, in the first instance, the approach adopted and results generated may be limited in terms of their generalisability to other countries beyond the confines of sub-Saharan West Africa. Future research is therefore recommended to: expand the scope and reach of the research to cover other developing nations outside of West Africa; and to study other variables such as networking, lobbying, negotiations skills, demography, religion and political climate. These variables are also important and could also have influences on SRQ in the context of the construction industry and in developing countries.

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