

**THE MEDIATING ROLES OF ETHICAL
PRACTICES IN THE RELATIONSHIP
QUALITY AND COST PERFORMANCE
OF MULTIFARIOUS INFRASTRUCTURE
PROJECTS IN NORTHERN REGION OF
NIGERIA**

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UNIVERSITI SAINS MALAYSIA

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NIGERIA**

by

MUHAMMAD RABIU SHUAIB

**Thesis submitted in fulfilment of the requirements
for the degree of
Doctor of Philosophy**

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DEDICATION

To Hafsat Danladi Hamza

CERTIFICATION

I, Muhammad Rabiū Shuaib with matriculation number P-RD00032/18(R), solemnly and sincerely affirm that I own the authorship of this thesis submitted to the School of Housing Building and Planning, University of Sains Malaysia in partial fulfillment of the requirement for the award of Doctoral degree (PhD) in Project Management. To the best of my knowledge, this work has not been published or submitted for award of any other degree somewhere.



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LIST OF ABBREVIATIONS

AVE	Average Variance Extracted
CA	Cronbach Alpha
CM	Commitment
CR	Composite Reliability
CV	Convergent Validity
DCT	Dynamic Capability Theory
DV	Dependent Variable
DV	Discriminant Validity
EP	Ethical Practice
FL	Fornell-Larcker
HTMT	Heterotrait-Monotrait
IC	Internal Consistency
IR	Indicators' Reliability
IV	Independent Variable
LV	Latent Variable
MM	Measurement Model
MV	Mediating Variable
PBV	Performance Based View
PC	Cost Performance
PLS	Partial Least Square
PoCEP	Post-contract Ethical Practice
PreCEP	Pre-contract Ethical practice
PS	Performance Satisfaction
RB	Relational Behaviour
RBV	Resources Based View

RM	Relationship Management
RQ	Relationship Quality
SC	Supply Chain
SCM	Supply Chain Management
SCRM	Supply Chain Relationships Management
SEM	Structural Equation Modeling
SM	Structural Model
TI	Tolerance Index
TM	Teamwork
TR	Trust
VIF	Variance Inflation Factor

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**PERANAN PENGANTARA AMALAN ETIKA DALAM KUALITI
PERHUBUNGAN DAN PRESTASI KOS PELBAGAI PROJEK
INFRASTRUKTUR DI WILAYAH UTARA NIGERIA**

ABSTRAK

Industri pembinaan telah dikaitkan dengan hubungan kerja yang semakin merosot dan menurun dalam kalangan rakan kongsi rantaian bekalan. Ia telah dilaporkan akan menjejaskan prestasi industri dalam konteks kos. Dalam erti kata lain, projek mencapai prestasi kos yang signifikan melalui hubungan kualitatif rakan kongsi rantaian bekalan (RB) dalam pembinaan. Kajian ini bertujuan untuk membangunkan model peranan pengantaraan amalan beretika mengenai hubungan antara kualiti perhubungan (KP) dan prestasi kos Projek Infrastruktur pelbagai jenis (PJ) di Nigeria. Empat sifat utama KP telah dikenalpasti dari kajian literasi mendalam iaitu amanah, komitmen, kerja berpasukan dan prestasi yang memuaskan. Kajian ini memperkenalkan amalan beretika sebagai konstruk pengantaraan dengan dua pengukuran dimensi sebagai amalan pra kontrak yang beretika (PraKB) dan amalan pasca kontrak yang beretika (PaKB) untuk bertindak sebagai pengantara hubungan antara KP sebagai pembolehubah bersandar dan prestasi kos sebagai pembolehubah tidak bersandar. Menggunakan teknik persampelan bukan kebarangkalian, sebanyak dua ratus lapan puluh sembilan data sampel kuantitatif telah dikumpulkan. Kajian ini telah memfokuskan kepada pemaklum utama seperti pengarah dan pengurus dalam beberapa organisasi terlibat terhadap Projek Infrastruktur pelbagai jenis (PJ) di Nigeria. Data telah dianalisis dan hipotesis diuji menggunakan permodelan persamaan penstrukturan kuasa dua kecil separa Smart PLS 3.28. Berdasarkan bukti secara empirikal, kajian ini mencadangkan parti

komitmen sebagai satu sifat KP tidak menjejaskan amalan yang beretika manakala kepercayaan, kerja berpasukan dan kepuasan prestasi adalah signifikan kepada kedua-dua pra dan PaKB terhadap projek PJ di Nigeria. Tambahan pula, kedua-dua PraKB dan PaKB mempunyai pengaruh positif terhadap prestasi kos. Dalam analisis pengantaraan, amalan yang beretika didapati menjadi penyebab negatif kepada kualiti hubungan dan prestasi kos. Sementara itu PraKB boleh secara signifikannya mengurangkan kesan negatif terhadap kepercayaan, prestasi yang memuaskan dan kerja berpasukan terhadap prestasi kos. Kajian ini seterusnya mendedahkan PaKB boleh meneutralkan pengaruh negatif terhadap semua dimensi KP terhadap prestasi kos. Kajian ini akhirnya menunjukkan bahawa KP menjelaskan varians sebanyak 63.3% dan 55.2% masing-masing dalam amalan etika pra dan pasca kontrak manakala varians sebanyak 42.9% dalam prestasi kos telah dijelaskan oleh konstruk pengantaraan (PraKB dan PaKB). Sebaliknya, keputusan nilai berkaitan ramalan (Q^2) menunjukkan kesahihan ramalan terhadap model itu. Secara keseluruhannya, kajian ini menyediakan asas baik untuk meningkatkan prestasi kos pelbagai jenis di Nigeria. Penemuan penyelidikan ini mengesyorkan pematuhan berkesan kepada amalan yang beretika pada peringkat pra dan pasca kontrak pelaksanaan projek. Dengan cara ini, kesan negatif KP terhadap prestasi kos dapat dikurangkan. Oleh itu, pengurus dan pengamal dalam industri harus memberi tumpuan kepada perkara ini untuk mencapai prestasi kos yang lebih besar dan memberi implikasi nilai yang lebih besar kepada Projek Infrastruktur pelbagai jenis mereka.

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ABSTRACT

The construction industry has been associated with deteriorated and adversarial working relationship among supply chain partners. This has been reported to affect the industry performance in terms of cost. In other word, projects attained significant cost performance through working relationships of the supply chain (SC) partners in construction. This study aimed at developing a model for the mediation role of ethical practice on a relationship between relationships quality (RQ) and cost performance of Multifarious Infrastructure Projects (MIPs) in Nigeria. Four main attributes of RQ were identified from extent literature as trust, commitment, teamwork and performance satisfaction (PS). The study introduced ethical practice as a mediating construct with two-dimensional measure as pre-contract ethical practice (PreCEP) and post-contract ethical practice (PoCEP) to mediate the relationship between RQ as the independent variable (IV) and cost performance (CP) as the dependent variable (DV). Using purposive non-probability sampling technique, 289 valid quantitative sample data were collected. The study focused on key informants such as directors and managers within several organizations involved on multifarious infrastructure projects (MIPs) in Nigeria. The data was analyzed and the hypotheses tested using partial least squares structural equation modelling Smart PLS 3.28. On the basis of empirical evidence, this study suggests that party's commitment as an attribute of RQ did not affect ethical practice (EP) while trust, teamwork and PS are

significant to both pre and post contract EP on MIPs in Nigeria. Furthermore, both PreCEP and PoCEP have positive influence on cost performance. On the mediation analysis, ethical practices have been found to mediate the negative causality between relationship quality and cost performance. While the PreCEP can significantly reduce the negative impact of trust, performance satisfaction and teamwork on cost performance. This study further revealed that PoCEP can neutralized the negative influence of all the dimensions of RQ on cost performance. The study finally demonstrates that RQ explained 63.3% and 55.2% variances in pre and post contract ethical practice respectively while the 42.9% variance in cost performance was explained by the mediating constructs (PreCEP and PoCEP). On the other hand, the result of the predictive relevance (Q^2) value indicates a predictive validity of the model. On the whole, the study provides a good base for improving cost performance of MIPs Nigeria. The findings of this research recommended effective compliance to ethical practice at both pre and post contract stage of project delivery. This way, the negative effect of RQ on cost performance could be reduced. Therefore, managers and practitioners in the industry should focus on this to achieve greater cost performance and by implication greater value of their multifarious infrastructure projects.

CHAPTER 1

INTRODUCTION

1.1 Study Background

The increasing need for performance improvement in construction had led the industry to the adaption of good philosophies and innovative practices from other industries (Adamu, 2019). One of these concepts which originated from manufacturing industries is supply chain management (SCM) (Vrijhoef & Koskela, 2000). It is a concept which add value to production process using “just-in-time delivery strategy” and logistics management (Seng et al., 2018). SCM provides an evaluation tool within the supply chain system towards creating a positive attitude for collaborative relationship. According to Christopher (2005), SCM is a management process of the supply chain relationships (SCR) whose effectiveness mainly depends on the quality of their collaboration (Horvath, 2001). Consequence upon this, SCR have been accepted as a performance improvement strategy in the construction industry (Briscoe & Dainty, 2005). This orchestrated the move from traditional to a collaborative procurement style that concerned about people and their working relationships in construction. It is against this backdrop that Zheng, Lu, Le, & Fang (2018) pointed out that all project parties need to develop an extensive web of an effective working relationship quality (RQ) as it affect performance of construction projects.

Relationships quality (RQ) is defined as “the degree of appropriateness of a relationships” (Zheng et al., 2018, Jelodar, Yiu, & Wilkinson, 2016) that is “measured on the basis of the overall strength and depth” of the relationships among contracting parties (Bove & Johnson, 2001). According to Lages, Lages and Lages

(2005) it is a by-product of multiple related dimensions which can serve as a mechanism for evaluating the level of relationships between the parties. However, studies in construction revealed that RQ between parties are functions of the major attributes among the parties which is achievable through some list of strategies and actions that may be systematically inter-connected” (Alutu & Udhawuve, 2009; Jelodar et al., 2015) and which further changes with environmental influence. This therefore, confirmed the opinion of Ofori (2012) who submits that the characteristics of construction as a framework for analysis undertaken from the perspective of developed countries should not be regarded as the drivers for construction development in developing countries. It is hereby argued that the techniques, models and tools for relationship management (RM) practiced in the United Kingdom (UK), New Zealand, Australia, China to mention a few (Wright & Fergus 2009; Ling et al. 2014b in Chan, Le, Hu, & Shan, 2015) would need more robust study for successful application in other construction environment around the world. This further corroborates the findings of Mignone et al. (2016) in Kwofie, Aigbavboa, and Matsane (2019) who submits that the social dimension of human working relationships differs with organizations, places, industries and across different cultures as well as dynamics of the environment.

Additionally, different construction projects differ in size with each characterized by its own way of RM (Meng & Boyd, 2017). Although projects attained significant cost performance through effective collaboration of its supply chain (SC) partners (Achi & Anadi, 2021; Meng, 2012; Handfield, Primo & Oliveira, 2015), there exist overwhelming evidences which show that the deterioration of RQ among SC partners is associated with unnecessary conflicts, indecisiveness and inadequate coordination (Zheng et al., 2018) having a significant impact on cost (Jha

& Iyer, 2007) than on time and quality performance in construction (Meng, 2012). This further revealed the significance of relationship management to cost performance in construction (Meng & Boyd, 2017).

Cost is regarded as a significant factor in measuring performance in construction. Despite this, the industry is faced with consistent challenge of meeting up its objective of completing projects within budget and schedule. Nawaz, Shareef and Ikram (2013) submit that more than 90% of delayed projects around the world faces problem of cost overruns. This retrogressive atmosphere is associated with attitudes of the parties due to carelessness, unethical practices, and unprofessional approach to service delivery. In many developing countries, corrupt government officials connive with corrupt contractors and consultants on construction projects to syphon monies meant for infrastructural development (Kenny, 2007 in Ogbu & Asuquo, 2018). This led to incidental cost overruns on the contract sum. According to American Society for Civil Engineers (ASCE) (2004) cited in Ogbu & Asuquo (2018), corruption in the construction industries account for about \$340bn of worldwide construction cost which also amount to an economic cost of about 120 billion euro per year in Europe (European Commission, 2012). It is also estimated to reach as much as 50 per cent of its contract value (Transparency International, 2010). In a report by the Construction Sector Transparency Initiative (CoST) (2012) in Ogbu & Asuquo, (2018), it was revealed that the “*annual losses in global construction through mismanagement, inefficiency and corruption could reach \$2.5 trillion by 2020*”. This corroborates the study which report that unethical practices in construction could give rise to dishonest financial claim which at the end, lead to cost overruns hence poor cost performance.

Ethical practice is the bane of development and an impediment for national growth (Shah & Alotaibi, 2017; Adah, 2020; Aigbavboa, Oke & Tyali, 2016). Thus, to achieve performance improvement in construction, a thoughtful consideration is required to prevent the occurrence of unethical practices in the sector (Oyewobi et al., 2011). According to Yeung et al. (2009), an outright compliance with ethical practices enhanced trust and commitment. Trust opens a good ground for transparency, openness, problem solving and mutual respect among parties. This reduces fragmentation which enhanced RQ. The prevalence of unethical practice is a causal factor responsible for high cost of construction projects (Akinrata, Ogunsemi, & Akinradewo, 2019; Matthews, 2016 in Lee & Cullen, 2018; Inuwa, Usman & Dantong 2015; Ikuabe, 2015; Ogbu & Asuquo, 2018). This implies the relevance of an effective ethical practice to enhance cost performance in construction. According to Alutu and Udhawuve, (2009) ethical practices are observed as a set of guides to organizational practice, societal practice, economic factors and stakeholders' interest. Consequently, the need for compliance with ethical practices at both individuals, organizational and institutional levels.

Consequent upon the aforesaid, this study identified trust, teamwork, performance satisfaction (PS) and commitment as the main attributes for relationships quality (RQ) and establish its implication on cost performance on construction projects. Looking at ethical practice as one of the behavioral competences of project management (Helgadóttir, 2008) and an influential variable in cost performance improvement (Akinrata, Ogunsemi & Akinradewo, 2019; Matthews, 2016 in Lee & Cullen, 2018; Ogbu & Asuquo, 2018; Inuwa et al., 2015) as well as on RQ, its effect as mediator between RQ and cost performance in construction is also established. This is the focus of this study.

1.2 Problems Statement

Previous literature revealed that, the construction industry has been plagued with issues relating to deteriorated and adversarial working relationship among its supply chain partners (Gorgelnner, 2011; Morwood et al., 2008; Li et al., 2005; Egan, 2002 in Kwofie, Aigbavboa, & Matsane, 2017). This further generate to poor cost performance of construction projects (Meng, 2017; Meng, 2012; Yeung et al., 2009). In other word, relationships quality (RQ) among SC partners is seen as a significant factor for cost performance enhancement in construction. In practice, poor working relationship led to conflicting decisions which further generates chaos, misunderstanding and delay in execution. And in some cases, it progresses to claim, dispute and litigation. The mostly inevitable consequences are time and cost overruns. However, the industry experience revealed that improvement could be attend with establishment of trust, respect, effective communications, team commitment and harmonious working relationships among the SC partners. These are the industrial gaps that also need to be bridged.

According to the model in Jelodar et al. (2016), RQ in construction is in five (5) fundamental levels. It further states that “not all projects require the same level of RQ”. Therefore, a fit-for-purpose RQ for a specific project is only achievable through appropriate strategies, attributes and actions that may be systematically inter-connected (Jelodar et al., 2015). This shows that RQ attributes in construction are environment specific which consequently varies with different projects. For instance, while four (4) attributes were considered to measure RQ in New-Zealand (Jelodar et al., 2012; Jelodar et al., 2016), only three (3) attributes were regarded sufficient in a similar study by Lu and Guo (2019) in China. Consequent upon this, it can be said that there is no agreed practical evidence regarding the attributes of RQ for different

places around the world. This corroborates the study which submits that the RQ among SC partners on public projects in Sydney achieved better performance than what is obtainable in Beijing and similarly performed better in Hongkong compared to Beijing (Li et al., 2014b in Chan et al., 2015). Further to this, it is hereby argued that construction performance increases with the quality of working relationships among the project parties and further decreases with poor working relationship of the parties.

Different models and frameworks were developed to address problems of poor relationships resulting from fragmentation, lack of integration and their consequence poor performance in construction. This principally, was to enable construction organizations derived strategies for collaborative working and improved performance. For example, the SC maturity assessment grid by the strategic forum for construction (SFfC), the partnering positioning matrix by the best practice in partnering groups (BPiPGs), the maturity model for Client- contractors working relationships (Meng, Sun & Jones, 2011) and the model of partnering by Ellison and Miller (1995), conceptual model of partnering and alliancing (Aaron & Kumaraswamy, 2007). While the scope of some of these models focused on the client's-sub-contractor's relationship, others have been observed to cover the entire supply chain relationships within the project team. Although these models were developed to address relationship issues in construction, there exist many defects associated with each of them. For instance, the model by the SFfC with only 3 maturity levels signified incomplete relationship spectrum (Meng et al., 2011). This is because a full relationship spectrum in construction has been described by 4 maturity relationships levels i.e., a progression from confrontational relationship to long-term cooperation (Meng et al., 2011).

Also, previous models perceived relational contracting strategy using partnering and alliancing as a good approach for effective SC relationship. On the other hand, Partnering and alliancing have been widely used not only as stimuli to collaborative relations but as cultivators for cultural and mutual trust among supply chain participants on projects (Davis & Love, 2011). Despite the unpopularity of partnering being not enough for effective SC relationship in construction (Meng, 2012), models such as Ellison and Miller (1995); best practice in partnering groups (BPiPGs), conceptual model of partnering and alliancing and maturity model for SCRs, all have partnering system as the highest level of relationship. Additionally, the models were observed to have conflicting and incomplete coverage of key relationship indicators. For example, trust and problem solving have been considered in Larson's model as key criterion but not covered in SFfC's model. Similarly, 'communication' is not regarded in Larson's model but found as key indicator in SFfC. Also, the maturity model for supply chain relationships (MSCR) in Meng et al. (2011) did not recognize pain/gain sharing and no-blame culture as did in Meng (2012) model. Consequence upon this, it is argued that the existing models are not sufficient/adequate to provide the needed solution for better performance improvement for all construction circumstance. Further to this, a new model is therefore required. This would incorporate the influence of ethical practice (EP) as it enhance RQ by improving trust and commitment (Yeung et al., 2009), which also improves cost performance in construction (Inuwa et al., 2015; Ikuabe, 2015). In other words, non-compliance to EP reduces the strength of party's relationships (Fayomi, 2013) and further degenerates to poor performance (Ogbu & Asuquo, 2018; Kareem et al., 2014).

Also, Several studies in Nigeria assessed the performance of public procurement guidelines (PPG) (Zadawa, 2017), project management practice (Shuaib & Davison, 2018), project governance (Zarewa, 2016; Shuaib, 2016) as well as unethical practices (Akinrata et al., 2019; Lee & Cullen, 2018; Ogbu & Asuquo, 2018; Ikuabe, 2015; Oyewobi et al., 2011; Alutu & Udhawuve, 2009) with a view to improve the performance of construction project. Despite these attempts, little attention was given to investigate the mediating role of ethical practice as it affects relationship between RQ and cost performance in construction. In view of the aforementioned, this study identifies the main attributes for relationship quality in the Nigerian construction environment and its implication on cost performance. As a proposed solution, this study finally presents a model for the mediation effect of EP on the relationship between the RQ and cost performance. This is the focus of this study.

From the reviewed literature, the following knowledge gaps in the scope of the existing research on relationship management in construction have been identified:

1. Lack of comprehensive list of attributes for a fit-for-purpose relationship quality (RQ) for MIPs in Nigeria.
2. Lack of RQ model applicable on MIPs in Nigeria.
3. Lack of evidence on the mediation role of ethical practice on the relationship between relationship quality (RQ) and cost performance on MIPs in Nigeria.

1.3 Research Questions

Related research questions that provide answers to the objectives are:

1. What is the relationship between RQ and ethical practice on MIPs in Nigeria?
2. Do ethical practice influence cost performance of MIPs in Nigeria.
3. Do ethical practice mediate the relationship between the main attributes for RQ and cost performance of MIPs in Nigeria?

1.4 Aim of the Study

The aim of this study is to develop a model for the mediation role of ethical practice on a relationship between relationships quality (RQ) and cost performance of Multifarious Infrastructure Projects (MIPs) in Nigeria.

1.5 Objectives of the Study

In pursuing the aim of this study, the following objectives are enlisted:

1. To investigate the relationship between the main attributes for RQ and ethical practice on MIPs in Nigeria.
2. To examine the relationship between ethical practice and cost performance of MIPs in Nigeria.
3. To determine the effect of ethical practice as a mediator between the main attributes for RQ and performance of MIPs in Nigeria.

1.6 Methodology

In this study, a quantitative data was collected using a purposive technique administered among SC participants with experience on MIPs in Nigeria. Partial least square (PLS) SEM was used to test the research model. The analysis involved evaluation of the measurement model and analysis of the structural model. Testing of the measurement model (MM) covers, a test for reliability and validity of the measurement instrument. Analysis of the structural model (SM) includes assessment for collinearity issues; examining the path coefficients, the coefficient of determination (R^2) values; the effect size (f^2) and finally the predictive relevance of the model (Q^2) values. The results followed the standard PLS-SEM reporting format which was further discussed in relation to the findings of previous studies on the subject. Conclusion was then drawn and contributions of the study to both academic and practice are then presented. The study finally provides some recommendations and suggestions for further research.

1.7 Scope and Limitation of the Study

Following the view that CP is affected by the influence of RQ in construction. Also, the concept RQ in construction is defined by its attributes and strategies and actions that are required to achieve those attributes and which further changes with construction environment. Consequent upon this, this study is scoped to determining the attributes for RQ in Nigeria and further established its effect on CP through EP as mediator. Nigeria construction industry (NCI) was chosen looking at its pivoted role and contributions to national economy. This was justified by its large investment in multifarious infrastructure projects whose performance in terms of budgetary and timely completion are persistently on the increased. For instance, in a study on

twenty CBN capital projects having a contract value of over two (2) billion USD, Shuaib & Davison (2018) reports that all the projects have not achieved their objectives of timely completion and within budget, with time overruns amounting to over 100% of the initial completion time. Although a good ethical practice has been described to promote performance, encourage investors (Olatunji et al., 2016) and give the industry a good reputation (Makeso 2017), there are existing evidence which shows that the NCI is eroded with unethical practices at all stages of its procurement process (Aigbavboa et al., 2016). This poor performance, therefore, justified the choice of Nigeria as the scope of this study.

Using structured questionnaire survey, quantitative data was collected from construction professionals involved in 40 selected MIPs projects across northern Nigeria and the FCT. These projects were selected on the bases of their contract values as criteria using a purposive non-probability sampling technique (Chan et al., 2015). A Threshold value of 25million USD was regarded as minimum. MIPs was chosen because of its persistent failure to achieve cost performance in Nigeria.

1.8 Significance of the Study

Over the last two decades, RM has been adopted from manufacturing industry (Vrijhoef & Koskela, 2000; Adamu, 2019) as a strategy for performance improvement in construction (Briscoe & Dainty, 2005). According to Zheng et al. (2018), a key to effective RM is a measure of the strength of the working relationship among the project parties. Unfortunately, previous studies revealed that there is no common consensus on what constitute a measurement dimension for RQ for different projects and in different countries around the world. Consequently, a fit for purpose RQ in the context of Nigerian construction procurement, its relative implication on

cost performance and the need to mitigate this effect for performance effectiveness is required. Furthermore, looking at the evidenced significance of ethical practice in cost performance improvement in construction, this study considers it a worthy variable to mediate the relationship between RQ and CP. These gaps signify the need for this study as further presented in the subsequent sections as contributions to both academics and practice.

1.9 Contribution of the Study

In general, this study has made a remarkable contribution to the existing theory and the body of knowledge on “RQ” in the context of construction procurement. Driving from the reviewed literature, while some previous studies focused on conceptual study to identify the main attributes of RQ in construction procurement, others paid attention mainly on the role of these attributes in performance improvement as well as its influence on EP. This study provides a good base both theoretically and practically for understanding the role of EP as a link between RQ and CP thereby, explaining the reason behind the effect of RQ on CP in construction procurement. Furthermore, using the theory of both resource-based view (RBV) and dynamic capability theory (DCT), this study presents the driving mechanism which empirically explained the role of EP as a mediator between RQ and CP in construction procurement.

Conclusively, the study demonstrates empirically the new focus of project management in today's practice, i.e., enhancing project performance through a shift in management focus from traditional ways of working to a relationship-based approach. The model finally filled in the gap in the knowledge by answering the questions concerning (1) whether ethical practice is likely to deteriorate with quality

of the SCR (2) whether unethical practice is likely to cause poor performance and (3) whether the influence of EP could reduce the effect of RQ on cost performance and the extent at which that could be achieved.

Consequent upon this, the theoretical and practical implications of the study is hereby discussed.

1.9.1 Academic Contribution to Knowledge

This research contributes to the body of knowledge as it presents empirical evidence for why qualitative relationships and efficient ethical practice is essential for cost performance of construction project. It also demonstrates how supply chain participants can effectively reduce the negative effect of RQ as it affects cost performance. In view of existing studies, this study provides researchers with further confidence on the measures of RQ and EP in the construction sector.

Additionally, few research in construction revealed that the influence SC relationships is a causal factor for poor performance. This study added to the limited available literature that the quality of the “supply chain relationships” described by four empirically tested attributes has significant influence specifically on cost performance in the context of Nigerian construction procurement. Which means that an improvement in the effectiveness of SCR would attract cost performance improvement. The model presented in this study also conceptualized the degree of the relationship between each of the attributes of RQ and ethical practice as the mediating variable in the model. It further added to the literature the effect of the effectiveness of Pre and post contract ethical practice on cost performance of construction project. Furthermore, the model contributes theoretically through providing a holistic perspective justifying the significant role of EP as mediating

variable in the model. This bridged the knowledge gap which previous models did not address.

Furthermore, applying the theory of RBV, the study explained how effective teamwork, trust, commitment, and performance satisfaction of the SCP in construction can lead to not only efficient EP but also improved performance of construction cost. On the other hand, the study further extent the application DCT to explain how the improved effectiveness of ethical principles as a mediating variable in the model could lead to improved cost performance in construction.

Also, identifying the location of this study is another contribution in respect of where these theories are applicable.

Furthermore, the measurement model considered in this study have been subjected to rigorous evaluation for reliability and validity using smart PLS 3.2. Consequently, the resultants measurement items for all the variables in this study represent an outstanding contribution for future research.

1.9.2 Practical Contribution

On practical contribution, this study provides valuable feedback on how RQ affects EP and further demonstrates empirically how EP influences cost performance of MIPs in Nigeria. Consequently, the study identifies the dimensions of RQ with larger effect on both pre- and post-contract ethical practice on MIPs. Therefore, to enhance ethical practice, this study identified the actual attributes of RQ needed to be improved. In other words, while all the four (4) attributes of RQ are required to enhance PoCEP, only trust, teamwork and PS of the parties are needed for PrCEP.

The study further demonstrates an enabling ground to understand how pre and post contract EP mediate the relationship between RQ and CP thereby specifying dimension of EP with larger capacity to reduce the effect of the dimensions of RQ on cost performance. Consequently, providing to the practitioners, how cost performance could be enhanced through effective ethical practice which neutralized the effect of poor RQ among the supply chain partners on MIPs in Nigeria. While the PreCEP can significantly reduce the negative impact of trust, performance satisfaction and teamwork on cost performance, this study revealed that PoCEP can neutralized the negative influence of all the dimensions of RQ on cost performance. The study empirically revealed that to enhance cost performance thereby reducing the negative effect of RQ on CP, managers and practitioners in the industry should focus on compliance to ethical practices at both pre and post contract stages of project procurement.

Conclusively, it is expected that the findings from this study will be a reference point for construction clients' project managers, contractors, consultants and materials and plants suppliers in the way of articulating their approach in complying with ethical practices at both pre and post-contract stages of project delivery. This therefore reduces the deteriorated effect of RQ among the team thereby improving the cost performance of MI projects.

1.10 Outline of the Thesis

This thesis is organized in five (5) chapters.

Chapter one presents the underlying foundation of the research covering the significance and motivation for the research. The chapter further explains the aim of the study as to develop a model for mediation effect of ethical practice on a

relationship between relationships quality (RQ) and cost performance of Multifarious Infrastructure Projects (MIPs) in Nigeria. This study is motivated on one hand by the lack of empirical evidence on measurement dimensions of RQ and their effect on cost performance and, on the other hand, the insufficient evidence of the mediation role of EP between RQ and CP in the context of Nigerian construction procurement. The chapter briefly itemized the research questions, objectives and the methodology applied in conducting the research, the significance of the study and finally some highlights on the contributions of the study to the body of knowledge.

Chapter two provides an overview of previous literature that examined topics on RQ, cost performance and ethical practice in construction. The study specifically focused on the conceptualization of the main attributes of RQ and their effect of cost performance and ethical practice in construction. Following the review, the research gaps in knowledge were identified. The theory of RBV and the DCT were also looked at principally to set the bases for the mediation effect of EP between RQ (as a valuable resource in construction) and CP. The hypothesis development of the study which followed the segmentation approach proposed by Rungtusanatham, Miller and Boyer (2014) derived eighteen research hypotheses to answer the three research questions developed in chapter 1 of the study. Eight of the hypotheses are related to the first research question; two are concerned with the second research question and the remaining eight provides the answer to the third research question of the study which is the mediating role of ethical practice on the relationship between RQ and CP.

Chapter three presents the outline of the research design. Covering the research paradigm, research choices, research horizon and the survey procedure. The chapter also presents purposive sampling technique used in the study. Within this

chapter, a preliminary study conducted on the data was also discussed. Questionnaire survey was administered to collect data from well experienced construction supply chain partners on MIPs in Nigeria. The chapter also covers the development of the measurement instrument and further present partial least square structural equation modelling (PLS-SEM) as the analysis technique for the study.

Chapter four presents the relevant empirical analysis conducted to achieve the objective of this study. It begins with presentation of the descriptive statistics conducted on the data to analyse the response rate and profile of the respondents. It further discussed SPSS statistical analysis conducted to investigate the CMV, KMO value and the normality characteristics of the data for further analysis to be conducted on the data. Furthermore, the evaluation of the measurement model (MM) in PLS-SEM revealed that the instrument has satisfactory reliability as well as convergent and DV. Analysis of the structural mode (SM) which include analysis of multicollinearity; the significance of the path coefficient, analysis of the coefficient of determination (R^2); mediation analysis, analysis of the predictive relevance and the effect sizes (f^2) were all conducted using smart PLS-SEM. All the hypotheses for the direct effect have been supported except for the relationship between commitment and PrCEP. Nine out of ten proposed direct relationships have a β value greater than 0.1. Similarly, all the hypothesis for the indirect effect have also been supported except for the mediation effect of PrCEP between commitment and cost performance ($\beta = -0.010$, $t = 0.646$, p value = 0.518). In which case, $t > 2.58$ and p -value also greater than 0.01. Also, the R^2 value revealed a satisfactory exploration power having a weak and medium values. As indicated by the Q^2 values, the structural model exhibited an excellent predictive relevance. Also presented in this chapter, are the results of the effect sizes (f^2) of the structural model.

Chapter five presents the discussion of the research findings. This followed based on the three research questions outlined in chapter 1 and finally reported the consistency and inconsistency of the analyzed finding in relation to previous research.

Chapter Six presents the conclusion and recommendations for further study. This was organized and presented based on the hierarchy of the research questions and objectives and how they were achieved. It also presents an overview of the research findings followed by a brief highlight on how each of the research question was answered. Furthermore, it presents the academic and practical contributions of the study to the body of knowledge. And finally, the limitations of the research and suggestions for further study.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter begins with the findings from literature review on supply chain (SC) and supply chain relationships management (SCRM) in construction. It further presents definition of relationship management (RM), various construction relationship spectrum, and relational behaviors of project parties. Relationship attributes and various relationship enhancement strategy in construction were also discussed. The chapter also presents relationship management models in construction, relationship maturity and quality levels in project management. The concept of RQ, performance in construction and ethical practice in project delivery were also presented. It further presents the developed conceptual research model to examine the mediating role of ethical practice on a relationship between RQ and cost performance of MIPs in Nigeria. The theory of resources-based view (RBV) and dynamic capability theory (DCT) were examined, analyzed and finally synthesized to conceptualize the research model. Additionally, the research hypothesis for the study is finally presented. This chapter ends with a summary.

2.2 Definitions of Supply Chain (SC) and Supply Chain Management (SCM)

Production industries are known to be characterized with different flows of activities, components, functions and role players. The increasing needs for productivity through changing delivery approach requires effective management strategies. SC is described as a contractual relationship involving wide range of interconnected organizations to procure a built asset. Christopher (1992) described

SC as a network of organizations contracted to deliver products and services through different form of interconnected process. Similarly, the nature of this contractual relationship is what classified the supply chain within the industry.

According to Meng (2012), two contractual relationships of client-main contractor and main contractor – suppliers/subcontractors have been described as upstream and downstream respectively. These relationships therefore linked the parties together as construction supply chain and is also what Fernie and Thorpe (2007) in Meng (2012) considered as significant in construction SCM.

SCM provides the strategy that aligns the SC activities with the overall project programme (Christopher, 2005). It involves the process of managing the integrated processes and relationships between different construction customers and suppliers to achieve project success. The three main key terms of SC collaboration have been described as collaborative planning, collaborative decision making and collaborative execution (Christopher, 2005; Jespersen & Skjøtt-Larson, 2005; Mendoza et al., 2007).

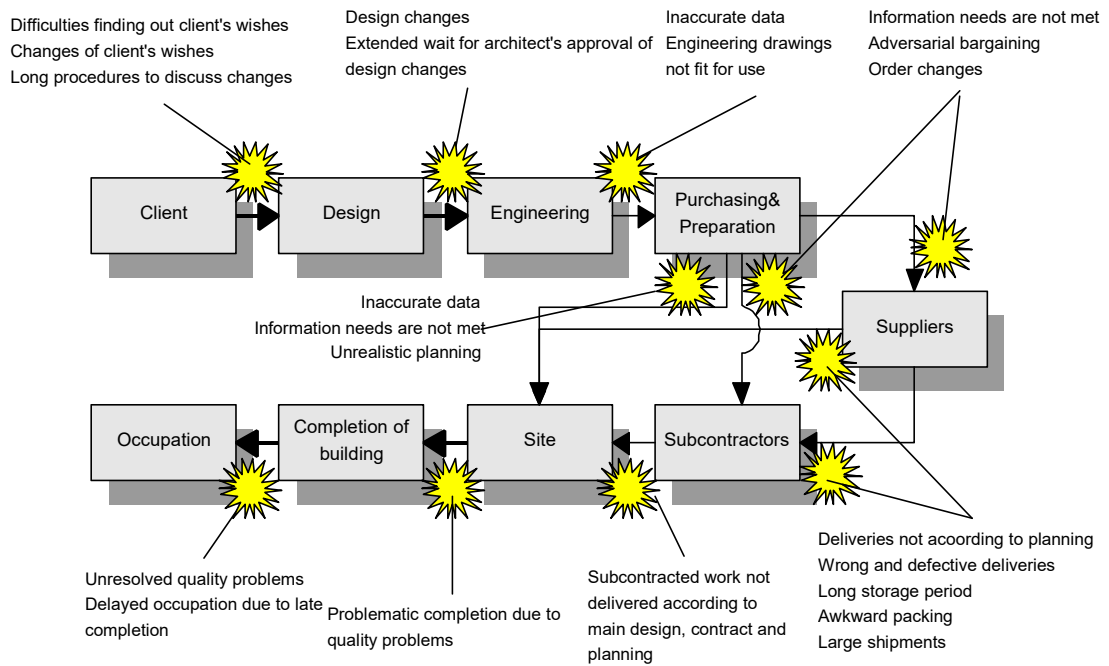


Figure 2.1: Generic problem in the construction supply chain relationships

Source: (Vrijhoef, Koskela & Howell, 2001)

Chain links of interface exist in construction supply chain. A major part of SC problem in construction originate at the interface of these chain links (Vrijhoef et al., 2001). Unlike other production industries, construction industry has been described by its characteristic uniqueness and complexity involving large number of participants. Poor commitments, multi-parties' interface and their cross-functional relationship have been identified as some of the major problems faces the SC in project delivery in construction industry.

2.3 Supply Chain Relationship in Construction

SCM described the sequence of operations and activities involved in the complete manufacturing and distribution cycle (Cartlidge, 2010). The concept was

principally used as adopted from the manufacturing industry to achieve performance enhancement by different industry sectors.

In the context of construction, SCM is applied to the whole process of project delivery starting from detail definition of the client's business needs through development of designs, contractual arrangement, execution and ends with delivery at maximum efficiency and minimum maintenance and operating cost.

Previous studies viewed SCR as the essence of SCM (Christopher, 2005; Jespersen & Skjøtt-Larsen, 2005). Supply chain relationships in construction have been interpreted in different ways. For example, in client-main contractors' relationship, client is the end customer while the main contractor being the supplier of labor, materials and equipment is regarded as the end supplier (Preece et al., 2014). But in the case of main contractors-subcontractors/suppliers relationships, the main contractor is regarded as a customer to both specialist subcontractors and suppliers (Meng, 2012). This corroborates the findings of Beach et al. (2005) which categorized the main contractor and consultants as first tier supplier while the specialist contractors and labor, materials and equipment suppliers are the second and third tier suppliers respectively. In any case, it is the interface between the customers and suppliers that define the construction supply chain in a project which is invariably at the center of SCM in construction.

According to Horvath (2001), the strategy for effective supply chain management is effective relationships of the SCP. This point to the importance of relationships management (RM) in performance improvement in construction.

2.4 Relationships Management (RM)

2.4.1 Definition of RM

RM is a strategy covering key aspects of management such as human factors; processes and technology (Mendoza et al., 2007) and measured by the quality of the relationships among the supply chain partners (Özge et al., 2019). This was empirically evidenced from the study of Crosby et al. (1990). RM has been considered as the next generation research area in construction (Meng & Boyd, 2017). Unlike the traditional PM approach, which is planning, and control based, RM is a relationships-based philosophy that highlights the importance of people and their working environment. The strategy stemmed from relationship-based management philosophy embedded in relational contracting (Chan et al., 2015). According to Meng and Boyd (2017), RM is a social network system in project environment considered at the center of a modern project management theories such as project marketing, relational contracting and stakeholders' management. While the emphasis of project marketing is on the transaction between the parties with a view to build sustainable relationships, relational contracting is concern with the cooperative relationships between project parties based on the recognition of mutual benefits and win-win scenarios (Yeung et al., 2012). Stakeholders' management on the other hand refers to the process of maintaining a good relationship with both external and internal stakeholders. Consequence upon these definitions, it could now be seen that all the three theories are points to working relationships. This stress the importance of RM in performance improvement. It is a management principles without which performance improvement will be very little or hopeless (Meng & Boyd 2017; Handfield et al., 2015). The ultimate goal of RM is to overcome fragmentation and

facilitate collaboration (Smyth, 2015) thereby addressing the problem of adversarial relationship faced with the traditional system in project delivery.

Traditional system of project delivery is associated with poor relationship which give rise to claims, disputes and consequence lack of performance. Scholars and practitioners have studied organizational RM by applying either formal control or relational governance (Zheng et al., 2018) to tackle the problem of poor relationship. While the formal control involved a relationship management strategy that provide proactive and formalized approach that better facilitate the operation of relational contracting mechanism (Chan et al., 2015), the relational behavior on the other hand provide the effectiveness for implementing the formal control of the SC contractual relationship (Zheng et al., 2018) which in the end determine the desired spectrum of the required relationship among the SC partners.

2.5 Relationship Spectrum in Construction

The construction supply chain relationships spectrum are in three different forms; traditionally adversarial, short-term collaboration and the long-term collaboration relationships (Meng, 2012; Meng et al., 2011). While the long-term collaborative relationship was an advancement of the short-term collaborative relationships using a partnering arrangement, the traditional relationship is attained where traditional PM approach using standard form of contract (SFC) is in used (Shuaib & Davison, 2018). Working relationship is driven from the type of contract in use. Traditional contracts such as standard form of contract (SFC) are formulated to assign responsibility, accountability and liabilities hence, not a condition for good working relationships (Thomas & Thomas, 2008). An approach which often leads to adversarial relationship and poor deliberations due to its win-loss characteristics,