REGULATORY INSTITUTIONAL ENVIRONMENT AND OPERATIONAL PERFORMANCE: THE ROLES OF INTER-FIRM GOVERNANCE MECHANISMS AND STRUCTURAL NETWORK COMPLEXITY

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DECLARATION

I hereby declare that this submission is my own work towards the award of Doctor of Philosophy in Procurement and Supply Chain Management and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which to a substantial extent has been accepted for the award of any other degree or diploma at Kwame Nkrumah University of Science and Technology, Kumasi or any other educational institution, except where due acknowledgment is made in the thesis.

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ABSTRACT

The regulatory institutional environment (hereafter regulatory environment) has important implications on a firm's strategies and operations. Accordingly, several scholarly works, over the years, have focused on investigating its influences on business performance outcomes. Yet, how regulatory environment affects business performance outcomes is still not clear as the emerged evidences have been largely inconsistent and

inconclusive. Of interest, knowledge of the conditional processes through which regulatory environment may enhance or undermine operational performance appears limited. Drawing on institutional theory and inter-firm governance literature, this study proposes and tests a model that suggests that regulatory environment drives operational performance, via inter-firm governance mechanisms, but that this indirect effect is conditional upon levels of structural network complexity. The study uses a sample of 331 firms from the service and manufacturing sectors in Ghana—a developing economy in sub-Saharan Africa—to test the proposed relationship. Largely supporting the theoretical predictions, the results from structural equation modelling show that under varying conditions of structural network complexity, different dimensions of governance mechanisms (formal control and social control) play differential mediating roles in the relationship between regulatory environment and firm operational performance. Specifically, the study finds that at low and high levels of structural network complexity, the positive indirect effects of regulatory environment on operational performance, via formal control and social control are strengthened respectively. The significance of the findings is that they provide a possible explanation for the divergent and sometimes conflicting results obtained on the direct regulatory environment-performance relationship. The theoretical implication is that different dimensions of governance mechanisms channel the impact of macro level regulatory conditions to firm level operational performance at different levels of structural network complexity. Practical implications for managers who make strategic and operational decisions about inter-organizational business networks are discussed.

Keywords: Regulatory Environment, Operational Performance, Governance Mechanism, Formal Control, Social Control, Structural Network Complexity, Ghana.

DEDICATION

I dedicate this thesis to my family for their love, support and encouragement.

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CHAPTER ONE

1.1 RESEARCH BACKGROUND

> *You've got to decide: do you want to obey the laws of the countries you are in, or not? If not, you may not end up doing business there.*
>
> *Bill Gates*

The above comment by Gates (2010) underscores regulatory environments as sine qua non for business operations and growth as they determine and influence organisational behaviour and practice (Cao *et al*., 2018; Martinez and William, 2012; Xu and Hitt, 2012; Manolova *et al*., 2008; Yaibuathet *et al*., 2008; Bello *et al*., 2004; North, 1990). In particular, the regulatory environment—the extent to which firms perceive a country's laws and regulations as desirable, appropriate and efficient in providing enabling environment for business operation (Díez-Martín *et al*., 2016)—sets out the legal ground rules that establish the basis for production, exchange, and distribution, and provides a structure within which business partners can cooperate (Davis and North, 1971).

Consequently, and given this critical role of the regulatory environment in organisational survival and growth (Martinez and William, 2012; North, 1990), it would seem reasonable that firm's operational performance, defined as the extent to which a firm responds to, and delivers its customers' needs (Zhang *et al*., 2016; Cao and Zhang, 2011; Panayides and Lun, 2009; Huo *et al*., 2008) may be influenced by regulatory environment. It is therefore not surprising that there have been sustained scholarly interests in explaining how regulatory environment drives organisational success (Cao *et al*., 2018; Adomako and Danso, 2014; Martinez and William, 2012; Xu and Hitt, 2012; Manolova *et al.*, 2008; Yaibuathet *et al*., 2008; Bello *et al*., 2004; Grewal and Dharwadkar, 2002; North, 1990).

Meanwhile, governance literature indicates that inter-firm exchanges, key drivers of performance outcomes (Poppo *et al*., 2016; Huang *et al*., 2014) rely upon exogenous regulatory frameworks (on whose evolution and presence exchange partners have little influence) to endogenously devise governance mechanisms (GMs) as administrative tools (Majid and Aulakh, 2012) to manage inter-firm exchanges for operational success (Hoetker and Mellewigt, 2009). Thus, the regulatory institutions provide conditions that may facilitate GMs of inter-firm relationships (Majid and Aulakh, 2012) to leverage pooled resources and efforts and optimise performance.

Accordingly, this study contends that GMs may explain how regulatory environment affects organisational outcomes, such as operational performance. Defined as the underlying control activities designed to manage exchange relationships (Cai *et al*., 2009; Hoetker and Mellewigt, 2009; Huang *et al*., 2014), GMs primarily comprise formal control and social control (Cao and Lumineau 2015; Huang *et al*., 2014; Li *et al*., 2010; Reuer, and Arino, 2007; Cavusgil *et al*., 2004; Poppo and Zenger, 2002). Formal control refers to the extent to which exchange relationship is governed by formally written contract, which explicitly stipulates the responsibilities and obligations of each party (Huang e*t al*., 2014; Abdi and Aulakh, 2012; Ryall and Sampson, 2009). In contrast, social control depicts the extent to which exchange relationship is governed by shared values, social and cooperative norms and trust (Cao and Lumineau, 2015; Huang *et al*. 2014; Li *et al*., 2010; Poppo and Zenger, 2002).

Even though GMs are supposed to enhance organisational performance outcomes, prior research (e.g. Poppo et al., 2016; Rhee, *et al*., 2014) has shown that its potency to do so may be undermined or strengthened under certain circumstances. For example, Poppo *et al*. (2016) and Rhee *et al*. (2014) find that behavioural uncertainty and environmental

dynamism moderate the GMs-performance respectively. Accordingly, this study suggests that the extent of the numerousness of actors characterising a firm's supply chain, termed structural network complexity (SNC) (Birkie *et al*., 2017; Choi and Hong, 2002; Bozarth *et al*., 2009), may condition the effectiveness of GMs in driving operational performance.

Viewing supply chains as network of interdependence and interconnectedness of firms and operations (tacitly) recognises complexity as an integral part of supply chain management (SCM) practice (Lu and Shang, 2017; Christopher, 2012; Bozarth *et al*., 2009). The notion of SNC has several implications on inter-firm exchange relationships as it induces uncertainties and complications (Lu and Shang 2017; Bozarth *et al*., 2009). Accordingly, an analysis of the intervening role of GMs in the relationship between regulatory environment and operational performance should recognise the differences in SNC that firms face. More importantly, understanding how interactions between different aspects of GMs and differing levels of SNC account for differences in operational performance outcomes is key to developing knowledge about the conditions under which GMs prove more or less useful in intervening the relationship between regulatory environment and operational performance.

Knowledge of how and when regulatory environment affects operational performance is important because the latter provides the most direct measure of how well a firm makes a living (Huo 2012; Huo *et al.*, 2008). Indeed, operational performance points to the growth and survival of firms. As Huo (2012) asserts, both theory and practice generally agree that operational excellence leads to the overall financial performance of firms. More importantly, since organisational strategies and responses (e.g. through the use and configuration of GMs) to the external environment (e.g. regulatory

environment) have direct bearing on the effectiveness of operations, operational performance becomes a more logical performance outcome to study. Detailed

discussion of the research gaps in literature is presented in the section that follows.

1.2 RESEARCH GAP

As institutional literature indicates, regulatory environment has important implications on a firm's success or failure (Scott, 1995; DiMaggio and Powell, 1983; Meyer and Roman, 1977). Accordingly, a substantial body of research (e.g., Zhang *et al*. 2017; Huang and Yang, 2014; Martinez and William, 2012; Cai *et al*., 2010; Yaibuathet *et al*., 2008; Bello *et al*, 2004; Grewal and Dharwadkar, 2002; North, 1990) over the years have advanced knowledge in the institutional literature by focussing on investigating regulatory environment and its influences on business performance outcomes.

Nonetheless, how the regulatory environment influences business performance outcomes remains unclear, as the emerged evidences have been largely inconsistent and inconclusive. For example, while some studies (e.g. Zhang *et al*. 2017; Huang and Yang, 2014; Zailani *et al*., 2012; Testa *et al*., 2011) report positive direct relationship between these variables, others (e.g. see Adomako and Danso 2014; Chen *et al*., 2014; Batjargal *et al*., 2013; Sheng *et al*., 2011; Zhu and Sarkis, 2007) find negative direct relationship.

The study argues that the inconsistent empirical outcomes may be attributed to the fact that first, certain mechanisms, such as GMs, through which the impact of macro level regulatory environment is channelled to firm level performance outcomes, have not been considered. Second, the relevant boundary conditions, including SNC, that explain such relationships have also not been fully accounted for. Of particular importance,

knowledge of the conditional processes through which regulatory environment may enhance or undermine operational performance appears limited.

Rindfleisch *et al*. (2008) suggest that theorising about relevant conditional processes linking a predictor variable to an outcome variable reduces competing explanations and enhances causal inference. Thus, in response to the inconsistent and mixed evidence on the regulatory environment-performance relationship, this study draws on institutional theory and inter-firm relationship governance literatures to develop and test a model that suggests that inter-firm GMs, combined with SNC, may explain how and when the perceived regulatory environment drives or undermines operational performance.

Institutional theory argues that organisations survive on institutional legitimacy—the extent to which firms' strategies, decisions and actions are perceived to conform to socially constructed system of norms and regulations, and reflect in the society's approval and endorsement (Martinez and William, 2012; Yaibuathet *et al*., 2008; Bello *et al*, 2004; Suchman, 1995; DiMaggio and Powell, 1983; Meyer and Rowan, 1977). Further, IE such as regulatory institutions define (and enforce) the appropriate and acceptable behaviours in (and structures of) inter-firm exchange relationships (Abdi and Aulakh, 2012; Heide and John, 1992). Accordingly, firms' decisions regarding the use of GMs is likely to be influenced by their perceptions of the prevailing regulatory environment.

Meanwhile, governance of inter-firm relationship is strategic and critical to achieving operational excellence and superior performance as they address opportunistic behaviour, which undermines performance (Huang *et al*., 2014; Hoetker and Mellewigt, 2009). In fact, recent meta-analytic study (Cao and Lumineau, 2015) reveals that formal control and social control aspects of GMs positively relate to firms' performance

outcomes. Thus, this study argues that GMs can represent operation specific action through which regulatory environment influences operational performance.

Nevertheless, available evidence suggests that there may be contingencies regarding GMs linkage with relevant performance outcomes (see e.g. Yang and Qian, 2017; Poppo *et al*., 2016; Rhee *et al*., 2014; Huang *et al*., 2014; Li *et al*., 2010). This indicates that incorporating relevant contingent factors in the GMs-operational performance nexus can increase the explanatory power of GMs in linking regulatory environment to operational performance. In fact, recent research (e.g. Cao *et al.*, 2018) has called for future studies to account for relevant boundary conditions when examining GMsperformance relationships. Accordingly, this study investigates whether the indirect regulatory environment-operational performance relationship, via GMs, is contingent upon SNC.

Prior research (Bode and Wagner, 2015; Manuj and Sahin, 2011; Bozarth *et al.*, 2009) indicates that due to the uncertainty and increased complications it induces within interfirm exchanges, SNC may undermine decision-making and coordination of supply chain activities, making it an important variable to consider whilst analysing the GMsoperational performance link. Whilst GMs can be effective in dealing with uncertainties characterising supply chains as well as coordination problems (Gulatti *et al.*, 2012;

Arshinder *et al.*, 2011; Fawcett *et al.*, 2008), it is still unclear whether the effects of GMs on operational performance vary at differing levels of SNC. Accordingly, this study seeks to investigate whether SNC contributes to the influence of regulatory environment on operational performance via GMs.

1.3 RESEARCH OBJECTIVES

In relation to the knowledge gaps explained above, the study focuses on addressing three research objectives. Specifically, the study aims to:

1. examine the relationships between regulatory environment and operational performance;
2. investigate the mediating roles of governance mechanisms in the relationship between regulatory environment and operational performance; and
3. assess the extent to which the indirect effect of regulatory environment on operational performance, via governance mechanisms, is moderated by structural network complexity.

1.4 CONTRIBUTIONS FROM THE STUDY

In addressing the proposed objectives, the study advances the institutional and interfirm relationship literature in several ways. Specifically, the study integrates institutional theory and inter-firm relationship governance literature to explain the proposed mechanisms and boundary conditions in the regulatory environmentoperational performance relationship. While institutional theory provides the basis for identifying regulatory institution as a key macro-level environment factor that influences organisational activities, the merit for the use of GMs and SNC, as mediators and contingencies respectively, is predicated on the inherent opportunism and uncertainty characterising inter-firm exchange relationship. This study posits that a theoretical specification and an empirical examination of the proposed relationships help offer new theoretical and managerial insights by providing a nuanced understanding of how and when perceived regulatory environment may enhance operational performance.

First, the study contributes to the growing scholarly works on IE and organisational performance by synthesising and integrating institutional theory and governance literature to broaden an understanding of how firms' perception of regulatory environment impacts performance outcomes. In doing so, the study opens the regulatory environment-operational performance link "black box" by theorising and testing the notion that GMs mediate the relationship between regulatory environment and operational performance. Specifically, the study argues that GMs represent key organisational level practice that can respond to regulatory institutional demands and in turn enhances operational performance by addressing opportunism and optimising collaborative efforts and synergy. Prior studies (see e.g. Jai *et al*., 2018; Zhang *et al*., 2017; Adomako and Danso, 2014; Batjargal *et al*., 2013; Zailani *et al*., 2012; De Jong *et al*., 2011; Sheng *et al*., 2011; Zhu and Sarkis, 2007; Geiger and Hoffman, 1998) have rarely addressed such mechanism underlying the theoretical connection between regulatory environment and operational performance.

Second, the study also extends the domains of institutional and governance literatures by theorising how SNC conditions the indirect effect of regulatory environment on operational performance, via GMs. By modelling GMs as intervening variables linking regulatory environment and operational performance, and SNC as a boundary condition of this indirect link, the study sheds new theoretical and managerial insights on when the benefits of regulatory institutions can be leveraged to enhance operational performance.

Third, IE varies across economic and cultural contexts (Ang and Michialova, 2008). For example, as in most developing economies, legal and regulatory institutions in Ghana is under-developed (Boso *et al*., 2013a). While Ghana scores 6.5 on World

Bank's judicial processes quality index, and takes an average of 710 days to enforce contracts, United Kingdom scores 15 and takes 437 days (World Bank, 2018). Yet, majority of research on IE and organisational performance (see e.g. Martinez and William, 2012; Xu and Hitt, 2012; Yaibuathet *et al*., 2008; Bello *et al*., 2004; Grewal and Dharwadkar, 2002) have centred on advanced economies whose findings may be of less relevance to management practice in the developing economies where institutions are weak, and underdeveloped (Boso *et al*., 2013a). Consequently, considering a developing economy context in the study of IE is important for broadening the scope and understanding of the institutional theory and its implications on management practice and economic benefits in developing economies (Adomako and Danso, 2014). In this regard, this study further offers context-specific contribution by using data from Ghana in the sub-Saharan African region, hence it expands the literature that hitherto has focused predominantly on developed economies.

1.5 THESIS OUTLINE

In executing the research project, the study is organised to follow the outline provided in Table 1.1.

Table 1.1: The Thesis Layout

CHAPTERS	RESEARCH ACTIVITIES
Chapter One	Introduction to the study
Chapter Two	Literature review
Chapter Three	Conceptual framework and hypotheses
Chapter Four	Research methodology
Chapter Five	Data presentation, analysis and results
Chapter Six	Discussion and conclusion

After the introductory chapter, review on how the key constructs (regulatory environment, GMs, SNC and operational performance) have been conceptualised and

linked with other constructs are presented. In addition, empirical studies regarding regulatory environment, GMs, SNC and their relationships with performance outcomes in literature are evaluated to ascertain the extent of scholarly works to provide the foundation for this study.

Following the review of the literature, (chapter 2), and based on the gaps identified, the study's theoretical framework and hypothetical discussions are developed in line with research objectives in chapter 3. The chapter also discusses the theoretical underpinnings of the study. Of interest, Institutional Theory, Transaction Cost Economics (TCE) and Relational Exchange Theory (RET) are brought into perspective. Institutional theory perspective is drawn upon to provide logical foundation for the regulatory environment, GMs, and operational performance relationships while both TCE and RET are drawn on to explain the association of GMs, and SNC with operational performance. In all, five hypotheses are developed; H1 argues for the direct association of regulatory environment with operational performance while H2 and H3 argue for the indirect association of regulatory environment with operational performance, via formal control and social control respectively. Finally, H4 and H5 present arguments for the moderating roles of SNC in the relationships between both formal controls and social controls, and operational performance respectively.

In chapter four, the study's methodology is discussed. The chapter discusses the philosophical foundation of the study, the research design and the sampling procedure. It also discusses measures of constructs, data collection approach, questionnaire administration procedures, data analysis, ethical issues and justification for the study context.

Chapter five focuses on the analysis and results. In particular, the chapter provides information on descriptive statistics of the firms involved in the study to describe the characteristics of the respondents and their firms. This helps to develop fundamental understanding of the subjects being studied. The chapter also discusses the strategies employed for the assessment of unidimensionality, reliability, and validity of the measurement items. In addition, the analytical strategy and the techniques adopted to test the study's hypothesis are described.

Finally, chapter six presents discussions of the results and conclusions drawn from the findings of the study. More specifically, the discussions focus on the summaries of the key findings in line with the study's objectives. Further, theoretical and managerial implications of the study are presented. This is followed by discussions on the limitations of the study and avenues for future research. Conclusion is then drawn from the findings to bring the chapter, and accordingly the study, to a closure.

CHAPTER TWO

A LITERATURE REVIEW

2.1 INTRODUCTION

This chapter presents review of relevant literature of the study. It focuses on synthesising institutional research and inter-firm governance literature. The chapter is organised into five sections. The first sub-section presents a review on operational

performance. Specifically, the sub-section focuses on discussions regarding the definition and conceptualisation of operational performance, why operational performance matters and the perspectives taken in this study. The second sub-section presents classification of major determinants of operational performance in management literature. In the third sub-section, external factors that determine operational performance are discussed. In doing so, specific attention is focused on IE where conceptual issues, the underpinning pillars, and their relevance to organisational behaviour and practices are discussed. In addition, issues on the isomorphic forces of IE and institutional legitimacy in relations to organisational behaviour and practices are reviewed. The fourth sub-section describes supply chain-wide factors as determinants of operational performance. Particularly, conceptual issues of GMs and SNC in relation to SCM practice are discussed. In the fifth sub-section, empirical review of the focal constructs, i.e., the regulatory environment, formal and social control GMs, SNC, and their relationships with operational performance are presented. Finally, review of empirical works on the intervening and contingency factors that explain the regulatory environment-performance link, and the GMs-performance associations respectively, are brought into perspective. The chapter concludes with review summary.

2.2.1 ORGANIZATIONAL PERFORMANCE

Organisational performance represents the ultimate aim of business activities (Cao and Zhang, 2011; Venkatraman and Ramanujam, 1986). As an important construct constituting the measure of business success, organizational performance is viewed as a complex phenomenon, and conceptualising it is not straightforward. Carton and Hofer (2006) outline potential reasons that account for the seemingly complex nature of performance construct. First, value creation, which is the key criterion for assessing

performance in business context, is relative and perceptual. Consequently, performance depends, in part, on what a particular organization considers valuable outcome of its value creating activities. Second, organisations operate on multiple dimensions of expectations and outcomes such as growth, profitability, legitimacy and so forth. Third, the time horizon within which the performance is assessed (Carton and Hofer, 2006).

Notwithstanding the seemingly illusive nature of organisational performance, some authors have proposed various forms of definitions depending on the focus of a particular performance outcome. Focusing on operational and financial outcomes, Cao and Zhang (2011) define organizational performance as the degree to which an organization achieves its operational and financial goals. Green and Inman (2011), from financial and marketing point of view conceive organizational performance as the extent to which financial and marketing goals have been met. While operation is concerned with value creation through the provision of goods and services to meet the expectation of the ultimate customer, marketing performance represents the organizations' ability to generate sales compared with industry average. On the other hand, financial performance measures how the organization is able to generate profit and maximize the investment of shareholders (Green and Inman, 2011). Viewing organizational performance in terms of financial, operational and marketing is consistent with the conceptualisation provided in other research in literature. For example, Venkatraman and Ramanujam (1986) conceive organisational performance in terms of business performance comprising operational and financial outcomes. Thus, organizational performance is considered as a higher-order construct with financial and operational being the lower- order dimensions of the performance outcomes. The above

definitions of organizational performance indicate that performance, as a construct is complex (Santos and Brito, 2012; Cameron, 1986).

In supply chain management context, the term supply chain performance has been used to describe organisational outcome (see Qrunfleh and Tarafdar, 2013; Whitten *et al*., 2012; Panayides and Lun, 2009; Beamon, 1999). These studies generally conceive supply chain from the extended view of flow of value from the supplier to the ultimate customer perspective. Specifically, supply chain performance is conceptualised as the ability to satisfy the end consumer in terms of quality and cost (Whitten *et al*., 2012; Green and Inman 2005; Chen and Paulraj, 2004). In this sense, supply chain performance is viewed from operational perspective, where performance outcome is measured in terms of the ability to: (1) deliver products and services in the right quality and at the right time, and (2) reduce total cost of providing product and services to the ultimate customer (Whitten *et al*., 2012; Green and Inman 2005; Chen and Paulraj, 2004).

Whitten *et al.* (2012) argue that achieving overall performance is dependent on the extent to which a particular supply chain achieves its operational objectives. Huo (2012) supports the operational view of supply chain performance when he conceptualises supply chain performance as a function of supplier and customer oriented performances. According to Huo (2012), while supplier oriented is concerned with the quality, flexibility and timeliness with which value flows from the supplying firm to the focal firm, customer oriented performance measures the same attributes of value flow from the focal firm to the ultimate customer. He argues that achieving these operational objectives is likely to drive financial performance of the supply chain.

From the various conceptualisations of organisational performance, it is evident that performance construct is largely viewed as a multidimensional although it may be thought of as a unidimensional (Santos and Brito, 2012). The multidimensional view of organisational performance is grounded in stakeholder theory, which describes organization as consisting of several different stakeholders with different demands and needs (Santos and Brito, 2012). The unidimensionality view of organizational performance assumes that all the demands and needs of organizational stakeholders are similar. As such, all the indicators of organisational outcome measure the same dimension of performance although this may not be likely in reality (Simerly and Li, 2000).

By contrast, the multidimensionality perspective assumes multiple stakeholders' needs and that each dimension represents the interest of a particular stakeholder of an organisation. Accordingly, each dimension represents a facet of overall organisational performance, which is assessed by a particular set of measures or indicators (Santos and Brito, 2012). In this regard, conceptualising organisational performance as a unidimensional may be simplistic and can rarely meet the diverse needs and demands of the stakeholders (Santos and Brito, 2012).

The multi-stakeholder view of organizational performance reflects in most empirical studies where organizational performance is defined and operationalised as a multi-dimensional construct. For example, Brush and VanderWerf (1992), in their review of studies in entrepreneurship literature observe prevalence of many different dimensions of organisational performance and report that there is no clear consensus regarding which specific dimension(s) actually reflects the overall performance of organisation. This indicates that there is inconsistency in the variables used to assess performance,

confirming Carton and Hofer's (2006) assertion that there is no evidence of any "best" measure of organizational performance.

2.2.2 Defining Operational Performance

Given that this study focuses on operational performance as the ultimate outcome variable, this section discusses operational performance and its operationalisation. Operational performance is one of the most studied performance constructs in operations management/ supply chain management research (Huo *et al*., 2008; Wijngaard *et al.*, 2006). Surprisingly, however, an assessment of the literature reveals that limited effort has been made to define it. To define and specify the domain of the construct, it seems necessary to, first, explain the term "operations", as it forms the base of the word "operational".

Operation refers to a sequence/pattern of activities or business processes that make and deliver product/service offerings (Slack *et al.*, 2013). Operation embodies how a firm makes a living—that is, an ordinary or a substantive means through which business and corporate objectives are attained—and it manifests in the form of routines or day-today processes that convert inputs into valuable outputs (that is, products/services) for customers (Slack *et al.*, 2013; Parkan and Wu, 1997). Firms (of even similar characteristics) may differ on how well operations are carried out, and the extent to which they score on this represents their operational performance level.

Put differently, operational performance indicates the extent to which operation-related objectives—relating to conversion of inputs into outputs and making the outputs available to customers—are achieved (Sengupta *et al.*, 2006; Slack *et al.*, 2013; Huo *et al.*, 2008; Cao and Zhang, 2011; Zhang *et al.*, 2017).

As in the case of other levels of strategy (that is, corporate-level and business-level), firms tend to have specific objectives to be attained at the operations-level (usually, short-term in nature), and there can be myriads of them. However, not every operationrelated objective may result in competitive advantage. The consensus in the operations strategy literature (specifically, competitive priorities aspect) (see e.g., Boyer and Lewis 2002; Ward *et al.,* 1998) is that operational objectives specified in terms of cost reductions, quality improvement, flexibility enhancement, and delivery improvement are crucial for a firm to cement its position in the marketplace. Operation-related objectives are the intended levels of competitive priorities—that is, "strategic emphasis on developing certain manufacturing [operational] capabilities [for example, cost, quality, delivery, and flexibility] that may enhance a plant's [firm's] position in the

marketplace" (Boyer and Levis 2002, p. 9)—to be achieved, while operational performance is the actual level of achievement of these same dimensions (Peng *et al.,* 2011).

In a related sense, Raymond and St-Pierre (2005) viewed operational performance as the extent to which organisational goals, in terms of production flexibility, quality, and costs, have been achieved. Zhang *et al*. (2017) and Huo *et al.* (2018) reinforced this view by defining operational performance as "the degree to which a firm's operations can achieve the goals of being right, fast, on time, productive and able to change" (p. 2), and "a company's performance in serving customers in terms of quality, flexibility, on-time delivery, and so forth" (p. 778) respectively. Building on these definitions, this study defines operational performance as the extent to which a firm responds to, and delivers its customers' needs (Raymond and St-Pierre, 2005; Huo *et al*., 2008; Cao and Zhang, 2011; Zhang *et al.,* 2016).

2.2.3 Conceptualisation of Operational Performance

As Huo (2012) asserts, operational performance construct is multi-dimensional in nature. Nevertheless, justifications on the dimensions of the construct that are studied, and the choice of empirical treatment—that is, analysing operational performance as a unidimensional or multi-dimensional construct—are often not offered. Table 2.1 summarises some common conceptualisations and empirical treatments of the construct. It can be observed that while most of the studies (Zhang *et al.*, 2017; Thomé *et al*., 2014; Peng *et al*., 2011; Wong *et al.*, 2011; Flynn *et al*., 2010; Inman *et al*., 2011; Huo *et al*., 2008; Sengupta et al. 2006; Raymond and St-Pierre 2005; Ahmad and Schroeder 2003) and recognise operational performance as a multi-faceted construct, some of them either empirically analysed it as a unidimensional construct (see e.g., Zhang *et al.*, 2017; Ahmad and Schroeder, 2003) or multi-dimensional construct (see e.g., Thomé *et al.*, 2014; Wong *et al.*, 2011). Another important observation is that semantic differences exists regarding the labelling of the dimensions of operational performance. Essentially, the dimensions of the construct that these studies examined can be classified, among others, in terms of (1) cost/efficiency performance, (2) product/service quality, (3) delivery performance (on-time/speed, reliability, and flexibility), (4) product/production flexibility performance, (5) (customer) service performance, (6) speed of introducing new products/service, and (7) innovation performance.

Thus, it can be argued that, the operationalisation of operational performance appears to be largely based on two broad categories: effectiveness (such as delivery performance) and efficiency. From the competitive priorities literature in particular, the crucial dimensions of operational performance include quality, flexibility, delivery

(effectiveness) and cost (efficiency) (Wong *et al.*, 2011; Boyer and Lewis, 2002; Ward and Duray, 2000; Ward *et al.*, 1998).

Table 2.1: Some selected Empirical Studies on Operational Performance

Study	Name of construct	Definition offered	Aspect(s) studied	Empirical treatment	Main predictor variable(s)	Context/ Unit of analysis
Wong *et al.* (2011)	Operational performance	No	• Production cost • Delivery • Product quality • Production flexibility	Multidimensional	Supply chain integration	Automotive industry (manufacturers)
Ahmad and Schroeder (2003)	Operational performance	No	• Unit cost of manufacturing • Quality of product conformance • On-time delivery performance • Flexibility to change volume • Speed of new product introduction	Unidimensional	Human resource management practices	Manufacturing plants
Zhang *et al.* (2017)	Operational performance	Yes "The degree to which a firm's operations can achieve the goals of being right, fast, on time, productive and able to change"	• Inventory turnover • Unit manufacturing cost • Stock-out cost • Overall product quality • Delivery speed • Delivery dependability • Volume flexibility	Unidimensional	Social capital Knowledge acquisition Knowledge combination	Manufacturing firm

Flynn *et al.* (2010)	Operational performance	No	• Modify products • Introduce new products • Respond to changes in the demand market • On-time delivery • Lead time • Level of customer service	Unidimensional	Supply chain integration	Manufacturing plants

Table 2.1: Some selected Empirical Studies on Operational Performance (continued 1)

Study	**Name of construct**	**Definition offered?**	**Aspect(s) studied**	**Empirical treatment**	**Main predictor variable(s)**	**Context/ Unit of analysis**
Peng *et al.* (2011)	Operational performance	"While competitive priorities are the intended levels of these five dimensions [cost, quality, delivery, flexibility, and innovation] (or a priori goals), operational performance is the actual level of achievement of these same dimensions (a posteriori)"	• Manufacturing cost/ Inventory turnover • Conformance quality • Delivery performance • Manufacturing flexibility • Innovation performance	Multidimensional	Competitive priorities Improvement capability Innovation capability	Manufacturing plants

Raymond and St-Pierre (2005)	Operational performance	The extent to which organisational goals, in terms of production flexibility, quality, and costs have been achieved.	• Perceived quality improvements • Perceived flexibility improvements Perceived cost reductions	Unidimensional	Strategic orientation Advanced manufacturing systems	Manufacturing firms

Table 2.1: Some selected Empirical Studies on Operational Performance (continued 2)

Study	Name of construct	Definition offered	Aspect(s) studied	Empirical treatment	Main predictor variable(s)	Context/ Unit of analysis
Sengupta *et al.* (2006)	Operational performance	Operational excellence of an organisation, in terms of speed, delivery, and quality	• Speed • Delivery • Quality	Unidimensional	Supply chain management initiatives (e.g. information sharing, product and service customisation, long-term relationships, hedging strategies, etc.)	Manufacturing and service firms
Huo *et al.* (2008)	Operational performance	Operational performance relates to a company's performance in serving customers in terms of quality, flexibility, on-time delivery, and so forth	• Cost performance • Service performance	Multidimensional	Functional involvement Operations emphases (low cost and differentiation)	Third-party logistics service providers

Inman *et al.* (2011)	Operational performance	No	• Customer service: customer satisfaction, product customisation, delivery speed • Quality: delivery dependability, responsiveness, order flexibility, delivery flexibility • Cost management: logistics cost [FAILED VALIDITY TEST) • Productivity: order fill capacity, information systems support, order fill capacity, advance notification Asset management: inventory turn, return on assets [FAILED VALIDITY TEST)	Unidimensional	Agile manufacturing	Manufacturing plants

Table 2.1: Some selected Empirical Studies on Operational Performance (continued 3)

Study	**Name of construct**	**Definition offered?**	**Aspect(s) studied**	**Empirical treatment**	**Main predictor variable(s)**	**Context/ Unit of analysis**
Thomé *et al.* (2014)	Manufacturing operational performance	No	• Delivery • Quality • Flexibility	Multidimensional	Sales and operating practices	Manufacturing firms

Panayides and Lun (2009	Supply chain performance	encompasses all activities associated with the flow of goods and information from sourcing of raw materials through to the end user	• Delivery reliability • Responsiveness • Cost reduction • Lead times • Conformance to specifications • Process improvement • Time-to-market	Multidimensional	Manufacturer's trust Innovativeness	Manufacturing firms

Source: Developed by the Researcher (2019)

2.2.4 Why Operational Performance Matters

That operations constitutes the foundation of how a firm makes a living implies that how well a firm executes its operations is paramount to enhancing the bottom-line (that is, profit). Available evidence (see Table 2.2) indeed indicates that operational performance is an important performance construct that ought to be given continued attention in research and practice as issues of uncertainties, threats, and disruptions in the business environment continue to be on the rise.

Table 2.2: Some Evidence on Why Operational Performance Matters

Study	Finding
Huo *et al*. (2008)	Cost performance positively and significantly affects financial performance Service performance positively and significantly affects financial performance
Flynn *et al*. (2010)	Operational performance correlates positively and significantly with business performance (in terms e.g. of growth in sales, sales, growth in profit, growth in ROI, return on ROI) significantly
Huo *et al*. (2018)	Operational performance positively and significantly affects financial performance
Huo (2012)	Customer-oriented performance (modify products, speed in introducing new products, response to changes in market demand, on-time delivery, lead time, level of customer service) positively and significantly affects financial performance
Gligor *et al*. (2015)	Found significant positive effects of customer effectiveness and cost efficiency on financial performance (ROA)
Raymond and St-Pierre (2005)	Operational performance has a weak positive association with business performance (in terms of net margin, return on assets, profitability) (r = .03)
Kroes and Ghosh (2010)	Supply chain performance (in terms of e.g. cycle time, on-time delivery, returns processing costs, damaged/defective products shipped) significantly affects business performance (in terms of profit margin, return on sales, ROA, and sales over assets)
Inman *et al*. (2011)	Operational performance significantly affects both financial and market performance

Source: Developed by the Researcher (2019)

In the face of increasing competition and uncertainties, firms are required to perform well on several aspects of operational performance, such as quality, delivery, and

efficiency. For example, achieving and sustaining competitive advantage and profitability demands operations that are not only efficient, but also, effective—able to respond flexibly and swiftly in fulfilling customers' orders/needs (Kortmann *et al.*, 2014). Thus, operational effectiveness and efficiency are critical determinants of firms' profit. In particular, improved delivery performance can reward the firm with satisfied customers, larger market share, and higher sales and profit (Huo *et al.*, 2018; Gligor *et al.*, 2015).

2.2.5.1 The Perspectives taken in this Study

Operational performance in terms of delivery effectiveness or performance (ontime/speed deliveries, reduction in lead-time, time-to-market (Panayides and Lun, 2009) is a widely studied aspect of operational performance. Traditionally, delivery performance has been viewed as a measure of the speed and reliability at which customers' orders are fulfilled (Ward and Duray, 2000). Consistent with this view, Peng *et al.* (2011) used percentage of orders delivered on time as a measure of delivery performance. Wong *et al.*'s (2011) scale for delivery performance indicates that delivery performance is also reflected in the extent to which the right kind of products are delivered and the extent of order-taking time. Still, Boyer and Lewis' (2002) view of "delivery" as a competitive priority should also reflect in reduced procurement and production lead-time (Thomé *et al.*, 2013).

On the other hand, like delivery performance, efficiency (or cost) performance is another widely studied dimension of operational performance. Parkan and Wu (1997) assert that "operational performance is a concept of how well a production unit (PU) makes use of its resources when converting them into outputs of goods and services", and "efficiency measurement is one of the essential components of any operational

performance management system for a PU or a set of PU" ("(p. 2963). In operations strategy, the concept of efficiency is normally linked with resource usage or output creation (Parkan and Wu, 1997). Technically, it reflects proportion of resources utilised in operations (Gligor *et al.*, 2015). Literally, efficient operations are characterised with less wastes (Goldsby, 2006). It is worth recognising that unlike operational efficiency—which is an internally-focused performance construct—delivery performance is a customer-centred performance construct, and it echoes the level of service offered by the firm to its customers (Ward and Duray, 2000). Accordingly, items used to measure it often overlaps with items that capture other customer-centred performance constructs such as customer effectiveness (Gligor *et al.*, 2015), customer-oriented performance (Huo, 2012), supply chain responsiveness (Handfield and Bechtel, 2002), supply chain performance (Panayides and Lun, 2009) and logistics (service) performance (Daugherty *et al.*, 2009).

Building on Panayides and Lun's (2009) and Flynn *et al.*'s (2010) conceptualisation, this present study examines operational performance in terms of delivery performance (effectiveness) in a multi-context (including service and manufacturing firms). Accordingly, the study operationalises operational performance as the extent to which a firm responds to, and delivers its customers' needs (on-time/speed deliveries, reduction in lead-time, time-to-market and, process improvement). This view of operational performance is in line with the conventional view of delivery as a competitive priority (see Ward and Duray, 2000).

2.2.5.2 Why Delivery Performance Dimension of Operational Performance?

Profitability, the ultimate outcome of firms' operation (Huo, 2012; Chen and Paulraj, 2004), is a function of cost and revenue, and it can be enhanced through either reducing

cost or maximising revenue generation or both. Kortmann *et al.* (2014) asserted that operational efficiency is necessary, yet, it is insufficient for sustained competitive advantage. In their study of supply chain agility, Gligor *et al.* (2015) contended that service level (in terms of delivery performance, reduction in lead-time among others) is a market winner for agile supply chains while cost is a market qualifier. The authors argued and found that one way by which agile supply chains cope with uncertainties (whether internally or externally induced) is by responding quickly to addressing customer needs, which in turn affects return on asset positively. Thus, firms ought to perform well in meeting customer needs and satisfaction to maximise their position in the marketplace (Chen and Paulraj, 2004; Huo, 2012) and generate above market-level profit.

As competitive priorities, delivery performance should be viewed as a driver of competitiveness that enables firms to achieve a sustained "fit" between strategy and competitive advantage. Thus, operational performance's contribution to competitive advantage and the bottom-line (profit) stems from its ability to respond to customer needs and satisfaction (Huo, 2012). Accordingly, studying delivery aspect of operational performance in this study is desirable as it can shed fine-grained insight regarding the regulatory environment-operational performance link, and also help provide broader understanding regarding the relationships among the predictor (regulatory environment), the intervening factors (GMs), the boundary condition variable (SNC), and operational performance (Wong *et al.*, 2011). The sections that follow discusses key determinants of performance in supply chains.

2.2.6 Classification of Determinants of Organisational Performance

Having reviewed organisational performance and their key dimensions, it is important to assess the key factors that determine them in literature. This section discusses the key determinants of organisational performance. Management research has examined various key variables that influence organisational performance outcomes. These range from internal organisational factors such as collaboration and information sharing (Cao and Zhang, 2011), strategy and resource (Barney, 1991; Porter, 1989) among others. In addition, firm size and experience (measured in terms of number of employees and or turn over, and number of years of existence respectively) of organizations have been conceived as internal organisation factors that may determine organizational performance although most studies treat them as controls (see Poppo *et al*., 2016; Huang *et al*., 2014).

Other studies have reported some supply chain-wide factors, including inter-firm relationship structures, GMs, incentive alignment, and relationship specific investment (see Gulati, 1998; Poppo and Zenger, 2002; Huang *et al*, 2014; Cao and Zhang, 2011; Cao and Lumineau, 2015; Poppo *et al.*, 2016) and network complexity (Bozarth *et al.*, 2009; Choi and Hong, 2002) as determinants of organisational performance. In addition, external factors such as environmental turbulence, market dynamics, munificence and IE have also been studied as factors affecting organisational performance (Boso *et al.*, 2013a; Boso *et al*., 2013b; Cao *et al.*, 2018; Tate *et al.*, 2014; Cai *et al*., 2010; Ang and Michialova, 2008; Yaibuathet, *et al*., 2008). This study classifies these into three key categories: internal factors, supply chain-wide or interfirm related factors and external environment factors.

Although prior studies have had significant impact in improving SCM literature regarding organisation's performance and their determinants, there is the need for further research to extend the frontiers of knowledge as there are several unresolved issues pertaining to SCM practice and performance outcomes. Such studies will provide more fine-grained insights into the determinants of organisational or supply chains performance.

While this study acknowledges several factors as determinants of organisational performance outcomes, for the purpose of this study, this literature review is zoomed along certain key external factors and supply chain-wide or inter-firm level factors, and how they influence organisational/supply chain performance. For the external environment factors, the focus is placed on key institutional environment factors such as regulatory, normative and cultural-cognitive institutions (with emphasis on the regulatory environment) while for the supply chain-wide factors, the review focuses on inter-firm GMs and supply chain network complexity (see Figure 2.1). The sections that follow discuss these in turns.

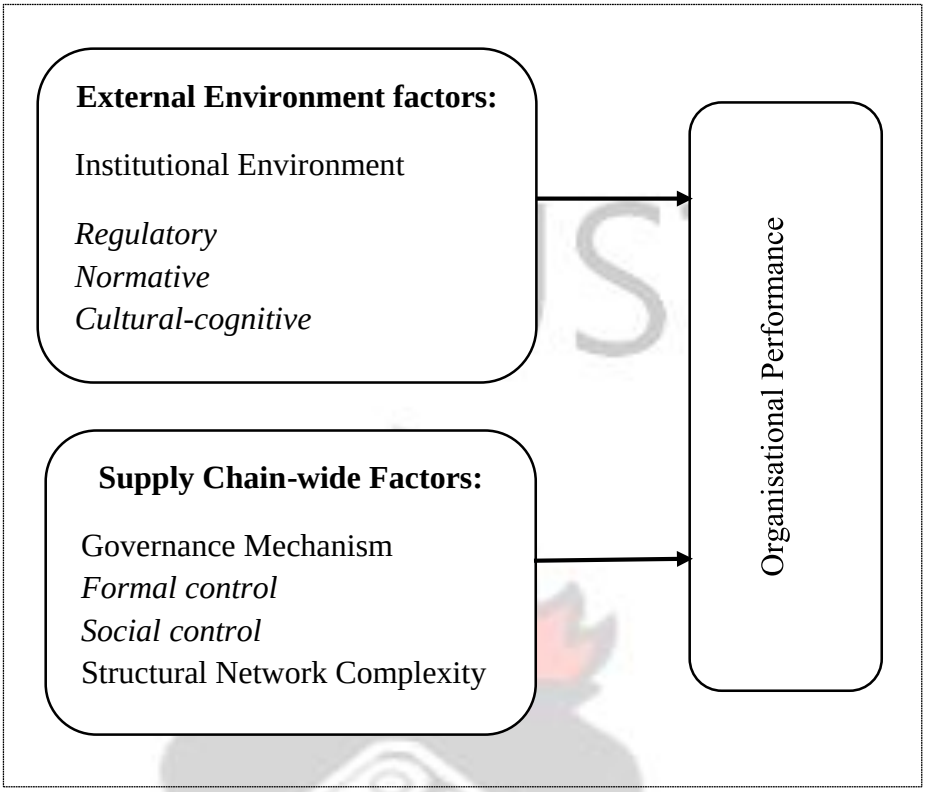


Figure 2.1: Determinants of Organisational Performance

2.3. EXTERNAL ENVIRONMENT FACTORS

Organisations are viewed as open systems interacting with their operating environment (Porter, 1981). Much as organisations thrive on resources, the success of their operations largely depend on the environment from which these resources are acquired. The external environment factors encompass all outside influences that present possible opportunities and threats to organisations (Porter, 1981; Duncan, 1972). As Porter (1981) posits, these factors are conceived as key determinants of organisational performance given that they influence the decision, strategies and processes of organisations. Exogenous to the organisation, the external environment factors, which often are beyond the control of organisations, cover a wide range of variables including political, legal, economic, social, cultural and technological. In this review, three key external factors of institutional environment are brought into perspective. These include

the regulatory, normative and cultural-cognitive elements of IE and their influence on organisational management practices and performance (Meyer and Rowan, 1977; DiMaggio and Powell, 1983; Scott, 1995).

2.3.1 The Concept of Institution

In conceptualising IE, it is important to examine the concepts of institution and environment in the socio-cultural context considering that these terms are key underlying constructs that explain IE. Although the term institution has been defined in various ways, review of institutional literature indicates some degrees of consistency in the conceptualisation presented by institutional theorists. Drew and Kriz (2012) assert that the term institution has been adopted across various disciplines including institutional economics and sociology since the 1970's. In particular, institutional theorists have drawn on institutional theory to define institution and how it influences social behaviour.

North (1990) for example, defines institution as the rules of the game in a society—the humanly devised constraints that shape and influence human interactions. North (1990) categorises institution into formal and informal norms of behaviour. Formal institutions include the legislation created by government or the state, which comprise written rules, laws, regulations and policies adopted by a society to regulate their relations with others. The informal institution, on the other hand, refers to norms of behaviours that have been created, internalised and psychologically enforced as mode of conduct that modifies or shapes behaviours and form the subjective perception of a given society (North, 1990). In line with North's (1990) definition, Scott (1995) conceives institution as dynamic, sense making frames that influence individuals and organisations to behave in acceptable ways and give meaning to goals, motives and actions.

Hodgson (2006), building on North's (1990) and Scott's (1995) conceptualisation, defines institution as durable system of established and embedded social rules that structure social interaction. Thus, institutions in the socio-cultural context are established systems of norms, values, beliefs, attitudes, conventions and rules within a society that provide a framework of acceptable mode of conduct to shape behaviours (Scott, 1995; North, 1990). These institutions are embedded within the social setting and represent the underlying forces that influence people's behaviour and actions within societies. Martinez and Williams (2012) explain the implicit assumption of the conceptualisation of institution. According to them, institutions serve as devices that provide structures for monitoring behaviours and prescribe working rules to guide community life, thereby bringing orderliness and reducing uncertainty.

The term 'environment' has been defined to encompass a broad range of meanings. In its popular sense, the term has been used to simply mean 'nature': the natural space or landscape together with all of its human and non-human features, characteristics and processes (Smithson *et al.,* 2008). Most literally, the term is used to mean the surroundings of individuals, elements or systems together with all of other entities and their interactions (Smithson *et al.*, 2008). From the institutional theory perspective, the term environment has been conceived as a space, field or jurisdiction within which institutions are established and where individuals and organisational actors make decision (Davis and North, 1991). When actors and organisations share an environmental space, they conform to the established norms of conducts as accepted standards of practice and behaviour (DiMaggio and Powell, 1983).

2.3.2 Institutional Environment Conceptualised

Institutional theorists have variously conceptualised IE in extant literature. IE has been defined as a set of fundamental political, social and legal ground rules that influence societal behaviour (DiMaggio and Powell, 1983; Meyer and Rowan, 1977, 1987; Davis and North, 1991) and establish the basis of production, exchange and distribution (Oxley,1999; North, 1990). Scott (1995) defines IE as regulative, normative and cultural-cognitive that shape social behaviour. Grewal and Dharwadker (2002) also define IE as the process of institutionalisation and corresponding institution and mechanisms of influence that pertain to legitimacy in a particular societal context.

Key in Grewal and Dharwadker's (2002) conceptualisation is the notion of legitimacy, which is a demand factor in achieving conformance and social fitness through adaptation of behaviour that is considered appropriate and acceptable within the socially constructed system of norms and beliefs. In line with Grewal and Dharwadker's (2002) and Scott's (1995) conceptualisation, Bello *et al*. (2004) conceive IE as various building blocks that characterise a society of a particular setting and context.

Scott (1995) viewed IE as consisting of three key pillars or elements. These are regulative, normative and cultural-cognitive institutions. Building on the previous conceptions (Scott, 1995; Scott, 2001; Grewal and Dharwalker, 2002; Bello *et al*., 2004). Yaibuathet *et al.* (2008) refer to IE as an integration of various building blocks specific to a nation or society and composed of three key components: regulatory, normative and cultural –cognitive. Similarly, Manolova *et al.* (2008) adopt DiMaggio and Powell's (1983) and North's (1990) postulation of IE as a framework of a society comprising the fundamental political, social and legal ground rules that shape societal

behaviour and provide the basis for production and distribution, and to which organisations must conform to earn societal support and legitimacy.

Of significance in these definitions is that, IE fundamentally consists of three key components or pillar: regulative, normative and cultural-cognitive (Scott, 1995). These pillars represent institutional forces that influence the behaviour of individuals and organisations operating within a particular environment and that, organisations gain support and legitimacy for the production of goods and services from society (environment) through conformance to established rules, laws, norms, values and belief systems that evolve from the institutional pillars. Such legitimacy (rather than efficiency) (DiMaggio and Powell, 1983) is key determining factor for organisational survival and success (Scott, 1995; Yaibuathet *et al*., 2008*;* Manolova *et al*., 2008; Cai *et al*., 2010).

2.3.3 Pillars of Institutional Environment

Although different fields of study have used various aspects of IE, the theoretical underpinnings largely overlap (Martinez and Williams, 2012). Institutional literature has largely evaluated IE along three key components or pillars. These include regulatory institutions, normative institutions and cultural-cognitive institutions. Institutional theorists across various fields of study (such as economics, sociology and political sciences) draw on institutional theory to provide understanding of how these pillars explain social behaviour. These pillars or dimensions exert differing pressures of conformity through varying mechanisms (Coercive, normative and mimetic) on organisations (DiMaggio and Powell, 19883). The regulatory, normative and culturalcognitive institutions and the corresponding forces and mechanisms of influences are discussed in the sections that follow.

2.3.3.1 The Regulatory Institutions

The regulatory institution corresponds to DiMaggio and Powell's (1983) coercive isomorphic forces. Regulatory institutions, on which institutional theory rests, include the legally structured rules, laws and regulations, and the mechanisms by which they are enforced in a society to maintain orderliness and reduce uncertainties (Davis and North, 1991). According to Manolova *et al.* (2008), regulatory institution represents formally codified, enacted, and enforced structure of laws in a community, society, or nation that shape behaviour. In keeping with Manolova *et al.*'s (2008) conceptualisation, Kara and Peterson (2012) define regulatory institutions as those that emphasise on laws and rules, and are enforced through surveillance, where sanctions are applied for non-conformance.

Ang and Michailova (2008) classify regulatory environment as less restrictive and more restrictive. In a less restrictive regulatory environment, governments introduce and maintain laws and policies through goodwill, where laws and policies are highly respected and accepted, and their adherence becomes a societal norm. Conversely, in a more restrictive regulatory environment, legal protection is weak and policies and practices tend to be less mature and vague. Thus, the regulatory systems and structures in a less restricted environment are more effective, efficient and trustworthy than with a more restricted regulatory environment (Ang and Michailova, 2008).

Bello *et al.* (2004) view regulatory institutions as the demand of state or government and regulatory agencies such as the courts system. Usually, the basis of compliance with regulatory requirements is expedience, and non-compliance leads to regulatory sanctions, whether directly or indirectly (Grewal and Dharwadker, 2002). The underlying principle of regulatory institution is by virtue of its capacity to maintain

order and reduce uncertainties in society through laws, rules and regulations, and their associated enforcing mechanisms (sanctions and rewards) (North, 1990). Such principles, in the context of organisational practices, can influence organisational behaviour and practices. Thus, as an institutional typology, the regulatory institutions function on the rational actor model of conformity and sanctions to shape societal behaviour and orientation (Kara and Peterson, 2012; Scott, 1995, DiMaggio and Powell, 1983).

In consistence with the foregoing assertion, Xu and Hutt (2012) observe that regulatory institutions, whose primary objective is to maintain order and reduce uncertainty, is the crucial responsibility of the state where government, by application and utilisation of rules, and laws standardises business practices through conformity within a country. Through sanctions, laws and policies of state, businesses are regulated to drive business actions and success (North, 1991; Bruton *et al*., 2002; Ahlstrom and Bruton, 2002; Xu and Hitt, 2012). Thus, laws on company registration, procurement contracts, property protection, taxes, foreign direct investment and financial regulations influence the ways businesses behave and conduct transaction, which may drive or constrain performance. Based on the above definitions, the current study conceptualises regulatory environment in organisational context as the extent to which firms perceive a country's laws and regulations as desirable, appropriate and efficient in providing enabling environment for business operation (Manolova *et al*., 2008; Díez-Martín *et al*., 2016).

2.3.3.2 Normative Institution

Normative element of IE corresponds with DiMaggio and Powell's (1983) sense of obligation of IE isomorphic pressure, and concerns with the established society's values and norms that influence, direct and shape behaviours in a particular society through an

imbued sense of social obligation and expectations (Scott, 2001; Bello *et al*., 2004; Yaibuathet *et al*., 2008). In their seminal article, DiMaggio and Powell (1983) conceive normative institutions as norms, rules and values embedded in, and supported by some identifiable groups such as professionals and trade associations. Drawing on this, normative institution is conceptualised in organisational setting as the extent of firms' perception about a society's values and norms that manifest in standards and commercial conventions such as those established by professional and trade associations, and business groups (Tate *et al*., 2014; Manolova *et al*., 2008).

As a less formal institution (contrary to regulatory element [Manolova *et al*., 2008]) normative institutions seek to emphasise on procedural legitimacy which demands actors (such as those in supply chain channels) to embrace the professional and socially accepted norms and conduct of behaviour (Selznick, 1984; Grewal and Dharwadker, 2002). As reinforced by Grewal and Dharwadker (2002), normative institution is driven by some key actors of society, and include trade and professional associations, accreditation agencies and other similar groups who generate and induce pattern of behaviour and mode of conduct within a particular social and economic context (North, 1990).

Typically, normative expectations prescribe the behaviour and practices required by imposing constraints on social action, which usually manifest in the establishment of standards and commercial conventions (Bello *et al*., 2004; Manolova *et al*., 2008; Grewal and Dharwadker, 2002; Scott, 2001). In organisational context, compliance with normative requirement is achieved through the development of appropriate code of ethics or conducts and learning from legitimate organisations and groups, a mechanism referred to as authorising and acquisition (Grewal and Dharwadker, 2002;

Bello *et al*., 2004). The basis of compliance is derived from a sense of social obligation (ought to), and non-compliance leads to sanctions (Bello *et al*., 2004). Thus, normative institutions influence social behaviour by appealing to the conscience of actors to feel they ought to, rather than mere expedience (Palthe, 2014).

Institutional theorists have analysed the influence of these institutional variables on social behaviour (Scott, 1995, March and Olsen, 1989). Scott (1995) asserts that whereas values represent what is appropriate and preferred, norms on the other hand specify how things should be done. In real sense, actors, particularly those within organisations, are guided by norms, values and roles to do what they are obligated to (Hoffman, 1999; March and Oslen 1989). Scott (2008) further observes that value expectations, job roles, obedience to order, and responsibilities represent institutional carriers of normative mechanisms. In practical terms, normative institutions define the roles and actions expected of organisations operating within a given society.

Various professional bodies such as the International standard Organisation (ISO), the Ghana Medical Association, Chartered Institute of Procurement and Supply (UK), Chartered Accountants of Ghana, Ghana Bar Association and others alike have developed industry specific norms of behaviour through education processes of their respective professions. Thus, these professional bodies typify the manifest function of normative institutions across industries. Their professional norms shape behaviours by instilling in their members the sense of obligation to adhere to professional standards and ethics, failure of which may lead to sanctions such as revocation of licenses and debarments.

2.3.3.3 Cultural-Cognitive Institution

Cultural-cognitive institution, the most informal among institutional pillars, represents the axiomatic beliefs and values about how people are expected to behave in a particular social setting (Manolova *et al*., 2008). Conceptualised as the degree of generalized perception of beliefs and assumptions about the expected standards of behaviour specific to a culture, which manifest through social interactions and networks of informal relationships in a society (Cai *et al*., 2010; Ren *et al.*, 2010; Manolova *et al*., 2008), cultural-cognitive manifests through memetic isomorphic mechanism of IE (DiMaggio and Powell, 1983). Scott (2001) views cultural-cognitive as the socially mediated construction of common knowledge and meaning that serves as a model for human behaviour and actions. Such representation of culturally driven and supported habits manifest in exerting subtle influences on the behaviour of actors, and tend to be repeated. In particular, cultural-cognitive emphasises on cognitive legitimacy that are based on the taken-for-granted cultural beliefs and practices specific to a particular social environment (Grewal and Dharwadker, 2002).

Corresponding to DiMaggio and Powell's (1983) mimetic isomorphic pressure, cultural-cognitive achieves compliance by providing actors with "prefabricated organising mode and script" (Scott, 2001, p.58), thereby making other types of behaviour inconceivable (Bello *et al*., 2004). Thus, the basis of compliance of cognitive legitimacy are habits, and members may comply without being aware (Grewal and Dharwaker, 2002). As shared beliefs that constitute social reality, and by which a meaning is made (Scott, 2008; Kara and Peterson, 2012), cognitive perspective provides understanding of how individuals in a given society behave, understand and deal with phenomena such as risks, uncertainty and ambiguity. These represent the underlying influence of cultural orientation of individuals in a particular society (Scott,

1995, 2001).

These shared sense-making processes and taken-for-granted tendencies of social reality (Martinez and Williams, 2012) are experienced and internalised by individuals living in a particular society (Peterson and Wood, 2008). For example, Kara and Peterson (2012) observe that cognitive mechanisms drive consistency on the creation of social reality by illustrating why individuals do not have to think of how to button up their shirts or which part of the road to drive on. This typifies the manifestation of the "takenfor-granted" syndrome of shared knowledge and beliefs. Bruton *et al*. (2002) reinforces the position that cultural-cognitive is the informal constraints embedded in traditions such as taken-for-granted conventions and customs, and develop over time through interactions. Building on organizational theory and sociology, Scott (2001 and 1995) further explains that cultural-cognitive can have significant impact on commercial activities in a given society. To illustrate, such actions, in the context of business may include morals, expectations of trust, loyalty and reliability, among others (Bruton *et al*., 2002). Though rarely documented, these institutions can significantly shape and influence organizational behaviour and practice. Table 2.3 presents the three pillars of institutions and their influencing mechanisms.

Table 2.3: Three pillars of institutions

Dynamics	Regulative	Normative	Cultural-Cognitive
Basis of compliance	Expedience	Social obligation	Taken-for-granted sense of shared understanding
Basis of order	Regulative rules	Binding expectations	Constitutive schemes
Mechanisms	Coercive	Normative	Mimetic
Logic	Instrumentality	Appropriateness	Orthodoxy
Indicators	Rules, Laws Sanctions	Certification Accreditation	Common beliefs Shared logics of action

Basis of legitimacy	Legally sanctioned	Morally governed	Comprehensible Recognisable Culturally supported

Source: Scott (1995)

2.3.4 Institutional Isomorphism and Organisational Behaviour

In their seminal article, DiMaggio and Powell (1983) seek to answer the question why organisations are increasingly becoming homogenous. "When organisations are formed in a society, they display quite considerable degree of diversity initially. However, as they react to the established institutional pressure, there is inexorable push for homogeneity" (DiMaggio and Powell, 1983, p. 148). The process by which organisations become homogenous in an environment within which they operate is referred to as isomorphism. It is a phenomenon involving a constraining process that forces an organisation to look like others that face similar set of environmental conditions (DiMaggio and Powell, 1983; Hawley, 1968; Meyer and Rowan, 1977). As organisational leadership learn to respond to environmental conditions (e.g. laws, norms and taken-for-granted conventions), their behaviours are modified and thus become compatible with environmental conditions (Herman and Freeman, 1977).

Extending the ideas of Meyer and Rowan (1977) and Fennell (1980), DiMaggio and Powell (1983) postulate two types of isomorphism: competitive and institutional. They explain competitive isomorphism as market competition, and is mostly relevant in an environment where free and open competition exists. The key underlying driver of competitive isomorphism is competition for resources and customers to achieve economic benefit. In contrast, institutional isomorphism is driven by the need for political and social legitimacy. In consistence with the above delineation of institutional isomorphism, and extending DiMaggio and Powell (1983) ideas, Shi and Hoskisson

(2012) posit that institutional isomorphism represents pressure emanating from cultural and regulatory requirements and expectations from society. Thus, government rules and mandates, social norms, and practices are institutional isomorphic pressures.

Similarly, Deephouse (1996) also defines isomorphism as the similarity among a set of organisations at a particular given period. Deephouse's definition is in line with DiMaggio and Powell's preposition that institutionalised factors put pressures on organisations who face similar environmental conditions to adopt similar structures, thereby behaving similarly. Thus, institutional isomorphism occurs when organisations adapt to socially constructed ideals in a society (Boxenbaum and Jonsson, 2008). As delineated by Kuappi and Hannibal, 2017), when organisations conform to society's norms and beliefs, they earn legitimacy and support from the society to operate.

Three mechanisms that influence isomorphic change include coercive, normative and mimetic forces (DiMaggio and Powell, 1983). While these mechanisms intermingle, their resultant outcomes may differ given that different antecedents and conditions drive them (DiMaggio and Powell, 1983). Guillen (2015) submits that ISO 9000 certification, market reforms, stock markets systems, for example are driven by coercive, normative and mimetic isomorphic mechanisms of IE (see Table 2.4b)

2.3.4.1 Coercive Isomorphism

Coercive pressures correspond with Scott's (1995) regulative pillar of IE. Emanating from state laws and regulations, coercive pressures compel organisations to adopt certain specific behaviours (DiMaggio and Powell, 1983; Tate *et al*, 2014; Kuappi and Hannibal, 2017). Coersion may also manifest when an organisation depends on others for resources or may arise from civil society movements such as Non-Governmental

Organisations (NGOs), Consumer Right Groups and other pressure groups (Kuappi and Hannibal, 2017). For example, multinational organisations may impose coercive pressure on a domestic firm (who depends on these multinational organisations) to implement just-in-time operations. Consumer Right pressure groups and ISO may also force organisations to produce products that match international quality standards.

Extending the proposition of Grewal and Dharwadker (2002), Bello *et al*. (2004) explain regulatory institutions, such as the courts system and other state agencies, which ensure that societal standards and expectations are adhered to in the society, drive that coercive isomorphism. As Grewal and Dharwadker (2002) and Bello *et al*. (2004) submit, organisational structures, processes and behaviours are influenced by coercive pressures through the combination of imposition and inducement mechanisms. They explain imposition as the exercise of coercive power by institutions to directly or indirectly impose restrictions on organisations' practices.

While direct imposition or restriction may manifest in the exercise of authoritative powers, indirect imposition is applied through rules (Grewal and Dharwadker, 2002; Bello *et al*., 2004). For instance, through the court systems, sanctions are imposed on deviant behaviours to adhere to standard norm. By contrast, inducement mechanism is applied when regulatory institutions lack capacity to impose legal constraints, and usually takes the form of incentives such as subsidies, tax rebates and other forms of concessions used to influence organisational behaviour (Grewal and Dharwadker, 2002; Bello *et al*., 2004). Reinforcing this assertion, Tate *et al*. (2014) put it differently that coercive pressures manifest through institutional powers (imposition tool) or persuasive invitation (incentive tool) to influence behaviour. Thus, imposition and inducement

represent the mechanisms through which coercive isomorphism manifest (Bello *et al*., 2004; Grewal and Dharwadker, 2002).

2.3.4.2 Mimetic Isomorphism

With mimetic isomorphism, conformance is driven by uncertainty and manifest through imitation of apparently successful organisations. Scott (1995) posits that mimetic pressure is the diffusing mechanism of taken-for-granted tendencies and shared beliefs. Building on DiMaggio and Powell's (1983) disposition, Tate *et al.* (2014) assert that in the absence of clear course of action that constitute effective and efficient practices, organisations choose to model what others perceive to be successful. In other words, mimesis arises from uncertainty, a situation that encourages imitation. In a more practical sense, when the environments are symbolically uncertain with no clear sense of direction, organisations are likely to respond to such uncertainties by modelling themselves on successful organisations (DiMaggio and Powell, 1983; Tate *et al*., 2014; Kuappi and Hannibal, 2017).

Within institutional literature, there have been suggestions that mimetic forces manifest among supply chains members through the adoption of performance assessment approaches where channel members' behaviours are assessed against an established standard of practice (Tate *et al*, 2014; Kuappi and Hannibal, 2017). The central idea about mimetic pressures is that successful organisations are perceived as legitimate. As such, they copy from the perceived successful organisations to attain conformance and legitimacy.

In the contemporary business practices, mimicry manifests through benchmarking practices. In developing the ideas of Meyer and Rowan (1977), DiMaggio and Powell (1983) argue that organisations from newly emerging nations can easily be predicted

even without any knowledge of the nation itself since such nations are more isomorphic. In practical sense, mimetic isomorphism explains why drivers, driving through a foggy weather, imitate vehicles ahead of them on the assumption that those vehicles see farther ahead than they do.

2.3.4.3 Normative Isomorphism

Normative isomorphism arises from occupational communities and professionalisation. The institutions of norm include trade associations, professional associations and other accreditation bodies (Larson, 1979; Collins, 1979). DiMaggio and Powell (1983) conceive professionalisation as the process where members of an occupation collectively define the standards of methods and procedures for their work to regulate their production activities, establish a cognitive base and legitimation for their occupational autonomy. The underlying mechanism that drives normative isomorphism is the logic of appropriateness and sense of obligation (DiMaggio and Powell, 1983; Grewal and Dharwadker, 2002).

DiMaggio and Powell (1983) delineate two aspects of professionalism as sources of normative isomorphism. The first source of normative isomorphism is formal education where universities and other training institutions provide training to members on norms and standard of practice. As these graduates apply their acquired knowledge, they diffuse standard of practices and models across their respective industries. The second source arises from the growth and elaboration of professional network across organisations of various industries where new models are diffused. In addition, trade associations also serve as conduit for the definition and promotion of normative rules and models about organisational and professional behaviour. Thus, universities,

professional and trade associations constitute the pivot for the development of organisational norms and standard of practices among professionals and managers. (DiMaggio and Powell, 1983).

These professional and trade associations exert pressure on their members and others to embrace their established standards of behaviour and conducts, and non-compliant organisations are usually sanctioned (Tate *et al.*, 2014). For example, a buying organisation may influence a supplying organisation to adopt certain quality standards to satisfy ISO requirements. Similarly, to satisfy its environmental protection obligations, a supply chain may induce pressure on channel members to adopt green supply chain practices.

Building on DiMaggio and Powell's (1983) proposition, Grewal and Dharwadker (2002) refer to two mechanisms through which normative ideals are diffused. These are authorising and acquisition. Authorisation emphasises on the development of rules or code of conducts that are considered appropriate, with trade and professional association acting as key agencies for maintaining and promoting these norms. Acquisition, on the other hand, refers to members imitating other organisations that have attained legitimacy. As organisations follow the practices of legitimate organisations, the ideals of normative institutions spread across and thus become standard of practice among industry players (Grewal and Dharwadker, 2002; Bello *et al*., 2004). Kauppi and Hannibal (2017) observe that while speculations can be made about the forms that normative pressures may take in supply chain management context, there is limited (empirical) research that specifically examine the phenomenon. Tables 2.4a and 2.4b show the isomorphic pressures and drivers of IE respectively based on DiMaggio and Powell (1983).

Table 2.4a: Isomorphic Pressures

Dynamic	Mechanism:	Examples:
Normative	Shared ideologies, worldviews, frameworks, or templates	Keynesianism, neo-liberalism, democracy, legal tradition
Coercive	Power, dependency	Hegemonic states, multilateral agencies, multinational firms
Mimetic	Frequency-based imitation to cope with uncertainty and/or secure legitimacy	Bandwagons, fads, fashions
Emulative	Trait-based imitation driven by the legitimacy of the source	Hegemonic states, states considered to be successful or innovative
Competitive	Performance	Markets

Source: Guillén (2014)

Table 2.5: Institutions and their Isomorphic Drivers

Topic:	Drivers:
ISO 9000 certification	Coercive (state, MNEs), normative (cohesion in trade), competitive (role equivalence in trade)
Central bank independence	Coercive (trade, MNEs, IMF), normative (cohesion in trade), competitive (role equivalence in trade)
Market reforms	Coercive (IMF), normative (cohesion), competitive (role equivalence in trade)
Stock markets	Normative (religion, legal tradition, economics), coercive (IMF), competitive (role equivalence), imitation (regional)
Shareholder capitalism	Normative (democracy, economics), coercive (IMF), imitation (region), emulation (USA)

Source: Guillén (2014)

2.3.5 Legitimacy

Legitimacy is an underpinning principle that influence organisations and their behaviour and strategy to be isomorphic to institutional pressures since legitimacy grants organisations the right to operate in an environment (Deephouse *et al.*, 2016). It represents an important phenomenon that answers the question of whether or not an organisation should be accepted and allowed to operate in a particular space of society. More specifically, it determines the survival and success of organisations and reflects in the society's approval and endorsement of organisation's right to access resources for production of goods and services (DiMaggio and Powell, 1983; Meyer and Rowan,

1977; Suchman; 1995). Deephouse and Suchman (2008) posit that legitimacy manifests in a wide range of forms. These include organisational forms, structures, routines, practices and governance systems.

Meyer and Scott (1983) view legitimacy as the extent to which society's established culture and value explain organisation's existence. Building on Meyer and Scott's (1983) assertion, Suchman (1995) defines legitimacy as the generalised perception that an entity's action are desirable, proper and appropriate, and consistent with socially constructed system of norm, values, beliefs and definitions. Thus, legitimacy reflects in the congruence between the behaviour of organisation and the established beliefs and values of a particular society. This implies that organisations attain legitimacy when their values and practices conform to the rules, culture and values of the environment within which they operate.

Suchman (1995) however observes that an organisation may deviate from societal norms and yet retain legitimacy for as long as such deviations go unnoticed. In this sense, an organisation may retain legitimacy to the extent that such deviation does not invoke disapproval of the public. Selznick, (1996) views legitimacy as a phenomenon that concerns normative belief about the appropriate, acceptable exercise of organisational authority. Thus, legitimacy is a status conferred on organisations by social actors, and it indicates the acceptance of an organization by its external environment and occurs through conformance to institutional prescriptions (Deephouse, 1996).

2.3.5.1 Types of Legitimacy

Various typologies of legitimacy have been discussed in institutional literature. Scott (1995) for example suggests a typology of legitimacy in line with his three pillars of IE. He proposes that each component of the IE (i.e., regulative, normative and

culturalcognitive) provides a basis for achieving legitimacy where congruence between organisational behaviour and rules or laws, professional norms and culturally supported beliefs of a particular society is attained. While regulatory legitimacy may be attained through conformance to laws, normative legitimacy may be achieved when organizations morally adhere to industry norms of practice. Cognitively, organizations may achieve legitimacy by adopting the culturally supported and shared beliefs (Palthe, 2014).

Suchman (1995) also proposes other typologies of legitimacy based on three dimensions: i.e., pragmatic, moral and cognitive. Pragmatic legitimacy is driven by the interest of organisations' stakeholders, where legitimacy is achieved when the actions of the organisations are aligned with the valued interest of stakeholders. Thus, a sort of exchange legitimacy in which societal support for organisation's programmes and actions are based on the expected values of such actions to the society (Suchman, 1995). Moral legitimacy relates to society's values, and concerns with whether a course of action of an organisation is what it ought to be. It is based on judgement and perception about whether the action of the organisation is the right thing to do. Such judgements are usually influenced by the beliefs and perception that an organisation's activities promote the welfare of society. It answers the question of appropriate behaviour as the basis of legitimation (Suchman, 1995). The cognitive legitimacy emphasises on the fact that procedures and methods of operation for achieving outputs are not only the best technically, the most efficient and effective but also in congruence with some takenfor-granted cultural system (Suchman, 1995, DiMaggio and Powell, 1983; Meyer and Rowan, 1977).

Other typologies such as socio-political and regulative legitimacy (Archibald, 2004) and environmental legitimacy (Bansal and Clelland, 2004) have been proposed, however, most authors (Zimmerman and Zeitz, 2002; Lamberti and Lettieri, 2011), have relied on Scott's (1995) proposition. In whichever form it occurs, the core assumption is that beyond economic efficiency, organisations require legitimacy to operate in a particular environment.

2.3.5.2 Legitimation Approaches

Selnick (1949) posits that organisation may attain legitimacy through one of two legitimating behaviours. First, through corporate generosity, which include contribution to charity and society or community. Thus, an organisation's contribution to society in the form of corporate social responsibility is an example of legitimating behaviour. Second, an organisation may achieve legitimacy through the co-option of political leaders or personalities of socially high status into organisations governing boards (Dowling and Pfeffer, 1975; Selnick, 1949).

Dowling and Pfeffer (1975) also delineate other approaches to attaining legitimacy. First, as has been discussed in institutional literature (DiMaggio and Powell, 1983; Scott, 1995), legitimacy may be achieved through adaptation of behaviour (eg. organisation's values goals and methods of operations) to conform to prevailing values of society. Second, an organisation may also attempt to, through communication, alter the definition of societal legitimacy such that it (society) conforms to organisation's philosophy and practices although this is difficult a process.

2.3.5.3 Reasons for Legitimacy

Legitimacy enhances the survival value, persistence and stability of the organisation (DiMaggio and Powell, 1983; Scott, 1995). That is, in business context, attaining

legitimacy means that the society is most likely to supply resources to the legitimised organisations because they find their actions (organisations) acceptable. In this case, people perceive the legitimate organisation as worthy, meaningful and trustworthy (Scott, 1995; Suchman, 1995). Organisation's conformity to socially constructed norms of the environment within which they operate earn them legitimacy and resource benefits from others in the environment. Thus, legitimacy indicates societal endorsement to organisation's right to exercise operational authority, and those that lack such legitimacy starve for resources and socio-political support (Selznick, 1949; Scott, 1995). Scott *et al.* (2000) argue that inasmuch as material resources and technical efficiency constitute important and fundamental factors of business operations, organisations equally need social acceptance and support for survival. Thus, the survival of organisations in a society rests not only on their access to resources but also, and more importantly, to the extent that the society is motivated to consume their services.

In the context of resource dependence, Dowling and Pfeffer (1975) and Suchman (1995) posit that legitimacy is seen simply as another form of resources that organisations extract from their IEs. In particular, Dowling and Pfeffer (1975) observe that organisation's legitimacy facilitates exchange resources between society and organisations operating within it. In consistence with institutional literature, Filatochev and Nakajima (2014) argue that organizations in a particular environment do not only compete for resources on the basis of economic efficiency but also on the basis of their societal acceptance through conformance to expected social norms, behaviour and demands of a wider body of stakeholders. In this sense, access to resources is seen as a by-product of legitimation (Suchman, 1995). Thus, organisation's survival largely depends on the acceptance they earn from the society, and that grants them

(organizations) the legitimacy for their establishment and access to resources for their operational activities (Ntim and Soobaroyen, 2013; Bell *et al*., 2014).

2.3.5.3 The Perspective of Institutional Environment taken in this Study

Although there are connections among regulatory, normative and cultural-cognitive dimensions of IE (Busenitz, *et al*, 2000), institutional literature indicates that, they are conceptually distinct (Kostova, 1997; Scott, 1995). Drawing on this, and for parsimony, the current study focuses on the regulatory element of IE for three key reasons. First, among the pillars of IE, regulatory institutions represent macro level factor (Bello *et al*., 2004; Martinez and Williams, 2012) that is of critical for the proper functioning of economies as they influence markets, protect property rights and safety of businesses, and facilitate the delivery of goods and services (OECD, 2011; UNCTAD, 2012). In particular, regulatory institutions codify society's expectations and establish conditions, requirements and standard of practices that determine how businesses are registered and operated in a particular economy. In other words, it provides formal conditions and legitimacy for firms to operate in a country.

Second, in addition to the relevance of regulatory institutions to business start-ups and activities (Manolova *et al.,* 2008), economic transactions require an environment that guarantees the protection of physical and intellectual property, fair competition, and allows firms to innovate and compete in the market. To this end, the interventions and measures that create such favourable economic environment for businesses to thrive manifest through the formally codified regulations and policies governments make (UNCTAD, 2012).

Third, beyond market prospects, a firm's decision to operate in a particular country is largely determined by the nature of the regulatory institutional conditions prevailing in

the host country as these can encourage or discourage the ability of firms to function (Gates, 2010; Martinez and Williams, 2012). For example, innovations is key for business growth (Boso *et al*., 2013a). However, a firm's motivation to innovate may largely depend on the legal enforceability and the degree of protection the laws guarantee for private and intellectual properties. As the World Bank's (2018) report on ease of doing business indicates, regulatory institutions represent key determinant of favourable business environment.

2.4 SUPPLY CHAIN-WIDE FACTORS AND ORGANISATIONAL PERFORMANCE

As Gunasekaran *et al.* (2008) indicate, SCM, with its focus on collaboration and coordination of resources and action represents strategic and operational business process that equip firms with the needed capabilities and capacities to be responsive to business needs and achieve sustained positional advantage. Review of extant literature reveals several supply chain related factors that potentially affect organisational performance outcomes in supply chains. This study focuses on two key supply chainrelated factors, and how they affect organisational performance outcome. These are inter-firm GMs (formal and social controls) and SNC. This section reviews these key factors in relation to SCM practices.

2.4.1 Supply Chain Concept

The concept of supply chain recognises that business entities can hardly compete favourably independent of their suppliers and customers in the turbulent environment. Rather, superior performance and competitiveness can be attained by leveraging the integrated efforts and resources of cohorts of entities (Yaibuathet *et al.,* 2008). Such integrative thinking approach continues to receive attention since the 1980s when

organizations, in response to increasing competition and market dynamics, realised the benefits of collaborative alliance within and beyond their boundaries (Cooper *et al*., 1993).

Various definitions have been proposed in SCM literature in the recent past. The supply chain council (1997) define supply chain as network of organization and business activities involving the design of goods and services and their associated processes of transforming inputs into goods and services as well as the disposal of these goods and services. By this process, business entities collaboratively engage in value creating activities required to innovate, plan, source, make, deliver and return or dispose off a particular set of products. Cox *et al.* (1995) conceive supply chain as a coordinated processes initiated from raw material stage (input phase) through to the stage of consumption of finished products (output phase) through the integration of functions and activities within and beyond the boundaries of organizations.

These definitions imply that supply chain involves integration of functions, and value creating process of cohorts of firms to produce goods and services through flow of material, information and money. Other authors have provided various definitions in extant literature (see Table 2.5), however, they all reflect the idea that supply chain involves integration of set of organizations and associated processes to engage in the production of goods and services for the ultimate customer (The Supply Chain Council, 1997).

Table 2.5: Definition of supply chain

Study	**Definition**
Handfield and Bechtel (2002)	Supply chain encompasses all activities associated with the flow of goods and information from sourcing of raw materials through to the end user.

Cox *et al*., 1995	1) The processes from the initial raw materials to the ultimate consumption of the finished product linking across supplier-user companies; and 2 the functions within and outside a company that enable the value chain to make products and provide services to the customer
Lummus and Alber (1997).	The network of entities through which material flows. Those entities may include suppliers, carriers, manufacturing sites, distribution centres, retailers, and customers.
The Supply Chain Council (1997)	Supply chain encompasses every effort involved in producing and delivering a final product, from the supplier's supplier to the customer's customer.
Quinn (1997)	All of those activities associated with moving goods from the raw-materials stage through to the end user. This includes sourcing and procurement, production scheduling, order processing, inventory management, transportation, warehousing, and customer service.
La Londe and Masters (1994)	A set of firms that passes materials forward.
Lambert, Stock, and Ellram 1998)	The alignment of firms that brings products or services to market.
Christopher (1992)	The network of organizations that are involved, through upstream and downstream linkages, in the different processes and activities that produce value in the form of products and services delivered to the ultimate consumer
Mentzer *et al.* (2001)	A set of three or more entities (organizations or individuals) directly involved in the upstream and downstream flows of products, services, finances, and/or information from a source to a customer.

2.4.1.2 Supply Chain Management

While supply chain consists of network of organizations collectively involved in value creating activities, (Mentzer *et al.*, 2011; Christopher, 1992), SCM emphasises on the management of network alliances and the flow of value across various stages of supply chain. Chopra and Mendl (2007) submit that SCM has to do with planning, organising, coordinating and integrating network of firms and the associated flow of material, information and money from the supplier to the final consumer with the ultimate goals

of creating visibility across the network and to ensure efficient and effective flow of goods and services to end customers. The supply chain council (1997) posit that SCM involves four basic activities, plan, source, make and deliver.

Planning represents the strategy by which activities, including demand and supply, are synchronised in the supply chain. This involves developing means of managing resources and relationships for effective and efficient flow of value across the supply chain. Sourcing is a procurement function of supply chain that focuses on acquisition of inputs of supply chain needs for the production of goods and service. Making follows sourcing and has to do with the processes of transforming the procured inputs into finished goods and services for the end consumer. Delivering is about fulfilling customer demands by making the products and services available to the consumer. It is about creating place utility while return involves managing disposal and reverse flow of customer returns of defective or unneeded goods.

Mentzer *et al*. (2001) observe that the concept of SCM consists of a three-prong process: (1) management philosophy, (2) implementation of management philosophy and (3) as a set of management process. As a management philosophy, SCM adopts system management approach and recognises supply chain as a single entitycomprising network of organizations, rather than a set of fragmented parts with each performing its own function (Ellranm and Copper, 1990; Tyndall *et al*., 1998; Mentzer *et al*., 2001). In this regard, supply chain is viewed as a business model that thrives on collaboration and integration of processes and efforts through inter-firm alliance such as partnership to create and manage the flow of value from suppliers to the final consumers (Ellram, 1990; Mentzer, 2001). Thus, from management philosophy perspective, supply chain is viewed as the inter-dependency and inter-connectedness of firms whose actions directly and indirectly affect the performance of the supply chain.

SCM as a set of activities implies that channel members are committed to establishing management practices and activities that enable them to actualise SCM philosophy (Mentzer, 2001). In other words, channel members institutionalise certain set of practices such as collaboration, coordination, joint planning, and so forth, to facilitate value flow and optimise performance. As Bowersox and Closs (1996) argue, to be efficient in today's competitive business environment requires business entities to collaborate with downstream and upstream channel members. SCM as a management process emphasises on designing structured set of process through which goods and services are provided to the ultimate customers (Mentzer 2001). As La Londe and Masters (1994) posits, SCM as a management process involves designing and synchronising processes to ensure flow of value across the enterprise and borders of various entities to deliver goods and services to the end consumers. Ross (1997) argues that SCM as a process comprises business functions, organizations and associated operations involved in delivering goods and services to the market through supply pipeline.

In consistence with Ross (1997), Mentzer *et al.* (2001) explain SCM process as a systemic structure and ordering of task activities across time and space, with a beginning and an end, clearly identified inputs and outputs, and a seamless structure of actions. In other words, SCM philosophy recognises that to attain operational excellence and competitiveness, businesses need to move away from the traditional functional silo-thinking model to a systems approach model, where all the functions within the supply chain are recognised as important part of the processes through which value is created to meet customer requirements (Mentzer *et al*., 2001; Lambert *et al*., 1998).

The various definitions of SCM provided reveal key underlying characteristics. First, supply chain comprises network of (at least) two or multiple organisations with diversity of activities and processes interacting in a coordinated manner to facilitate efficient and effective flow of value from the point of origin (the supplier) to the point of consumption (the final consumer). Second, SCM concept as a business philosophy recognises that operational excellence and superior performance is attained through collaboration and coordination of pooled resources and efforts. In this regard, the notion of inter-firm governance and the associated mechanisms for managing interconnectedness and inter-dependency is central in SCM practice. In particular, inter-firm governance is instrumental in SCM philosophy given that the inter-connected network of firms, which is the central characteristic of supply chain, is driven by governance structures (such as buyer-supplier partnership, strategic alliance vertical integration [Hoetker and Mellewigt, 2009; Fontenot and Wilson, 1997]), and the mechanisms through which these alliances are managed to inspire motivation and commitment among exchange parties. Thus, the key driver underpinning supply chain as a network of organisations is inter-firm alliance governance.

Thirdly, the inter-connectedness and the inter-dependent nature of supply chain recognises complexity and uncertainty as inherently embedded in the SCM process. As supply chain network expands, complexity across the value chain manifests as a result of increase in the number of actors, both in the upstream and downstream, and the associated diversity and interactions of activities, processes, interests, cultural and regulatory issues that emerge across the supply chain. Thus, among other factors, managing inter-firm governance, which is the key vehicle of collaboration and supply chain network, and the associated inherent complexity, is critical to supply chain success. Accordingly, from the supply chain- wide perspective, the focus of the review

is zoomed along inter-firm governance and SNC of supply chain. Literature on interfirm governance and SNC is presented in Sections 2.4.2 and 2.4.3.

2.4.1.3 Benefits and Challenges of Supply Chain Management

The benefits and challenges of SCM as a business process continues to receive increasing attention (Fawcett *et al*., 2008; Gunasekaran *et al*., 2007; Cooper and Ellram, 1993). As an integrative philosophy of managing value flows (Cooper and Ellram, 1993), SCM approach is increasingly becoming an important strategy and model for integrating resources and capabilities to improve operational effectiveness, efficiency and competitiveness (Kherbach and Mocan, 2016; Gunasekaran *et al*., 2007).

The benefits that accrue to firms adopting SCM business model are several, with superior performance and competitiveness being the ultimate. In particular, SCM, by its nature drives operational efficiency and effectiveness through its collaborative and coordination capabilities (Cao and Zhang, 2011). SCM literature indicates that the most sought after benefits of SCM include increased inventory turnover, increased revenue and cost reduction (Fawcett *et al*., 2008; Daughetty *et al*., 2005). Fawcett *et al*. (2008) posit that SCM practices (such as collaboration) do not only lead to cost reduction but also increase revenue across the supply chain, arguing that improved performance is driven by the extent to which firms are able to win customer allegiance and loyalty.

Other studies also report performance related benefits accrued from SCM at the supply chain level to include operational and financial benefits such as market responsiveness, capital utilisation, decreased product time to market, lead-time reduction, cost reduction and revenue maximization and competitiveness (Lee 2004; Meutzer *et al*., 2000).

At the macro level, performance of SCM contributes to Gross Domestic Products (GDP) through efficient flow of goods and services, job creation and increases in tax revenue within and across geographical boundaries (Kherbach and Mocan, 2016). As Kherbach and Mocan (2016: 405) puts it "a market with a well-developed logistics and SCM facilities has a qualified advantage over other economies, and that improving logistics infrastructure may serve as a competitive tool and is effective in rising market share". Thus, the benefits that accrue from SCM may be viewed in terms of operational effectiveness (such as improved product, material and information flow), economic benefits (such as cost, reduction, competitive advantage and revenue growth) and contribution to national development (such as job creation, tax revenue to governments and goods and services across border).

Notwithstanding the contributions of SCM to firms' performance, it is not without its challenges at the focal, inter-firm and national levels. At the focal level, supply chains face management and organizational characteristics related challenges such as goal incongruence, lack of functional coordination and cooperation, inefficient flow of information, lack of management supports, inflexible organisational system and processes and cross-functional conflicts (Fawcett *et al*., 2008). At the supply chain wide levels, SCM is threatened by inter-firm alliance and complexity related issues. These may include poor coordination arising from misalignment of motives and opportunistic behaviours of alliance partners, as well as the potential lack of trust and commitment among partners across the supply chains. These tendencies make allying partners compete rather than collaborate and coordinate, and thus undermine the synergistic efforts and ultimate performance (Park and Ungson, 2001, Fawcett *et al*., 2008).

Similarly, complexity related challenges, which include variety of actors and products that characterise the supply network, incompatible culture and technology, potentially threaten performance of supply chains in terms of increase in transaction cost (Tyndall *et al*., 1998; Fawcett *et al.*, 2008). More specifically, complexity induces uncertainties and renders management of supply chains particularly complicated, thereby undermining performance (Choi and Hong, 2002; Bozarth *et al*., 2009).

At the macro or national level, supply chains face external pressures such as those from IE. In particular, restrictions from the formal and informal institutions such as unfavourable laws, rules and professional standards as well as societal values and belief systems (Oliver, 1997; Rowan and Mayer, 1987; DiMaggio and Powell, 1983) may be sources of barrier to efficient supply chain practice and performance.

2.4.2 Governance Mechanisms

2.4.2.1 Overview

As indicated in SCM literature, inter-firm alliance governance represents one of the key factors that significantly impact supply chain sustenance and operational success (Hoetker and Mellewigt, 2009; Poppo and Zhang, 2002). Gulati (1998) observes that environmental dynamics, such as the globalization of markets, the convergence and shift in technologies and regulatory changes have made inter-firm alliance governance an ubiquitous phenomenon in business management and practice. In particular, SCM philosophy recognises that improved performances and productivity could be achieved from a pool of collaborated and coordinated resources through the mechanism of interfirm alliances, (Huang *et al*., 2014; Cao and Zhang, 2011). In light of this, inter firm governance is considered an important function of SCM practice as it allows firms to pool, harness, and leverage imperfectly tradable resources in order to achieve

operational excellence (Hoeker and Mellewigt, 2009; Mitchell *et al*., 2002). As Gulati (1998) observes, achieving operational excellence and competitive advantage through collaboration and coordinated resources and capabilities represent the central motivation underpinning the formation of inter-firm alliance. By their nature, supply chains are characterised by intra and inter-firm collaborations to leverage capabilities and resources and benefit from synergy, improved performances and increased productivity (Dyer, 1996). Success of inter- firm alliances largely depends on the extent of parties' commitments to the exchange. Under such collaborations, firms demonstrate commitments through range of investments in assets (tangible and intangible) that may be unique to specific exchange relationships.

However, as Williamson (1985) submits, human beings inherently are opportunistically inclined. Conceived as "self-interest seeking with guile" (Williamson, 1985), the notion of opportunism, in business context particularly manifests in inter-firms exchanges in the form of breach of agreements, quality shirking and withholding of vital information (information asymmetry) among others (Wathne and Heide, 2000; Dyer, 1996). Opportunism has negative implications on firm performance (Williamson, 1985) as managing it requires considerable amount of resources (Wathne and Heide, 2000). As inter-firm relationships increase in scope and complexities, opportunistic behaviour naturally emerges and becomes pronounced in the exchange relationship, resulting in high transaction cost and reduced worth creation (Wathne and Heide, 2000; Dyer, 1996). In this regard, GMs are recognised as an important administrative tool in governance literature (see e.g. Hoeker and Mellewigt, 2009) for addressing opportunistic behaviour to achieve compliance and commitments from exchange parties.

2.4.2.2 Governance Structure and Control Mechanisms of Supply Chain

While governance and GMs appear similar and might be used interchangeably, the two terms are conceptually different. Although Heide (1994) proposes a broader conceptualisation of governance to cover both alliance structures and controls—where governance is conceived as elements involved in the process of establishing and structuring exchange relationships as well as aspects of monitoring and enforcement—Hoetker and Mallewigt (2009, p. 1027), make conceptual distinction between governance and governance mechanism. Whereas "governance is a higher level concept describing an organizational construction or, in broader terms, institutional framework (for example, a strategic alliance), GMs are the underlying and concrete management and control activities, which describe in detail how the required behaviour of the partner will become motivated, influenced and established or generally, in which ways the desirable or predetermined, gains are to be fulfilled".

Other authors make similar conceptual differentiation between governance and GMs. For example, Gilliland *et al.* (2010) assert that while governance broadly encompasses the processes necessary to establish and structure exchange relationships, GMs represent the control-based processes of governance involving initiation, directing and managing the partners during the lifetime of the exchange. Gilliland *et al.* (2010) further argue that inter-firm governance approach may be unilateral or bilateral. The unilateral approach is economic-driven and it is grounded in the TCE and agency theories. In particular, unilateral governance approach is concerned with the use of contractual arrangement designed by one party to motivate other in exchange relationships to comply with expected behaviour (Gilliland *et al.*, 2010; Burgen *et al.*, 1992). In contrast, bilateral approach assumes that inter-firm exchange governance rests on social

platform where both parties to the exchange are jointly committed to rely on relational norms and shared values to achieve shared objectives (Heide and John, 1992). Thus, while with the unilateral approach to governance, exchanges are controlled by one party, bilateral approach is characterised by shared responsibilities and joint monitoring of the parties.

Again, Gilliland *et al*. (2010) advance that both unilateral and bilateral governance approaches operate through three key processes: (1) incentive system, (2) monitoring procedures and (3) means of enforcement. The incentive system focuses on motivating the parties to work and exhibit desired behaviour. On the other hand, monitoring procedure is concerned with processes involved in ensuring that the parties are committed to their respective roles and responsibilities under the exchange through utilisation of information, while means of enforcement emphasises on making conscious efforts to ensure that parties' behaviours are realigned with the expectations and demands of the exchange (Gilliland *et al*., 2010).

Although in its broader sense, governance may be used to cover both alliance structures and control mechanism (Heide, 1994), Hoeker and Mallewigt's (2009) and Gilliland *et al*.'s (2010) conceptualisation of governance and GMs implies that from a more nuanced perspective, the two are conceptually distinct. While the former represents alliance structure such as strategic alliance and buyer-supplier partnership (See Figure 2.2 [Fontenot and Wilson, 1997; Webster, 1992]), the latter represents the control mechanisms through which the behaviours of the actors within the alliance are managed to achieve alliance goals. As described by Martinez and Janillo (1989) GMs may be viewed as an administrative tool of alliance governance.

Governance research indicates that alliance exchanges fall within two extremes, market and hierarchy (Joshi and Stump, 1999; Williamson, 1975). In other words, inter-firm governance structures span a continuum from pure market, such as transactional, to more hierarchy such as vertical integration (Fontenot and Wilson, 1997). While market driven governance is influenced by market conditions or control based upon price, vertical integration (hierarchy) structure is governed by bureaucratic administrative or relational controls (Fontenot and Wilson, 1997). For example, in transactional type of relationship, prices are negotiated based on market conditions with less emphasis on mutual benefit. On the other hand, vertical integration form of governance is characterised by trust and mutual benefits such as cost saving, production efficiency and so forth. In such trust and win-win atmosphere, prices are negotiated with less market pressure (Fontenot and Wilson, 1997; Webster, 1992). The current study is built on Hoetker and Mallewigt's (2009) and Gilliland *et al.*'s (2010) conceptualisation of GMs. These are discussed in the section that follows.

Figure 2.2: the range of inter-firm alliance structures
Source: Fontenot and Wilson (1997) and Webster (1992).

2.4.2.3 Governance Mechanism Defined

TCE theorists (Dyer, 1996; Williamson, 1985) have argued that GMs are necessary when engaged in inter-firm exchange relationships to address the problem of opportunism and reduce transaction cost. Dyer (1996, p.651), extending Williamson's

(1985) defines GM "as institutional arrangements designed to govern exchanges by controlling opportunism". Dyer (1996) further explains that GMs should be seen as an inter-firm relationship management tool that drives coordination, controls and inspires trust necessary for exchange relationship to achieve relationship goals.

Building on Das and Teng (1998), Huang *et al*., (2014, p.705) also define GMs as "organisational or structural arrangements designed to determine and influence the behaviour of organisational members". The organizational arrangement includes developing and utilising formal contracting procedures (rules, conditions and policies) and relational norms and trust to manage cooperative alliances to achieve organizational goals (Huang *et al*., 2014; Li *et al*., 2010; Wang and Fulop, 2007). Cai *et a*l. (2009) conceive GMs to encompass legal contracts (rules, conditions and policies) and relational mechanisms (values, norms and trust) to manage the behaviours of parties engaged in inter-firm exchanges to address opportunistic tendencies.

Hoetker and Mallewigt (2009, p.1027) also define GMs as "the underlying and concrete management and control activities, which describe in detail how the required behaviour of the partner will become motivated, influenced and established or generally, in which ways the desirable or predetermined gains are to be fulfilled". On their part, Gilliland *et al*. (2010) refer to GM as the control-based processes involving initiation, directing and managing the partners during the lifetime of the exchange.

Extending Blowfield and Dohan's (2010) submission, Li *et al*. (2014) opine that GMs are an emerging phenomenon that is key to managing risks of corporate legitimacy and reputation. More specifically, Li *et al.* (2014) conceive GMs in supply chains as institutional structure and mechanisms that guide, regulate and control the (behaviours and) activities of stakeholders in exchange relationships to coordinate and maximize

the benefits accrued from the exchanges. These mechanisms include economic contracts (the use of contractual arrangements) and relational contracts (when the focus of control is based on shared social norms and trust). Relatedly, Luminous and Henderson (2012), drawing on previous conceptualisation (Wathne and Heide, 2004; Bradach, 1997; Williamson, 1996; Williamson, 1985) define GMs to involve contractual arrangement and relational control systems to mitigate exchange hazards, promote cooperation between transacting partners and to take advantage of their differential capabilities and impact. Similarly, following earlier works by Poppo and Zeuger (2002), Ness and Haugland (2005) conceive GMs into contractual based (the use of formalised legally binding agreement) and relational-based governance (the use of social norms of solidarity).

The central notion that manifests across the various definitions of GMs is that the concept of GMs recognises opportunism as an inherent hazard of inter-firm exchange relationships, which adversely affects relationship performance outcome (Huang *et al*., 2014; Li *et al.*, 2010; Wathne and Hide, 2004; Bradach, 1997; Williamson, 1985). To this end GMs represent effective tool to managing such hazards characterising exchanges. Again, inter-firm collaboration and coordination do not occur by chance but through conscious efforts of the exchange parties to eschew opportunism and adopt desirable behaviour for productive delivery of their obligations. (Gilliland *et al*., 2010). Third, control mechanisms are critical for effective functioning of the exchange (Gilliland *et al*., 2010; Hoetker and Mallewigt, 2009). Based on the above definitions, the current study defines GMs as the underlying control activities, which describe in detail how the required behaviours of the exchange partners will become motivated and

managed to ensure that desirable or predetermined gains are to be fulfilled (Gilliland *et al*., 2010; Hoetker and Mallewigt, 2009).

2.4.2.4 Types of Governance Mechanism

Governance literature has conceived GMs into two main types: formal control mechanisms and social control mechanism (Huang *et al*., 2014; Cai *et al*., 2009; Cannon et al., 2000).While formal control represents formal approach to relationship governance, social control emphasises on the use of shared values, social and cooperative norm as well as trust to influence the behaviour of exchange parties (Huang *et al.*, 2014; Li *et al*., 2010; Lee and Cavusgil, 2006; Poppo and Zenger, 2002).

2.4.2.4.1 Formal Control Mechanism

Formal control, also referred to as "legal control" (Achrol and Gundlach, 1999) "explicit contract" (Zhon and Poppo, 2010) legal safeguards" (Lui and Ngo, 2004), plays important roles in the coordination of exchange relationship (Cao and Lumineau, 2015). It represents the formalistic approach to inter-firm relationship management (Huang *et al*., 2014; Abdi and Aulakh, 2012; Ryall and Sampson, 2009; Zhang *et al*., 2003; Dyer and Singh, 1998; Martinez and Jarillo, 1989) where contractual arrangements on price, volume, delivery, time and flow of information are utilised to mitigate exchange hazards. Stouthuysen *et al*. (2012), from behavioural perspective, refer to formal control as a mechanism used to motivate exchange parties to cooperate in good faith to achieve set objectives. In this regard, control in the supply chain governance context is viewed as a dyadic phenomenon where either the buying firm usually exercises control ("controller") and the supplying firm represents the target of control ("the controllee") (Stouthuysen *et al*., 2012) in unilaterally governed exchanges

or both parties exercise joint control of the exchange relationship in bilaterally managed relationships.

In consistence with prior studies (see Cardinal, 2001; Das and Teng, 2001) Stouthuysen *et al*. ‘s (2012) conceptualisation provides a finer-grained insight by conceiving formal control as a two-dimensional governance mechanism comprising output and behaviour forms of controls. With output control mechanism, the expected outcomes such as delivery times, quality level, lead time specifications among others, as well as tools for evaluating performance are defined (either unilaterally or bilaterally), and suppliers are allowed to device means of achieving these targets. Contrarily, the behaviour control emphasises on the processes of value or service delivery and means of achieving goals by defining the specific rules and procedures, and providing incentives to match compliance. Thus, behaviour control mechanism relies on defined behaviour and production procedure and the mechanism for evaluating these behaviours (through direct observation, the use of progress report, periodic meeting (Stouthuyesen *et al*., 2012; Choudhury and Sabherwal, 2003; Kirch *et al*., 2002; Eisenhardt, 1985).

Cannon *et al.* (2000, p.182), use the term contractual governance to describe it as “the extent to which detailed and written contractual agreements are used to specify the roles and obligations of parties”. In other words, contractual governance or formal control stipulates the expectations and obligations of parties in exchange relationships. Building on the above conceptualisation, this study defines formal control as the extent to which exchange relationship is governed by formally written contract, which explicitly stipulates the responsibilities and obligations of each party (Huang *et al*., 2014; Abdi and Aulakh, 2012; Ryall and Sampson, 2009).

As an inter-firm governance mechanism, formal control is developed on the principles of legality to regulate the behaviour of exchange parties to discourage opportunism, thereby safeguarding transaction- specific asset to achieve relationship goals (Cai *et al*., 2009; Liu *et al*., 2009; Williamson, 1979). In practical sense, formal control requires exchange partners to design detail contracts that stipulate the rights and obligations of each party to the exchange. Such contracts serve as the basis to coordinate activities, resolve potential conflicts, adjust corporate strategies in response to environmental changes and provide legal safeguards to transacting parties (Huang *et al*., 2014; Li *et al*., 2010; Cai *et al*., 2009). As submitted by Hernandez- Espallado *et al.* (2010), formal control mechanism equips transacting parties to match reward and sanctions to constrain opportunistic behaviour, thereby enhancing alliance performance (Huang *et al*., 2014; Li *et al*., 2010).

In addition, formal control, by its nature, allows for the use of a third party, (Eg. Court system, arbitration) to sanction opportunistic party. From the central tenets of TCE (Williamson, 1975), formal control is designed as a restrictive mechanism to deal with opportunism through clauses, obligations and sanctions for non-compliance. As the scope of contract increases, the contents and clauses also increase. Thus, resulting in rise in the cost of monitoring and coordinating (transaction cost) (Carey and Lawson, 2011).

However, formal control mechanism has some limitations that undermine its coordinating and controlling properties (Cao and Lumineau, 2015). First, formal control may be inadequately designed due to the cognitive limitation and inability to have access to all pertinent information relevant to develop a detailed contract (bounded rationality) that can cover every possible eventuality. The validity of this logic is

demonstrated in the universal commercial code which recognises the concept of "gap filling" in commercial contracts and "goods faith" (Cannon *et al.*, 2000). In this regard, the safeguarding role of formal control may be less effective. Second, formal contracts may signal lack of trust, which may adversely affect its cooperative functions (Poppo and Zenger, 2002; Ghoshal and Moran, 1996). Third, the implementation of contractual terms may in itself serve as a potential source of conflict between the exchange parties to the extent that while one party may be rigid in the application of terms and conditions, the other party may use them flexibly. This may potentially undermine the coordinating and corporative property of formal control (Cao and Limineau, 2015). In addition, the rigid nature of formal control limits its adaptability, which can stifle innovation and coordinating capabilities.

2.4.2.4.2 Social Control Mechanism

Social control mechanism, also relational governance or relationalism (Cao and Lumineau, 2015; Jayaraman *et al*., 2013; Cai *et al*., 2009) refers to the extent to which exchange relationship is governed by shared values, social and cooperative norms and trust (Cao, and Lumineau, 2015; Huang *et al*. 2014; Zhou and Xu, 2012; Li *et al*., 2010; Poppo and Zenger, 2002). It utilises a set of social norms to regulate and restrict unacceptable or opportunistic behaviours of parties in exchange relationships (Huang *et al*., 2014; Cai *et al*., 2009). The use of the term relational governance to mean social control is traced to Macneil (1980) who argued that exchange is embedded largely in networking. In consistence with this line of reasoning, it is argued in governance literature that economic exchange partially involves socially embedded relationships (Dyer and Singh, 1998).

Social control or relationalism consists of a set of informally developed norms that influences the behaviours of exchange parties as they interrelate with one another

(Mesquita and Brush, 2008; Baker *et al*., 2002). The underlying mechanism of social control is the utilization of informal structures and self- enforcing mechanism (Malhotra and Murnighan, 2002; Dyer and Singh, 1998). It represents a more flexible approach to managing inter-organisational relationships (Poppo and Zenger, 2002; Yu *et al*., 2006) as parties willingly avoid opportunistic behaviour and work towards mutual goals and benefits (Carey and Lawson, 2011).

In particular, social control mechanism thrives on the principles of shared values, social norms leading to an atmosphere of trust and cooperativeness to encourage specific desirable behaviours that harmonise the interest of transacting parties and discourage opportunism (Huang *et al*., 2014; Li et al., 2010; Liu *et al*., 2009). As specified by Das and Teng (2001, p. 259), social or informal control assumes that when the mutually agreed goals and shared values are internalised by the exchange parties, "their commitment and motivation to achieve these goals will be high".

As postulated by Ahuja and Galvin (2003), and corroborated by Sengun and Wasti (2009), socialisation, familiarity with individuals and sense of collectivism in addition to problem solving norms create social cohesion and motivate members in exchange relationships toward shared and mutual goals (Das and Teng, 2001). Thus, through trust building among exchange partners, members develop a sense of confidence in each other's willingness to cooperate in good faith, work towards common goals of their partnership rather than behaving opportunistically (Huang *et al*., 2014; Liu *et al*., 2009). Cai *et al*. (2009) submit that social or relational governance is a mechanism of collective structure underpinned by trust and shared values to manage interdependence (and minimise) transaction cost.

Governance literature has operationalised social control mechanism in terms of trust and relational norms. (Cao and Lumineau, 2015; Griffith and Myers, 2005; Gulati, 1995). While trust is conceived as the confidence reposed in a partner's integrity, credibility and benevolence in an exchange cooperation (Das and Teng, 1998), relational norms is viewed as shared expectations about each partner's behaviour in inter-firm exchange relationship (Cannon *et al*., 2000; Heide and John, 1992). Trust is based on the assumption that the existence of mutual trust among parties in exchanges inspires mutual confidence such that compromise of integrity and opportunism will be suppressed in exchange relationships. To this end, parties mutually consider each party's interest in the exchange as they make decision (Liu *et al*., 2009; Barney and Hansen, 1994). Relational norms serves as reference through which parties behave in a desirable and expected ways (Liu *et al*., 2009; Cannon *et al*., 2000). As Liu *et al.* (2009) and Poppo and Zenger (2002) posit, both trust and relational norms drive commitment of exchange parties and attenuate opportunism.

Notwithstanding the usefulness of social control mechanism in ensuring productive exchange relationships, it suffers from some limitations. First, as Das and Teng (1998) and Dyer and Singh (1998) observe, social norms and trust require extensive time and resources to develop. Second, social control may be fragile as it can be that such bond may be dismantled easily (Barber, 1983). Third, the ambiguous nature of it makes it susceptible to being abused by opportunistic parties (Cao and Lumineau, 2015; Dyer and Singh, 1998).

Management literature indicates that, both formal control and social control mechanisms may be employed to address the notion opportunism while improving commitment (Hoetker and Mellewigt, 2009; Poppo and Zeuger, 2002; Heide and John,

1992; Gulati, 1989; Williamson, 1975).The fundamental motivation underpinning the use of GMs in exchange relationships is to discourage opportunism thereby inspiring commitment. The notion of opportunism is discussed in Section 2.4.2.5.

2.4.2.4.3 Relationships between Formal and Social Controls Mechanism

As has been discussed in governance literature, both formal and social control GMs have their strength and limitations. Given this, prior studies have investigated the interplay between both mechanisms and suggested for their joint utilisation to govern inter-firm relationships (Cao and Lumineau, 2015; Huang *et al.*, 2014; Mahapatra *et al.*, 2010; Zhang and Keh, 2009; Poppo and Zenger, 2002; Dyer and Singh, 1998). In their Meta-analytic investigation into inter-organisational governance, Cao and Lumineau (2015) provide empirical evidence on the interplay between formal and social control governance. Two opposing views are presented in their review on the interplay between these GMs: 1) the view that formal and social control mechanisms are substitute to each other, and 2) the complementary relationship between the two governance (Cao and Lumineau, 2015).

Researchers that hold the view of substitute relationship between the two controls contend that there are two main principles underpinning the substituting relationship of formal and social control mechanism: i.e., "replacing" and "dampening" (Cao and Lumineaau 2015; Huber *et al.*, 2013). Building on the work of Huber *et al*. (2013), Cao and Lumineau (2015) explain the replacing mechanism to mean that both formal and social control have functional equivalence, a characteristic underpinning the substitutability of the two control mechanisms. In particular, they argue that when social control mechanism is well developed, inter-firm exchanges can be managed effectively without the need for formal control and thus renders formal control redundant (Wang

et al., 2011; Galati, 1995). The dampening mechanism on the other hand explains the notion of substitution as a phenomenon caused by the "pernicious effect" of one type of control on the strength of the other (Huber *et al.*, 2013). The logic of this argument lies in the belief that the use of formal contract signifies lack of trust among exchange parties, a phenomenon that jeopardises the development of social and relational harmony in exchanges (Malhotra, 2009).

Contrary to the views that formal and social control mechanisms substitute each other, other studies support the views of complementarity between the two (Poppo and Zenger, 2002; Cannon *et al*., 2000). Highlighting on the argument of this school of thought, Cao and Lumineau (2015) explain the logic underpinning the complementary relationship between these controls. First, a well-developed contract may induce confidence among the exchange parties in the cooperative union, which in turn inspires trust building and development of social norms (Cannon *et al*., 2000; Poppo and Zenger, 2002). Second, by its nature, formal control specifies the obligations, commitment and sanctions associated with violations and opportunism. These terms and conditions characterising formal control reduce opportunistic behaviour and build healthy atmosphere for developing relational or social norms (Yang *et al*., 2012). As Blomqvist *et al*. (2005) suggest, trust building and mutual understanding improve from the contracting process.

Third, as Bastl *et al*. (2012) note, trust building between exchange parties could create "win-win" culture and mind-set, thereby facilitating formal contracting process. The mechanisms through which the complementarity between formal and social control mechanism manifests are referred to as the "enabling mechanism (Cao and Lumineau,

2015) in the sense that one type of control provides facilitating conditions for the other. Cao and Lumineau (2015) argue that beside the enabling mechanism, formal and social controls compensate each other to the extent that the limitations of one type may be addressed by the strength of the other when the two types of controls are used simultaneously. This situation is referred to as "compensating mechanism" (Cao and Lumineau, 2015).

More nuanced explanations about formal and social control mutuality have been provided in literature (Malhotra, 2009). These studies have argued that the complementarity and the substitute characteristics of formal and social control is largely a matter of context. Cavusgil *et al*. (2004) assert that legal hostility context leads to greater reliance on restrictive measures and controls through formal contracts. To illustrate, legal systems are likely to influence the effectiveness of formal contract as a governance tool. For example, when regulations are not properly enforced in an environment, a formal contract cannot be wholly relied upon to manage exchange relationships. In other words, when there is no recourse to any law, channel members tend to use informal GMs such as trust or social control to ensure transaction efficiency (Cavusgil *et al*., 2004).

This explains the importance of trust building in exchange relationships. In a collectivist cultural environment, the use of relational or social control is more likely to complement formal control mechanism given the social cohesion and harmony that prevail in such cultures. Again, in an environment where professionalism and sense of industrial best practice is admired, firms are likely to use formal control in inter-firm relationships to ensure that parties follow due process of industrial practices and ethics such as meeting the International Standard Organisation quality standards, and

accounting and audit standards. In supply chain context, the level of complexity represents a key contextual factor that may affect formal and social control relationship.

Olander *et al.* (2010) extend the argument in the inter-firm governance literature when they view the interplay relationship between formal and social control GMs from the perspective of stages or phases of inter-firm exchange relationships. According to them, exchange transactions, such as buyer-supplier R&D collaborative project consists of three distinct phases: exploration, development and finalisation phase. In the exploration phase, since the value-creation potential is not yet clear, collaborative efforts of the parties is key to explore the prospects and wealth creation potentials of the project. The development phase represents the period when both parties perceive the potential value creation and provide motivation for collaborative development of solutions to a given problem. Usually, this phase is characterised by testing and piloting activities. In the finalisation phase, the outcome of the collaboration begins to crystalise and commercial benefits become clear (Olander *et al.*, 2010).

Olander *et al*. (2010) further argue that categorising collaborative exchange project into these phases help identify where formal and social control mechanism are most needed for their efficient configuration. For example, they argue that in the exploration phase, where uncertainty is high because parties are not yet clear with their future goals, social control or trust is beneficial as it helps decrease risks related to transaction costs, foster goodwill and enable conflict resolution, and ultimately, facilitates development of the exchange relations. In the development phase, both GMs are needed. In particular, the use of formal control ensures predictability and stability of the exchange, thereby facilitating flow of information and knowledge sharing. This galvanises the foundation for commitment and trust building in the relationship (Deakin *et al*., 1997). Again,

given that contracts cannot cover every contingency (as results of human's bounded rationality [Cao and Lumineau, 215; Williamson, 1985]), the use of social control helps in dealing with such eventualities. In the finalisation stage, where wealth creation potential becomes evident (Olander *et al*., 2010), formal control governance is likely to be strong as it defines the distribution of wealth and benefits. Lack of clear rules of parties' rights at this stage may lead to conflicts and jeopardise trust building for subsequent transactions between the parties. At the same time, social control is important for trust building and to an extent determine the possibility or otherwise of future collaborations (Olander *et al.*, 2010).

2.4.2.5 Opportunism in Inter-firm Relationship

As pointed out in the preceding section, one of the key motivations underlying the use of GMs in inter-firm relationships is to discourage opportunism while increasing commitment and compliance. Opportunistic behaviour has negative consequences on exchange relationships (Poppo *et al*., 2016; Huang *et al*., 2014) because dealing with it requires considerable resources that could have been deployed in other productive ventures (Wathne and Heide, 2000). Drawing on TCE arguments, opportunism has been defined as "self-interest seeking with guile" (Williamson, 1975, p.6). The notion of guile is key in discussing opportunism as a phenomenon. Building on the earlier work, (Williamson, 1985, p.47) explains guile to include "lying, stealing, cheating and calculated effort to mislead, distort, disguise, obfuscate or otherwise confuse". These characteristics of opportunistic tendencies underscore that human beings are inherently self-interest seeking (Wathne and Heide, 2000; Douglas, 1990) and could hardly be relied upon in economic exchanges (Williamson, 1993; John, 1984). Masten (1988) describes this as "blatant" form of opportunism and may manifest itself in one of two forms: (1) through deliberate misrepresentation of various kinds during formation or

initiation of relationship (ex-ante) and (2) through various forms of breaches and infractions in the course of the relationship (ie, ex post) (Wathne and Heide, 2000; Williamson, 1985). Inter-firm governance literature indicates that opportunism may be active or passive (Masten, 1998; Shell, 1991).

2.4.2.5.1 Passive and Active Opportunism

In an ongoing exchange relationships, blatant opportunism may manifest in both passive and active manner as mentioned in the previous section. These occur when parties shirk or evade their responsibilities and obligations. Thus, when a channel member simply fails to honour contractual obligations, passive opportunism is demonstrated to the extent that there is a deliberate intention to withhold efforts or information (Griesinger, 1990; Masten, 1998). Active opportunism on the other hand manifests when parties to an exchange deliberately violate contractual obligations (Wathne and Heide, 2000; Heide *et al*., 1998). In other words, whereas passive opportunism involves evasion or withholding of efforts or information, active opportunism manifest in deliberate violation or misrepresentation of material facts (Wathne and Heide, 2000; Rousseau, 1995). Thus, drawing on Williamson's (1985), an explicit contract may suffer opportunism either actively or passively. On the other hand, there may be violations and breaches that do not pertain to any formal contract. Williamson (1991) describes such behaviours as lawful opportunism (Williamson, 1991).

2.4.2.5.2 Circumstances of Opportunism

Manifestations of active or passive opportunism may take place under one of two circumstances: (1) existing exchange circumstance and (2) new circumstance arising from exogenous factors (Wathne and Heide, 2000). Under the existing circumstance,

opportunism occurs when a party to exchange evades his or her obligations such as failing to comply with the requirements. In the context of supply chain, for example, a supplier may fail to deliver supplies in the right quality standard or at the right time. To the supplier, such action may accrue benefits in terms of cost saving in the short-term. However, in the long-term, the action could potentially lead to loss of revenue or adversely affect wealth creation to the relationship because of customer dissatisfaction. Thus, revenue to both parties will be eroded and mutual goals of benefits will suffer in effect (Wathne and Heide, 2000).

When the circumstance of existing or ongoing exchange changes (due to some exogenous events, such as changes in state regulation, market dynamics leading to a shift in industry norms, and technological evolution), an opportunistic party may fail to adapt to the changing circumstances. The inflexible stance or posture of the opportunistic party typifies the manifestation of passive opportunism in the new circumstances. Although, the behaviour may earn the opportunistic party some revenue in the short-term, in the fullness of time, expected revenue will decline. For example, a supplier may fail to restructure its operations to meet the changing needs of technology such as in e-procurement). Similarly, in the banking sector, a shareholding institution may fail to cooperate in raising additional equity to meet the new recapitalisation policy requirements. These situations may lead to competitive disadvantage because of one party's rigid posture. In the end, the overall wealth creation process is likely to be adversely affected to the detriment of the exchange (Wathne and Heide, 2000).

Active opportunism under existing circumstance manifests in the form of one party engaging in actions that are prohibited under contractual arrangements. It represents a clear violation or breach of agreed terms and conditions in an ongoing exchange

(Wathne and Heide, 2000). In the context of supply chain, a distributor who fails to comply with restrictions on resale of certain product lines or deal with some unapproved categories of customers in a particular territories or markets demonstrates active opportunism under existing exchange circumstance (Wathne and Heide, 2000). Active opportunistic behaviour increases cost for the victim party in terms of investment in monitoring, which erodes revenue generation for the exchange.

Under new circumstances, active opportunism occurs when one party capitalises on the new circumstance to extract concession from the other party of the exchange who may have little or no option to pull from the relationship, a behaviour that leads to redistributing the wealth in accordance with the concessions being sought for (Wathne and Heide, 2000). In particular, the opportunistic party under such a circumstance exploits the situation by compelling the other party into force renegotiation to its (opportunistic party) advantage. In other words, the (opportunistic) parties take advantage of the emerging circumstances at the expense of the relationship. Thus, passive and active forms of opportunism in both existing and new circumstances adversely affect worth creation and distribution (Wathne and Heide, 2000; Klein, 1980).

2.4.3 The Concept of Supply Chain Complexity

As an inherent phenomenon of supply chain (Choi and Hong, 2002; Bozarth *et al*., 2009), complexity represents a key supply chain factor that affects operations. Sahin and Robinson (2002, 2005) argue that sustained operational performance is attained through effective and seamless integration and coordination of business functions of channel members across the value chain. However, the dynamic, multi-functional, and global nature of supply chain and the associated multiplicity of firms, processes, and

flows render supply chain structures particularly complicated (Manuj and Sahin, 2011), a phenomenon referred to as complexity (Choi and Hong, 2002; Mentzer *et al*., 2001; Choi *et al*., 2001;). Prior research has identified supply chain complexity as a key strategic and operational challenge confronting supply chain practitioners (Choi and Krause, 2006).

Complexity has been conceptualised in varied ways (see Table 2.5) in extant literature depending on the specific field of discipline (Bode and Wagner, 2015; Jacobs and Swink, 2011). Bode and Wagner (2015) describe complexity as an elusive construct linked to a system of elements. Key definition that seems to have influenced the operationalisation of complexity in literature is that provided by Simon (1962) from social science perspective when he referred to complexity as "social technical system is complex if it is made up of a large number of parts that interact in no simple way" (P.468). This definition has become pivotal to subsequent conceptualisation of complexity.

In particular, Simon (1962) brings out two key characteristics of complexity—structure and behaviour (Bode and Wagner, 2015; Burnes, 2005; Anderson, 1999). While the structural characteristic, also termed as the static or detail complexity (Bode and Wagner, 2015) refers to the number and variety of elements that define a particular system, the behaviour, otherwise described as dynamic or operational complexity (Bode and Wagner, 2015), is the interaction between the elements of the system (Lu and Shang, 2017; Bode and Wagner, 2015). These characteristics of complexity, though distinct, are interrelated in the sense that the degree of interaction corresponds with the number of elements. As such, an increase in the number of elements within a system leads to corresponding increase in the interactions within a system (Bozarth *et al*.,

2009). The two dimensional view of complexity—the number of elements (numerousness) and interactions are seen in other conceptualisation. For example, Casti (1979) conceptualises complexity in terms of "(a) the mathematical structure of the irreducible component sub-systems of the process and (b) the manner in which the components are connected to form the system" (see P.41).

Yates (1978) however extended the two-prong view of complexity and conceptualises it in terms of five attributes (1) significant interactions, (2) high number of component parts or interactions, (3) nonlinearity, (4) broken symmetry and (5) non-holonomic constraints. Yates (1978) submits that nonlinearity arises when the response of the system to a given input is disproportional. On the other hand, a symmetry of the system or non-holonomic constraints arise when one or more portions of a system fall outside the central control system (Bozarth *et al*., 2009). Flood and Carson (1988) also argue that the last three of Yates's (1978) five attributes constitute higher-order complexity as they render a system difficult to predict.

In supply chain context, high order complex system arises when there are multiple downstream demand points that independently place orders in a centralised supply point without considering the constraints or the needs of other demand points (Bozarth *et al*., 2009). In this respect, although orders are made based on existing policies of inventory (same inputs), it may have varying impact depending on the state of the supply chain (Bozarth *et al*., 2009).

Price (1972) also define complexity as the structural differentiation or variety characterising an organisation's operations. This definition assumes that complexity may arise from a number of subsystems or from the structures of internal organization. For example, the number of departments or functions and how they are linked together

define how complex an organization is (Choi and Hong, 2002; Dooley, 2001). Table 2.5 presents definitions of complexity from across a number of disciplines including product design, organisational design and behaviour, organisational theory, supply chain among others.

The definitions are broadly based on three dimensions—multiplicity, diversity and interrelatedness. From product design perspective, complexity is defined in terms of multiplicity (numerousness) of components and interrelatedness (Ramdas, 2003; Tatrikonda and Stock, 2003; Kaski and Heikkila, 2002; Baldwin and Clark, 2000; Gupta and Krishnan, 1999). From organisation design and behaviour perspective, complexity has been conceptualised based on multiplicity and diversity of system components (see e.g. Scott, 1992; Price and Mueller, 1986; Payne, 1976). In operations research and supply chain operations management disciplines, complexity is conceived as the multiplicity or numerousness of elements of a system (Bozarth *et al*., 2009; Choi and Krause, 2006; Novak and Eppinger, 2001). These conceptualisations, as presented in Table 2.4 apply to different objects and in different disciplines. Yet, they are similar to the extent that they generally define complexity based on multiplicity, diversity and interrelatedness of components or elements of a system (Bozarth *et al*., 2009).

Other studies have drawn on organisational theory to define structural complexity in terms of horizontal, vertical and special or dispersion (see Lu and Shang, 2017; Bode and Wagner, 2015). Horizontal complexity refers to the number of different organisations within a particular tier of supply network. On the other hand, vertical complexity refers to the number of levels or tiers in the system while spatial complexity involves the number of operating locations. In other words, spatial complexity is a

measure of the degree of dispersion of elements or components within a system (Price and Mueller, 1986; Price, 1972). The validity of this conceptualisation manifests in SCM literature (see Bode and Wagner, 2015 Bozarth *et al*., 2009; Choi and Hong, 2002,). Drawing on organisational theory, and building on Choi and Hong's (2002) conceptualisation, Bode and Wagner (2015) focus on upstream and conceptualised supply chain structural complexity in terms of three dimensions; horizontal, vertical and spatial. In applying this framework in supply chain context, Choi and Hong (2002) and Bode and Wagner, (2015) explain horizontal complexity as the number of suppliers in a particular tier, vertical complexity as the number of tiers in a particular supply chain whilst spatial complexity is referred to as the geographical distance between focal firm and its supplier (the degree of dispersion).

Similarly, Choi and Krause (2006, p. 641), focusing on upstream aspect of supply chain define supply base complexity as "the number of suppliers in the supply base, the level of supplier interaction, and the degree to which these suppliers vary in terms of organizational culture, size, location, technology and so on". Thus, as the number of suppliers increases within the supply base, the likelihood of variations and level of interactions also increase. By extension, the operational burden or "load" borne by the focal organization in managing the supply base becomes particularly amplified (Choi and Krause, 2006). Such operational burden or load reflects in the transaction cost associated with managing the supply base such as engaging in frequent interactions and devising strategies to address issues of uncertainty. Thus, the level of complexity has implication on transaction cost (Choi and Krause, 2006).

Departing from the upstream-focused conceptualisation in SCM literature (Lu and Shang, 2017; Bode and Wagner, 2015; Choi and Krause, 2006), Bozarth *et al*, (2009) broadens the scope of definition of supply chain structural complexity to encompass

upstream, focal organization and downstream of supply chain. In line with Vachon and Klassen (2002) who defined supply chain complexity as comprising numerousness, interconnectivity and system unpredictability, Bozarth *et al*. (2009) conceptualise supply chain complexity as "the level of detail complexity and dynamic complexity exhibited by the products, processes and relationships that make up a supply chain". Bozarth *et al*.'s (2009) definition of supply chain complexity is developed in terms of internal complexity, upstream complexity and downstream complexity. Internal complexity is concerned with internal products, processes, functions, and planning and control systems of the focal organization. By contrast, downstream complexity involves the number of customers and the heterogeneity of their needs, while upstream complexity has to do with the number of supplier's relationships that must be managed.

Thus, from various conceptualisation (as shown in Table 2.6), it can be concluded that supply chain SNC involves the number of customers and suppliers that make up the supply chain as well as the internal process, products and functions managed by the focal organization. In other words, supply chain complexity is concerned with management system complicatedness involving the numerousness of suppliers, customers as well as products and associated processes. Drawing on the foregoing conceptualisation (see Table 2.6), this study defines SNC as the extent of the numerousness of actors characterising a firm's network (Birkie *et al*., 2017; Bozarth *et al*., 2009; Vollmann *et al*., 2005; Sivadasan *et al*., 2002; Choi and Hong, 2002).

Table 2.6

: Definitions of Complexity

Discipline	Source	Definition	Dimension
Product Design	Baldwin and Clark (2000)	Complexity is proportional to the total number of design decisions	M
	Griffin (1997)	Complexity is represented by the number of functions designed into a product	*M*
	Kaski and Heikkila (2002)	Complexity is represented by the number of physical modules and also by the degree of interrelatedness	M
	Gupta and Krishnan (1999), Ramdas (2003)	Complexity is represented by the number of components in the product	M
	Tatikonda and Stock (2003)	Complexity is proportional to the interdependence of technologies	I
Organizational Design	Blau and Shoenherr (1971)	Complexity is manifested by the number of structural components that are formally distinguished	M
	Price and Mueller (1986)	Complexity is manifested by the degree of formal structural differentiation	D
	Scott (1992)	Complexity is proportional to the number of elements that must be addressed simultaneously	M
Organizational Behaviour	Payne (1976)	Complexity is proportional to the number of choices presented a worker	D
Complex Systems	Simon (1962)	Complexity is manifested in a system comprised of a large number of parts that interact in a non-simple way	M, I

Table 2.6

	Klir (1985)	Complexity is manifested in a system containing differentiation and connectivity	D, I

: Definitions of complexity (continued)

Management Information Systems	Meyer and Curley (1991)	Complexity is proportional to the depth and scope of technical activities required for a process	M
Operations Research	Eglese *et al*. (2005)	Complexity is a synonym for difficulty which is Proportional to the number of constraints applied to possible solutions to a problem	M
Information Processing Theory	Campbell (1988)	Complexity is a function of the diversity of information and the rate at which information changes.	D
Organizational Theory	Child (1972)	Complexity is manifested by the heterogeneity and range of an organization's activities	M, D
Organizational Theory	Aldrich (1979)	Complexity is represented on a continuum of homo to heterogeneous and concentration to dispersion	D

Table 2.6

: Definitions of complexity *(continued)*

Supply Chain Operations Management	Choi and Krause (2006)	Complexity is manifested in the varied number of types of suppliers and their interactions.	M
Supply Chain Operations Management	Bozarth *et al*. (2009)	Detail complexity is the distinct number of components or parts that make up a system, while dynamic complexity refers to the unpredictability of a system's response to a given set of inputs, driven in part by the interconnectedness of the many parts that make up the system.	M
	Fisher *et al.* (1999)	Complexity is manifested by a number of systems and the rate at which products in the portfolio are replaced	M
	Novak and Eppinger (2001)	Complexity is represented by the number of components within a product, extent of interactions, and degree of product novelty	M

M=Multiplicity, D= Diversity, I = Interrelatedness
Source: Jacobs and Swink (2011)

Table 2.6

2.4.3.1 Types of Complexity

Extant literature has identified various elements that define and drive supply chain complexity. These elements and drivers have been used to categorise and label complexity into various types (Wycisk *et al*., 2008; Craighead *et al*., 2007; Meepetchdee and Shah, 2007; Choi and Krause, 2006; Blackhurst *et al*., 2005; Perona and Miragliotta, 2004; Vachon and Klassen, 2002; Choi *et al*., 2001; Choi and Hong, 2002; Stock *et al*., 2000; vanDonk and vanDam, 1996; Funk, 1995; Rao and Young, 1994). Table 2.7 provides summary of types of supply chain complexity and their associated sources.

Table 2.7: Summary of types of Supply Chain Complexity

Study	Type of complexity	Source of complexity
Forrester (1958)	System (supply chain) Complexity	Channel members ordering decisions
Funk (1995)	Logistical complexity	Number of manufacturing steps, part numbers
Rao and Young (1994)	Global logistics Complexity	Network, process, and product
van Donk and van Dam (1996)	Scheduling complexity	Number of products, production lines, machine, and labour constraints
Wilding (1998)	Supply chain Complexity	Deterministic chaos, parallel interactions, demand amplification
Choi *et al*. (2001) and Choi and Krause (2006	Supply base complexity	Number of suppliers, degree of differentiation among suppliers, level of interrelationships between suppliers
Vachon and Klassen (2002)	Supply chain complexity	Technology and information processing
Choi and Hong (2002)	Network complexity	Horizontal, vertical, and spatial complexity
Faber *et al*. (2002)	Warehouse complexity	Number and variety of items handled, degree of interaction between items, and the number, nature, and variety of processes
de Koster (2002)	Distribution operations Complexity	Assortment type, assortment width, and number of weekly orders
Blackhurst *et al*. (2005)	Supply chain complexity	Multiple levels of suppliers, large network of manufacturers/distributors, involvement with other supply chains, change/dynamic nature
Sivadasan *et al*. (2002, 2006)	Supplier-customer system complexity	Operational and structural complexity.
Craighead *et al*. (2007)	Supply chain complexity	Number of nodes/flows
Meepetchdee and Shah (2007)	Logistical complexity	Degree of connectivity

Bozarth *et al*. (2009)	Supply chain complexity	Detail and dynamic complexity; downstream, manufacturing, and upstream complexity

Source: Manuj and Sahin, (2011)

2.4.3.2 Dimensions of Supply Chain Complexity

Prior studies have conceived supply chain complexity into various forms of dimensions (Lu and Shang, 2017; Bode and Wagner, 2015; Bozarth *et al*., 2009; Choi and Krause, 2006). While some of the classification focused on sub-systems or sections of supply chain such as upstream (see e.g. Lu and Shang, 2017; Bode and Wagner, 2015; Choi and Krause, 2006), others look at the entire supply chain structure (Bozarth *et al*., 2009). Choi and Krause (2006) viewed complexity by focusing on the supply base of supply chains. Specifically, they conceived supply base complexity into (1) the number of suppliers in the supply base, (2) the degree of differentiation of these suppliers and (3) the level of inter-relationships among the suppliers.

They refer to the number of suppliers as the current suppliers within the supply base of the focal organization. In other words, the number of suppliers are those the focal firm have business relationships with. In this respect, the degree of complexity is determined by how large the number of suppliers are. This implies that using multiple suppliers for a single part or component requires more efforts of coordination. On the other hand, few supply base reduces complexity and level of coordinating efforts (Choi and Krause, 2006).

By contrast, supplier differentiation is concerned with different characteristics that exist among the suppliers in the supply base. These may include differences in organizational culture, operational models, technical capabilities and geographical locations. The lower the degree of differentiation, the less the complexity and coordinating efforts required to achieve performance (Choi and Krause, 2006). For example, suppliers with

the same organizational culture and norms will require little effort from the focal firm to manage. On the other hand, when a focal firm deals with suppliers with different operational models (e.g. some operating on pull system while others on push system) requires a lot of coordinating efforts as complexity is high. Similarly, technological and geographical distance among suppliers increase complexity and efforts required to manage (Choi and Krause, 2006).

Choi and Krause's (2006) third dimension of supply base complexity focuses on interrelationships among suppliers. Choi and Krause (2006) observe that supplier to supplier relationships induce complexity into the supply base network. For instance, when interrelatedness among the supplying firms moves beyond the dyadic level (one supplier to one supplier) to two or more suppliers competing against one another to supply another supplying firm, the dynamic of the supply base becomes more complex to manage (Choi and Krause, 2006; Wu and Choi, 2005). Thus, the level of supplier to supplier relationship affects supply base complexity. Bode and Wagner (2015), focusing on upstream stage of supply chain, classified complexity into three dimensions: horizontal, vertical and spatial complexity. Unlike organizational theory that associates horizontal complexity with skill and knowledge specialisation in an organization (Draft, 2006), Bode and Wagner (2015) linked horizontal complexity to the number of suppliers the focal firm directly deals in the upstream of supply chain. This corresponds to Choi and Krause's (2006) number of suppliers dimension where complexity arises from large supply base because no supplier is perfectly reliable when the number of suppliers is huge. In other words, uncertainty amplifies under horizontal complexity, thereby frustrating planning and undermine operational performance (Choi and Krause, 2006).

On the other hand, vertical (or hierarchical complexity as organizational theory conceives) (Taibert and Hall, 2009) refers to the number of tiers within the upstream stage of supply chain (Bode and Wagner, 2015). The larger the number of tiers in the upstream, the lesser visibility and transparency become, and the more the complexity and its associated uncertainty (Choi and Hong, 2002; Milgate, 2000). Thus, when the number of tiers increases, knowledge about what lies beyond the first-tier suppliers becomes limited, making it difficult for the focal company to make decisions. Spatial complexity refers to how disperse suppliers within the supply base are (Choi and Hong, 2002; Vochon and Klassen, 2002). In particular, it measures the distance between the focal firm and the supplying firms engaged in the supply base. From the supply chain context, spatial complexity induces more uncertainty arising from variability in leadtime, regulatory condition (institutional distance) technological and cultural incompatibility. Thus, transaction cost increases when dealing with geographically distant suppliers (Bode and Wagner, 2015).

Focusing on the entire supply chain, Bozarth *et al*. (2009) also conceived complexity in terms of internal, upstream and downstream of supply chain. They refer to internal complexity as the level of detail and dynamic complexity within the focal firm's facility. This complexity reflects in the products, processes and planning and control system of the focal firm (Bozarth *et al*., 2009). Key drivers of internal complexity include the number of functions, processes and the stability of manufacturing schedule. Increase in the scope of the focal firm's operations induces more complexity and uncertainty internally (Bozarth *et al*., 2009; Flynn and Flynn, 1999).

By contrast, downstream complexity refers to detail and dynamic complexity arising from the focal firm's downstream market, and it is linked to the number of customers,

the diversity and variability of customer needs and demands, and the average length of product life cycle (Bozarth *et al*., 2009). As Vollmann *et al*. (2005) observe, downstream complexity is a function of the number of customers and the degree of diversity of their needs and demands. As customer base increases, the magnitude of relationship management tasks, demand management task and order management task increase in scope and induce complexity and uncertainty within the network. Again, complexity within the downstream is driven by the fact that customers differ in terms of needs and potentially create conflict in manufacturing schedules and decisions (Bozarth *et al*., 2009).

From product life cycle perspective, complexity is induced in two respects. First, as Fisher *et al.* (1999) and Krishinan and Gupta (2001) argue, shorter product life cycle and the corresponding increases in products parts and components over a period of time increases detail complexity. Second, variability in customer needs and taste and the associated demands for newer products exposes the focal firm's operation system to dynamic complexity since the operation system needs to be adjusted to accommodate such variability (Borzarth *et al*., 2009). Additionally, variability in customer demand is a potential source of dynamic complexity in the supply chain. This arises when there is lack of coordination in ordering policies at different points of the supply chain, resulting in bullwhip effect. The bullwhip effect and its resultant fluctuation in upstream ordering patterns as the demand at downstream varies exposes the supply chain dynamic complexity (Bozarth *et al.*, 2009; Chen *et al*., 2000).

Finally, upstream complexity results from the focal firm's supply base. Complexity at the upstream is induced by the number of supplier relationship to be managed, the variability of delivery lead time and the extent to which the focal firm engages in global

sourcing. Bozarth *et al*. (2009) submit that an increased number of suppliers necessarily lead to detail complexity due to the increasing volume of information flows, physical flows and the associated relationships needed to be managed. Also, variability and unreliable supplier lead-time also create complexity as such situations force the buying firm to review its safety stock level and order quantity policies. In particular, long unreliable lead-time increase dynamic complexity as it distorts production plans. Again, supply chain may also be exposed to complexity as the supply base extends globally.

Global sourcing exposes the focal firm to different forms of institutional factors such as import/export and tax regulations, exchange rate volatility, cultural issues and potentially long uncertain lead-time (Cho and Kang, 2001). Complexity in this regard manifest in the difficulty associated with managing such institutionally distant suppliers. This corresponds to the spatial complexity (Lu and Shang, 2017; Bode and Wagner, 2015). Relatedly, Christopher (2012) classified complexity in terms of network, process, range, product, customer and supplier induced complexities. Also, complexity may manifest in the form of organizational and information complexity (Christopher, 2012)

2.4.3.3 Supply Chain Complexity and Uncertainty

Supply chain complexity is known for its association with uncertainty in complexity literature (Bode and Wagner, 2015, Milgate; 2000). As uncertainty within supply chain increases, visibility level declines, rendering decision-making particularly difficult (Bozarth *et al*., 2009). Prior studies have linked uncertainty to supply chain complexity and indicated that the two are interrelated (Vachon and Klassen, 2002; Milgate, 2000). In particular, Bode and Wagner (2015) argue that horizontal, vertical and spatial complexities are likely to increase uncertainty and reduce transparency and visibility.

Thus, supply chain complexity distorts visibility and increase uncertainty (Bode and Wagner, 2015; Lu and hang, 2015). Lu and Shang (2017) argue that uncertainty is the reflection of the difficulty associated with predicting transaction outcome. In the context of supply chain, three types of uncertainty have been proposed to be associated with supply base: micro-level variation, meso-level information shortage, and macroequivocality (Flynn *et al.*, 2016).

Micro-level variation is rooted in the difficulty of predicting task execution arising from goods and information flow variation within the supply network (Germain *et al*., 2008). As Flynn *et al.* (2016) observe, variation increases transaction cost as it reduces predictability and makes planning and decision making particular difficult. In line with Flynn *et al.*'s (2016) observation, Lu and Shang (2017) assert that variation in delivery lead-time and demand increase cost of operation in the sense that such variations compel focal firms to adjust it operation schedules and plans. Thus, uncertainty arising from variations in the flow of goods and information undermine operational efficiency and effectiveness.

Meso-level information shortage form of uncertainty associated with supply chain complexity is caused by information shortage at the meso-level of the supply chain. Information shortage or asymmetry arises due to undesirable behaviours of supply chain actors. In particular, some members within the supply chain decide to withhold information, usually out of opportunism to satisfy their own interest (Shrivastava and Mitroff, 1984). Lu and Shang (2017) advance that meso-level uncertainty is particularly common with increased number of actors within the supply chain (both suppliers and customers) and variability in products and process. Wu and Barnes (2012) assert that with meso-level information shortage, assessing suppliers (and customers) become particularly challenging due to incomplete information. More specifically, meso-level

uncertainty is associated with the bullwhip phenomenon arising from incomplete or inaccurate information flow across the stages of the supply chain. Such phenomenon causes firms to hold extra inventory to compensate for the uncertainty, thereby increasing cost of operation (Lu and Shang, 2017).

Contrary to micro and meso-level uncertainties, macro-level equivocality is a form of uncertainty driven by ambiguous and ill-structured situations (Lu and Shang, 2017). Specifically, when the focal firm deals with multiple partners (suppliers and customers) from different geographical locations, with regulatory inconsistency (institutional distance), economic variation, market fluctuation and technological incompatibility, macro-level uncertainty or equivocality results (Lu and Shang 2017; Germain *et al*., 2008). Under such situation, the focal firm is faced with different forms of information from multiple partners, inconsistent regulatory, economic and market environmental conditions. This, coupled with bounded rationality (Simon, 1979), makes it difficult for the focal firm to make optimum decision. As Lu and Shang (2017) assert, macro-level equivocality is difficult to comprehend, yet, it has significant impact on transaction cost and operational efficiency. In particular, with spatial complexity, information processing becomes more challenging with geographically distant suppliers and customers, making transaction more difficult and costly (Bode and Wagner, 2015).

2.5 THE INSTITUTIONAL ENVIRONMENT AND FIRM PERFORMANCE LINKAGE: AN ASSESSMENT OF EMPIRICAL EVIDENCE

IE is recognised as key exogenous determinant of organizational survival and success within the broad spectrum of management literature (Liou *et al*., 2012). The impact of IE on firms' activities stems from the embeddedness of organisational activities in institutional and task environment (Ren *et al*., 2010; Oliver, 1997; DiMaggio and

Powell, 1983). Extant literature indicates that given such embeddedness of economic activities in institutional environment, organizational performance and survival largely depends on the extent of congruence of organizational activities with the values and expectations of the environment in which the organization operates (Grewal and Dharwadkar, 2002).

From institutional theory perspective, organizations that are isomorphic to institutional demands (operating in conformance with social values and demands) have greater chance of achieving superior performance and survival because such conformity grants them political approval and acceptance as well as institutional legitimacy to access resources and stay in business (Liou *et al*., 2012; DiMaggio and Powell, 1983). As prior studies suggest, a firm's ability to operate in conformity with institutional fields is critical to achieving performance and survival (e.g. Liou *et al*., 2012; Yaibuathet, *et al*., 2008; Bello, *et al*., 2004; Grewal and Dharwadkar, 2002;).

Within institutional and management literature, IE and their impact on organization activities have broadly been analysed either based on Scott's (1995) framework of three pillars: i.e., regulative, normative and cultural cognitive, or in terms of DiMaggio and Powell's (1983) isomorphic mechanisms: coercive, normative and mimetic forces. In specific terms, conformance to regulative pillar is a function of coercive isomorphic pressure (formal or informal demand placed on organizations by government and its agencies and other organizations). On the other hand, while adherence to normative pillar (arising from professionalisation) corresponds to normative isomorphic pressures, conforming to cultural-cognitive pillar of institutional fields corresponds to mimetic isomorphic pressure, which may be akin to the tendency of copying from conventional practices within the institutional fields (Lion *et al*., 2012).

Existing empirical works have demonstrated varying impact of IE dimension (whether in terms of pillar (Scott, 1995) or isomorphic mechanisms (DiMaggio and Powell, 1983) on organizational activities and performance. In international business literature, Kostova and Roth (2002) find that institutional profile (i.e. regulative, normative and cultural- cognitive pillars of host country impact foreign subsidiary's operations and by extension performance (Liou *et al*., 2012). Chang *et al*. (2008) find that regulatory pillar of IE has negative association with firm performance. Oliver (1997) also reports weak positive influence of regulatory institution on organizational performance. In their studies, Yaibuathet *et al*., (2008) empirically assessed the impact of IE on operational performance across China, Japan and Taiwan. They report that while normative and cultural-cognitive pillars of IE drive performances of firms in Japan and Thailand, regulatory and cultural-cognitive elements of IE explain changes in performance levels of firms in China.

Further, findings from other studies indicate that IE's impact on organizational strategy and performance are mixed depending on the nature of IE and how organizations respond to them (Hotho and Peterson, 2012; Draw and Kriz, 2012). For instance, Kobrin (2005) finds that normative pressures from NGOs and some Advocacy groups forced Taliman and Gil Multinational Company out of Sudan in 2003. Xu and Hitt (2012) also submit that firms that are able to adapt to institutional forces experience enhanced performance. They continue to explain that institutions differ across countries implying that their impact on performance may vary.

2.5.1 Regulatory Institutional Environment and Operational Performance Linkage

Several studies have investigated into the link between regulatory environment and firm performance and report mixed findings. While some studies find positive association between various forms of regulatory institutions (such as political instability and rule of law) and organisational performance, other findings indicate negative relationships. For example, Krammer *et al*. (2017) find regulatory institution to be positively related to firm performance. Similar findings are reported by other empirical studies (see e.g. Jai *et al*., 2018; Zhang *et al*., 2017; Zhang *et al*., 2015; Roxas and Chadee, 2013; Roxas *et al*., 2013; Zailani *et al*., 2012; De Jong *et al*., 2011; Geiger and Hoffman, 1998). However, there are some empirical studies that find the association between regulatory environment and firm performance negative (see Chang *et al*., 2014; Adomako and Danso, 2014; Batjargal *et al*., 2013; Chadee and Roxas, 2013; Sheng *et al*., 2011; Zhu and Sarkis, 2007). In fact, some other studies actually find very weak or no relationships between regulatory institutions and firm performance (see Li *et al*., 2008; Chung *et al*., 2016). Focusing on DiMaggio and Powell's (1983) dimensions of isomorphic mechanism, Huang and Yang (2014) identified positive association between coercive pressure and entrepreneurial growth but find contrary for that between mimetic and entrepreneurial success.

Again, further empirical review of IE and management literature suggests that regulatory institution moderates the relationship between firm performance and other variables. For example, Sheng *et al*. (2011) report that law enforcement inefficiency and government support positively moderate the relationships between both businesses and political ties, and firm performance respectively. Chung *et al.* (2016) corroborate this finding when they find that perceived regulatory constraints positively moderate

managerial intention-performance link. Similarly, Cheng *et al.* (2014) observe that regulatory institution enhances the association between government relations and performance. Other factors have been reported to moderate various forms of regulatory environment and firm performance. For example in Adomako and Danso (2014), both political ties and environmental dynamism moderate regulatory-performance relationship while Batjargal *et al*. (2013) find structural hole to moderate the relationship between regulatory environment and financial performance.

Despite several empirical studies on regulatory-performance relationship, the mechanisms through which the relationships between these variable manifest appear noticeably underexplored given that limited evidence abounds in extant literature. Chadee and Roxas (2013) argue that the effect of regulatory environment on firms is channelled through innovative capacity while entrepreneurial orientation and eco design partially mediate the relationship between regulatory environment and firm performance respectively (Roxas and Chadee, 2013, Zailani *et al*. 2012). Tables 2.8 through to Table 2.10 present evidence of empirical studies on regulatory institution and firm performance relationships.

Table 2.8: Studies that linked Institutional Environment with Firm Performance

Study and Theory Used	Dimension of IE used	Context	IE-Performance Relationships	Key Findings
Adomako and Danso (2014) (Institutional and social capital theories)	Regulatory Environment	Sub-Saharan Africa	Regulatory IE→ Performance	Regulatory environment is negatively related to firm performance.
Krammer *et al*. (2017) (Institutional theory, RBV)	Regulatory Environment (Political instability, Informal competition)	BRIC economies (Brazil, Russia, India and China)	Political instability and Informal competition → export performance	Political instability positively affects export performance
Huo *et al*. (2013) (Institutional theory)	Normative, Mimetic, and Coercive	Chinese manufacturing industry	IE→ Integration outcome	Normative and Mimetic positively affect Integration outcome while coercive negatively affect Integration
Chadee and Roxas (2013). (Institutional theory)	Regulatory Environment (Regulatory quality Rule of law, Corruption)	Russia	Regulatory Environment → performance	Regulatory quality, rule of law and corruption have strong direct and negative impacts on performance of firms.
Roxas and Chadee (2012) (Institutional theory)	Regulatory Environment (Court system, Political stability, Corruption Crime and theft and Tax administration)	South Africa	Rule of Law → Performance	While Crime, theft and tax administration inhibit business performance, Political instability and the court system were not
Zhu and Sarkis, (2007). Institutional theory	Regulatory	China	Regulatory → Organizational performance	Regulatory IE has negative association with organisational performance but it indicates no moderating effects on performance

continued)

Table 2.8: Studies that linked Institutional Environment with Firm Performance (

Li *et al.* (2008) No theory	Political connection	China	Political connection → firm performance	Political connection has positive effect on firm performance
Batjargal *et al.* (2013) Institutional polycentrism and social network theory	Formal institution Regulatory, economic institutions (composite)	China, American, French, and Russian	Institution → Revenue Growth	Formal institutional order has negative effect on revenue growth
Sheng *et al*. 2(011)[1] Institutional theory	Enforcement inefficiency, Government support,	China	Enforcement inefficiency and government support → firm performance	Enforcement inefficiency negatively Relate with performance, government support positively Relate with performance
Jia *et al*. (2018)[2] Institutional Theory	Government relation Government interference Legal protection Importance of guanxi	China	IE → firm performance	Government relation, positive insignificant relationship with performance; Government interference, Negative significant relationship with performance; Legal protection, positive significant relationship with performance Guanxi, negative and insignificant

[1] Business and political ties were the independent variable while the IE variables, i.e. enforcement /gov. support were used as moderators

continued)

Table 2.8: Studies that linked Institutional Environment with Firm Performance (

Chung *et al.* (2016)[2] Institutional theory	Environmental Regulation Constrains	China	IE → Sustainable Performance	Regulation Constrains alone is not related to performance
Roxas *et al*. 2(013). Institutional theory	Formal institutions Rule of law Regulatory quality Access to finance	Philippines	Formal institution →Firm performance	Formal institutions (Rule of law, Regulatory quality, Access to finance) have positive significant effect on performance
Zhang *et al*. (2017). Institutional theory	Institutional Support	China	Institutional support → firm Performance	Institutional support positively affects product and process innovation and firm performance
Sigmund *et al*. (2013) Institutional theory	Formal Institutional Environment	Germany and Brazil	Institutional Environment → Financial Performance	There is insignificant positive relationship between Formal Institutional Environment and *Financial Performance*
Huang and Yang, (2014) Institutional theory	Regulatory environment (coercive) and Mimetic	Taiwan	Environment → economic and environmental performance	Regulatory (coercive) pressures have significant positive relationships economic and environmental performance. While that for mimetic (competitor pressure) is negative.

[2] Managerial Intention: Proactive and Protective were the independent variables

continued)

Table 2.8: Studies that linked Institutional Environment with Firm Performance (

de Jong *et al*. (2011) Institutional theory	Formal institutions: International trade promotion policies; Flexibility of labour regulations; Investment promotion policies; Efficiency of law enforcement system	European countries	Formal institutions → *Performance*	Except for International trade promotion policies All the dimensions of formal institutions foster MNE performance
Li and Sun, (2017) Institutional theory	Formal institution (national institutional constraints)	China	Formal institutions → firm *Performance*	Formal institution (national institutional constraints has weak positive relationship with foreign firm Performance
Testa *et al.* (2011) Revisionist view	Direct regulation (command and control)	European countries	Direct regulation→ green business performance	Direct regulation has a strong and significant effect on green business performance.
Wu and Chen (2014). Institutional theory	Formal IE: Institutional development, Institutional instability	China	Formal IE→ firm's propensity of foreign expansion	Institutional development positively affect the propensity to expand to advanced markets. Institutional instability (IS) negatively relates to a firm's propensity of foreign expansion

continued)

Geiger and Hoffman, (1998). No particular theory	Regulatory environment	USA	Regulatory environment → firm performance	The relationship between regulatory environment and performance (Return on Total Capital) was positive and significant, and positive, but not significant on Return on Asset dimension of performance.
Zailani *et al*. (2012). Institutional theory	External Institutional Drivers: Regulation and Incentive	Manufacturing firms in Malaysia	External Institutional Drivers →Environmental Performance Outcome.	External Institutional Drivers have significant positive relationship with performance.

Table 2.8: Studies that linked Institutional Environment with Firm Performance (

Roxas and Chadee (2013) Institutional theory	Rule of law, Regulatory quality, Government policy Business support	Philippines	Regulatory → firm performance	The four institutional constructs have positive statistically-significant relationships with firm performance while entrepreneurial orientation partially mediates the relationships between the four formal institutions and firm performance.
Chen *et al*. (2014)[3] Socio-emotional wealth (SEW) theory	Regulatory environment	International Evidence	Regulatory environment → entrepreneurial growth	Regulatory environment have a substantially greater negative effect on entrepreneurial growth for family firms compared to nonfamily firms.
LiPuma *et al*. (2013). Institutional theory	- government intervention, the court system, and tax regulations	World Business environment	Regulatory environment → Performance	higher-quality institutions in the areas of government intervention, the court system, and tax regulations are positively related to export performance

[3] Family control was independent variable

continued)

Tate *et al*. (2014). Institutional theory	Institutional pressuresCoercive Normative Mimetic	Manufacturing Firms	Institutional pressures→ environmental practices	Institutional pressures-Coercive Normative Mimetic have insignificant positive effect on environmental practice
Yaibuathet *et al*. (2008) Institutional theory	IEs (regulative, normative and cultural-cognitive)	China, Japan and Thailand	IEs → operational performance	IEs (regulative, normative and culturalcognitive) may positively affect performance level in Japan and Thailand. However, those IEs do not appear to have significant.

2.5.1.1 Summary and Comments

Summary of the literature on IE-performance linkage is presented in Table 2.8. Overall, institutional literature indicates that IE has been analysed based either on Scott's (1995) three pillars (regulative, normative and cultural-cognitive) or in terms of DiMaggio and Powell's (1983) isomorphic mechanisms (coercive, normative and mimetic). While some studies focus on the three pillars or dimensions of isomorphic mechanism (see Tate *et al*., 2014; Yaibuathet *et al.*, 2008) some studies look at aspects of these dimensions (see Li and Sun, 2017; Adomako and Danso, 2014; Roxas and Chadee, 2013). In particular, regulatory institution, the macro aspect of IE (and also classified as the formal institution) has received increasing attention (Martinez and Williams, 2012; Draw and Kriz, 2012). The literature of IE also shows that regulatory institution has been conceived into various sub-dimensions such as rule of law, government support, law enforcement, legal protection and regulatory constraints among others (Jia *et al*., 2018; Sheng *et al*., 2011; Li and Sun, 2017).

In sum, findings on the relationships between IE (and its components) and organizational performance are mixed. In particular, evidence on the regulatory environment and its association with organizational performance seems to suggest that regulatory environment might not always drive organizations' performance directly while in some cases; the former might predict or explain the latter positively. In some cases, regulatory institution are reported to have negative association with performance (Zhu and Sarkis 2007; Batjargal *et al.*, 2013; Adomako and Danso 2014; Chen *et al*., 2014; Sheng *et a*l. 2011) or no relationship (Chung *et al*. 2016).

Thus, empirical evidence on existing literature regarding the regulatory-organizational performance link indicates evidence of inconclusive (and in some cases conflicting)

findings. This reinforces the notion that the regulatory environment-performance relationship is still not clear and understood, suggesting that further investigation into the association between these variables is warranted. Consequently, some studies have sought to provide scholarly inquiry into the processes and boundary conditions that may explain the regulatory environment-performance link in literature. For example, while some studies (see Chadee and Roxas, 2013; Zailani *et al*. 2012 ; Roxas and Chadee, 2013) find that innovation capacity, eco-design and entrepreneurial orientation mediate the relationship between regulatory environment and performance outcomes respectively, others find dysfunctional competition (Zhang *et al*. 2017), market (Zhu and Sarkis 2007) and aspects of regulatory institution (Huang and Yang, 2014) as boundary condition in the IE–performance link. Tables 2.9 and 2.10 present summary of studies on mediation and moderation between regulatory environment and firm performance outcomes.

Table 2.9: Studies on mediation between Regulatory Environment and Firm Performance

Study and Theory Used	Dimension of IE used	Context	Mediation	IE-Performance Relationships	Key Findings
Chadee and Roxas (2013). Institutional theory	Regulatory Environment (Regulatory quality Rule of law, Corruption)	Russia	Innovation Capacity	Regulatory Environment → performance	Innovation capacity strongly mediates the effects of institutions on firm performance
Roxas and Chadee, (2013). Institutional theory	Rule of law, Regulatory quality, Government policy Business support	Philippines	Entrepreneurial orientation	Regulatory → firm performance	Entrepreneurial orientation partially mediates the relationships between the four formal institutions and firm performance.
Zailani *et al*. (2012) Institutional theory	External Institutional Drivers: Regulation and Incentive	Manufacturing firms in Malaysia	Eco-Design	External institutional Drivers →Environmental Performance Outcome.	Eco-Design partially mediates the relationship between External Institutional Driver and environmental performance
Huo *et al*., (2013).	Institutional Pressures: Coercive, Normative and Mimetic Pressures	Chinese manufacturing industry	System Integration and Process Integration	Integration →Financial Performance	Financial Performance

: Studies on Moderation between

Table 2.10 Regulatory Environment and Firm Performance

Study and Theory Used	Dimension of IE used	Context	Moderators	IE-Performance Relationships	Key Findings
Adomako and Danso (2014). (Institutional and social capital theories)	Regulatory Environment	Sub-Saharan Africa	Political Ties, (+) Perceived Environmental Dynamism, (+)	Regulatory IE→ Performance	Regulatory environment is negatively related to firm performance.
Zhu and Sarkis (2007). Institutional theory	Regulatory	China	Market Regulatory Competitive	Regulatory → Organizational performance	Regulatory IE has negative association with organisational performance but it indicates no moderating effects on performance
Li *et al*. (2008). No theory	Legal effectiveness	China	Political Party membership (-), not significant	Legal effectiveness → firm performance	Legal effectiveness has very week positive relationship with performance (.001)
Batjargal *et al.* (2013) Institutional polycentrism and social network theory	Formal institution Regulatory, economic institutions (composite)	China, American, French, and Russian	Structural holes (+) significant	Institution → Revenue Growth	Formal institutional order has negative effect on revenue growth

: Studies on Moderation between

Sheng *et al*. (2011) Institutional theory	Enforcement inefficiency, Government support,	China	Enforcement inefficiency(+) significant Government support (+), not significant)	Enforcement inefficiency and government support → firm performance	Enforcement inefficiency negatively Relate with performance, Government support positively relates with performance

Table 2.10 Regulatory Environment and Firm Performance *(continued)*

Jia *et al*. (2018) Institutional theory	Government relation Government interference Legal protection Importance of guanxi	China	Government relation, Government interference, Legal protection Importance of guanxi,	IE → firm performance	***Government relation***, positive insignificant relationship with performance; ***Government interference***, Negative significant relationship with performance; ***Legal protection, positive*** significant relationship with performance Guanxi, negative insignicant with performance
Chung *et al*. (2016) Institutional theory	Environmental Regulation Constrains	China	Manager's Perceived Environmental Regulation Constrains (+)	IE → Sustainable Performance	Regulation Constrains alone is not related to performance
Qualitative Zhang *et al*. (2015). Institutional theory	Formal Institution Government Support Informal Institution -*Guanxi*	Chinese SMEs	The Art of War Strategy (+)	IE → firm's International Performance	Formal Institutions have positive relationship with firm's International Performance
Zhang *et al*. (2017) Institutional theory	Institutional Support	China	dysfunctional competition (-)	Institutional support → *firm* Performance	Institutional support positively affects product and process innovation and firm performance

: Studies on Moderation between

Table 2.10 **Regulatory Environment and Firm Performance *(continued)***

Sigmund *et al.* (2013). Institutional theory	Formal Institutional Environment	Germany and Brazil	Venture size (+) Institutional Environment (-)	Institutional Environment → *Financial Performance*	There is insignificant positive relationship between Formal Institutional Environment and Financial Performance
Huang and Yang, (2014) Institutional theory	Regulatory environment (coercive) and Mimetic	Taiwan	Regulatory (-), significant Mimetic (+),significant	Environment → *economic and environmental performance*	Regulatory (coercive) pressures have significant positive relationships economic and environmental performance. While that for Mimetic is negative.
Chen *et al*. (2014)	Regulatory environment	International Evidence	Regulatory environment (+)	Regulatory environment → entrepreneurial growth	Regulatory environment have a substantially greater negative effect on entrepreneurial growth for family firms compared to non-family firms. Regulatory environment moderates family involvement-economic performance

2.5.1.2 Comments on Mediators Linking Regulatory Environment and Performance Outcomes

In the context of SCM, factors such as GMs play a crucial role given that supply chain thrives on inter-firm alliances and collaborations (Hoetker and Mellewigt, 2009). In the light of this, GMs —formal control and social control— may represent dyadic level factor that can potentially act as the mechanisms through which regulatory environment may influence operational performance. While this may be the case, both IE and management literatures lack such empirical evidence. Indeed, there seem to be no study that has attempted to test GMs as mediators linking regulatory institution to performance. This is in line with Tahanyi *et al*.'s (2012) view that, the field of institutional theory and its application in management research, particularly in the SCM context remains sufficiently nascent to warrant further scholarly attention. Thus, it appears that further research is warranted to investigate into the processes and contingencies that explain the regulatory environment-organizational performance outcome. Of interest, is the need to further theorise and test the mechanisms through which regulatory environment influences operational performance in different contexts of business environments.

2.5.2 Inter-Firm Governance Mechanism and Firm Performance Linkage

This section discuss the existing empirical evidences that establish or refute the notion that inter-firm GMs (formal control and social control) drive organisational performance. The notion of inter-firm governance mechanisms has received a great deal of attention in management literature. As discussed earlier, while inter-firm alliance governance represents a higher-level concept describing an organizational construction, such as buyer-supplier partnership or strategic alliance, the concept of governance

mechanism represents the underlying management and control activities that describe how the required behaviours of the partners in exchanges will become motivated, influenced and established to realise the alliance objective (Hoetker and Mellewigt, 2009). In other words, governance mechanism serves as administrative tool used to control and motivate actors' behaviours in exchange relationships (Martinez and Jarillo, 1989). Thus, governance represents the approach of inter-firm alliance while governance mechanism allows for addressing the challenges of safeguarding, collaboration, coordination and cooperation (Hoetker and Mellewigt, 2009).

Both formal control and social control GMs are recognised as potential determinants of firm performance (Cao and Lumineau, 2015; Huang *et al*, 2014; Cai *et al.*, 2009; Poppo and Zenger, 2002). This recognition is informed by evidence in inter-firm governance literature that both formal and social control mechanisms stimulate and drive alliance collaboration and coordination by first; inspiring commitment and compliance of exchange parties. Second; by attenuating risk of opportunism (Huang *et al*., 2014; Hoetker and Mellewigt, 2009; Poppo and Zenger, 2002), and third; by creating a mutually agreed upon range of acceptable behaviours that enable the parties perform their respective functions under the alliance to achieve the goals of the collaboration (Hoetker and Mellewigt, 2002).

Given the critical role of GMs in SCM practices (Poppo and Zenger, 2002; Joshi and Stump, 1999), several empirical studies on GMs-performance linkage have been reported in inter-firm literature. The relationship between GMs and performance has been examined in several contexts with inconsistent findings. For example, within the SCM literature, Huang *et al*. (2014) find significant curvilinear relationship between formal control and cooperative performance of supply chain. Cai *et al.* (2009) also

report that formal control (legal contract as so termed) has significant positive relationship with supplier performance within supply chain. Similar findings are reported (e.g. See Ferguson *et al*., 2005; Poppo and Zenger, 2002). Other empirical studies however find insignificant positive association between formal control and firm performance (e.g. Yang and Qian, 2017; Wacker *et al*., 2016; Hoetker and Mellewgt, 2009; Cannon *et al*., 2000).

Despite the empirically established positive association between formal control and firm performance, other prior research have reported contrary evidence regarding the performance consequences of formal control mechanism. Specifically, these studies find that formal control mechanism negatively relates to firm performance (Osmonbekov *et al*., 2016; Li *et al*., 2010).

In the same vein, evidence on social control-performance linkage is mixed. In particular, while most of the studies report significant positive association between social control mechanism and firm performance (see Yang *et al*., 2017; Osmonbekov *et al.*, 2016; Cao and Lumineau, 2015; Qi and Chau, 2015; Huang *et al*., 2014; Li *et al*., 2010; Poppo and Zenger, 2002), others find insignificant association (Wacker *et al*., 2016; Cai *et al*., 2009). In fact, Hoetker and Mellewgt (2009) actually report negative association between social control mechanism and firm performance. Table 2.11 presents empirical evidence on GM-performance link.

Table 2.11: Evidences of Relationship between Inter-firm Alliance Governance and Performance

Study	Governance Type	Relationship	Performance Outcome
Yang and Zhang (2017), *Journal of Business & Industrial Marketing*	Contractual obligatoriness contractual issue inclusiveness	Positive (insignificant) Positive (significant)	Performance
Osmonbekov *et al*. (2016), Journal of Business & Industrial Marketing	Contractual governance Social governance	Negative (insignificant) Positive (significant)	Relationship Performance
Wacker *et al.* (2016), *International Journal of Operations & Production* Management	Contractual Enforcement and Social Enforcement	All Positive (insignificant)	Financial returns
Cao and Lumineau (2015), *Journal of Operations Management*	Relational norms, contracts and trust.	All Positive (significant)	Relationship performance
Qi and Chau, (2015), *Information Technology & People*	Contract dimension Relational dimension	Positive (insignificant) Positive (significant)	IT performance improvement (outsourcing success)
Huang *et al.* (2014)	Formal control and Social	Curvilinear (significant Positive (significant	Cooperative performance
Li *et al*. (2010), *Journal of Operations Management*	Formal control Social Control	Negative (significant) Positive (significant)	Performance
Herna´ndez-Espallardo *et al*. (2010), *Supply Chain Management: An International Journal*	Social enforcement	Positive (significant)	performance

Table 2.11: Evidences of Relationship between Inter-firm Alliance Governance and Performance *(continued)*

Hoetker and Mellewigt (2009), *Strategic Management Journal*	Formal governance relational governance	Positive (insignificant) Negative (insignificant)	Alliance performance
Cai *et al*.(2009), *Journal of Business Research*	Legal contract, joint problem solving,	Positive (significant) Positive (insignificant)	Supplier's performance.
Lee and Cavusgil (2006), *Journal of Business Research*	Contractual-based Relational-based	Positive (insignificant) Positive (significant)	Alliance Performance
Ferguson *et al.* (2005*), Journal of Academy of Marketing Science*	Contractual and Relational Governance	All Positive (significant)	Exchange Performance
Poppo and Zenger (2002), *Strategic Management J*	Contractual Relational	All Positive (significant)	Exchange Performance
Cannon et al. (2000), *Journal of the Academy of Marketing Science*	Legal contract Relational contract	Positive (insignificant) Positive (significant)	Performance

2.5.2.1 Summary and Comments

Table 2.11 demonstrates empirical evidence on GMs-performance relationship. In general, evidence from the literature shows inconsistent findings on the association between GMs and performance. As indicated in Table 2.11, while formal control and social can drive firm performance, there is the possibility that these GMs might not always be beneficial to firm performance. In particular, while some studies find that formal control and social control positively relate to firm performance, others find contrary evidence. In fact, some studies find the association between these formal control and social control with performance particularly negative (Osmonbekov *et al*., 2016; Wacker *et al*., 2016; Hoetker and Mellewigt, 2009), suggesting absence of possible contingency factors that may explain the relationships. In light of this, some studies have explored into possible boundary conditions that might address the inconsistent results on the association between GMs and firm performance (see for example Rhee *et al*., 2014; Poppo *et al*., 2016; Lee and Cavasgil, 2006). The section that follows provides empirical review of some moderators that account for the GMs-performance relationship.

2.5.3. Moderators of Governance Mechanisms and Firm Performance Linkage

Following the inconsistent results on the direct effect of GMs (formal and social controls mechanisms) on firm performance, some prior studies have explored various inter-firm relationship, environmental and managerial characteristics related variables as possible moderators between GMs-performance relationship. Some studies focused on relationship related variables as moderating factors, while others have examined the role of task environment and managerial characteristics. With respect to inter-firm relationship related factors for example, studies have explored variables such as

relational norm, (Yang *et al*., 2017) buyer asset specificity (Poppo *et al*., 2016) prior ties and buyer lock-in (Rhee *et al*., 2014) contractual governance (Huang *et al*., 2014) as moderators between GMs-performance relationships.

Regarding task environment related factors, some studies have provided evidence of environmental dynamism (changes in business environment) (see Rhee *et al*., 2014) supply market uncertainty (Poppo *et al.*, 2016) and environmental turbulence (Lee and Cavasgil, 2006) as playing the moderating roles between GMs and performance relationship. Among the managerial characteristics variables, Rodriquez *et al.* (2008) find that management support and management risk aversion act as moderators in the association between GMs (trust and cooperation) and performance while Poppo *et al.* (2016) suggest that behavioural uncertainty may moderate the GMs-performance link although their results proved contrary. Table 2.12 displays empirical evidence of moderators in the GMs-performance relationship in the management literature.

In sum, literature on GMs-firm performance provides empirical evidence that, the inconsistent results regarding the direct effect of GMs (formal and social control mechanisms) on performance might be as a result of absence of some boundary conditions (i.e. not incorporating organizational and environment related factors as moderators) in the GMs -performance research.

Further, among the performance outcomes studied, operational dimension of firm performance has least received attention. As such, more research attention would be necessary to ascertain if new insight would emerge when operational performance is considered as an outcome variable. More importantly, viewing supply chain as network of organization recognises SNC as an integral part of management practice (Christopher

and Holweg, 2011; Bozarth *et al*., 2009). This is in view of the fact that supply chain thrives on the collaborative efforts and interconnectedness of firms

(Christopher and Holweg, 2011). As such, as supply chains increase in scope of operations, the interconnectedness of firms, made up of suppliers, focal firm and distributors become increasingly complex. Such complexities potentially affect actor's behaviours and operations of the supply chain adversely (Choi and Hong, 2002; Vochon and Klassen, 2002; Bozarth *et al*., 2009; Anderson, 1999). Accordingly, network complexity may require governance attention to ensure seamless coordination. Thus, an argument is made that the direct effect of GMs on firm's operational success may vary across different levels of SNC.

Yet, in the context of supply chain, no study has attempted to test SNC as the moderating effect in the link between formal and social control mechanisms and firm performance. Thus, further research appears imperative to provide comprehensive insight on the performance consequences of GMs. Accordingly, an attempt to theorise and test the association of formal and social control mechanism with (operational) performance under varying levels of SNC would be scholarly insightful and worthwhile to extend the frontiers of knowledge and SCM literature.

Table 2:12 Evidences of Moderators in the Inter-firm Alliance Governance – Performance Relationships

Study	Governance Type	Moderators	Outcome Variable
Yang and Zhang (2017), *Journal of Business & Industrial Marketing*	Contractual obligatoriness contractual issue inclusiveness	Relational norms Positive (insignificant)	Performance

Poppo *et al* (2016), *strategic management journal*	Relational Trust	Supply market Uncertainty, Behavioural Uncertainty	Supplier Performance
Rhee, Kim & Lee (2014), *Journal of Business Research*	Formal control Social Control	Environmental Dynamism (changes bus env.) Buyer lock-in Prior ties	Performance
Huang *et al*. (2014), *Industrial Marketing Management*	Formal control Social Control	Formal control and Social Control	Cooperative performance
Li *et al*. (2010), *Journal of Operations Management*	Formal control Social Control	Formal control and Social Control	performance
Poppo and Zenger (2002), *strategic management journal*	Contractual Relational	Contractual and Relational	Exchange performance

2.6 CHAPTER SUMMARY

The chapter presented a review of key construct studied in management literature as key determinants of organisational performance. The review indicates that both external and supply chain-wide factors have been studied as determinants of organisational performance outcome. Particular attention was given to institutional pillars with emphasis on regulatory institutions as external environment factors and their influences on firms' operations and performance outcome. In terms of supply chain-wide factors, assessment of inter-firm GMs—formal and social controls—and

SNC, and their relationship with organisational performance outcome was presented. Key conclusions drawn from synthesising institutional and governance literature review include the following. First, the regulatory environment has been conceived as external institutional factor that influences firms operations and performance. However, empirical evidence has been mixed and inconclusive. Second, the mechanism through which regulatory environment drives (operational) performance, as well as the

boundary conditions explaining such relationship appeared to have received limited scholarly attention in both institutional and governance literatures. Third, GMs have been widely studied as significant driver of organisational performance outcome. However, evidence from the review also revealed inconsistent outcomes regarding such relationships. In particular, the indirect relationship between regulatory environment and operational performance, via GMs, appears rare in extant literature. Fourth, the moderating effects of SNC in the indirect regulatory environment-operational performance relationship, via GMs, is yet to be determined in the institutional and governance literatures. Thus, it can be concluded from the review that the question of how and when regulatory environment explains variation in operational performance in the context of supply chain, seemingly, lacks empirical validation, indicating a clear void in the institutional and inter-firm governance research.

Based on the gaps that have been identified, it is imperative for academic research to focus attention on examining the (direct and) indirect effect of regulatory environment on operational performance, via GMs, and how such indirect association manifests under conditions of SNC. This will contribute to institutional and inter-firm governance literature by extending the theoretical domain regarding the determinants of operational performance.

The next chapter presents the conceptual model and the underlying theoretical framework with the aim of addressing the gaps identified in the literature. Specifically, theoretical association of regulatory environment with operational performance is discussed. Second, the indirect theoretical relationship between regulatory environment and operational performance, via GMs (formal and social control), is presented. Finally,

hypotheses relating to the moderating effects of SNC on the indirect relationship between regulatory environment and operational performance, through GMs, is presented.

CHAPTER THREE

CONCEPTUAL FRAMEWORK AND HYPOTHESES

3.1 INTRODUCTION

This chapter presents the conceptual model and the hypotheses that describe how regulatory environment drives operational performance and the pivotal role of GMs and SNC. In doing so, the chapter is organised into two main sub-sections as follows: The first sub-section introduces the theoretical underpinnings of the study. Specifically, the section discusses institutional, transaction cost economics and relational exchange theories. In the second sub-section, research model and hypotheses for the study are presented. Specifically, an argument on the direct theoretical association of regulatory environment with firm operational performance is presented. The section also discusses the hypotheses in respect of the indirect effects of regulatory environment on operational performance, via formal control and social control. Further, hypothetical arguments regarding the moderating roles of SNC on the proposed indirect regulatory environment-operational performance relationship, via formal control and social control are also presented. Finally, the section concludes with chapter summary.

3.2 THEORETICAL UNDERPINNINGS

3.2.1 Overview

The study draws on three theoretical perspectives, including institutional theory (Scott, 1995; North, 1990; DiMaggio and Powell, 1983; Meyer and Roman, 1977), TCE (Joshi and Stump, 1999; Morgan and Hunt, 1994; Williamson, 1985) and RET (Joshi and Stump, 1999; Heide and John, 1992; Macmiel, 1980) to explain the conceptual model of the study. As Mayer and Sparrowe (2013) suggest, drawing on multiple theoretical lenses for an integrated model is important because such an approach does not only

provide deeper understanding regarding how concepts are related, but also minimises competing explanations and improves predictive accuracy.

Institutional theory is appropriate for management research in several ways. First, it provides a wider perspective in the social sciences (Scott, 1995) and has since 1980s, emerged as a leading movement in management research (Zoogah *et al*., 2015; Peng *et al.*, 2009; Dunning and Lundan, 2008). Second, because institutional theory is sensitive to cross-country variation in institutional factors (Ang and Michailove, 2008), major problems of organizational management and effectiveness can be better analysed and addressed through institutional framework considering that organisational decisions and strategies, more often, are made in response to various national institutional pressures such as the legal system. For example, in developing economies and Africa in particular, the effectiveness of organizations depends on the institutional environment within which they operate (Zoogah *et al*., 2015). More so, as Zoogah *et al*. (2015, p. 14) submit, "formal institutions tend to dominate the modern context and influence industrial activities through their regulatory function". Thus, institutional theory represents a framework that better explains the rationale for organisational decision and behaviour.

TCE and RET represent the dominant theoretical perspectives in inter-firm governance literature (Hawkins *et al*., 2008; Lai *et al.*, 2005). Their relevance in this study lies in the fact that they both serve as key frameworks for explaining behavioural dynamics of exchange relationships (Joshi and Stump, 1999; Heide, 1994; Williamson, 1985). In particular, while TCE essentially explains the need for maximising transaction benefits by examining factors and assumptions underpinning transactions and associated cost

(Hawkins *et al*., 2008; Joshi and Stump, 1999). RET seeks to explain actors' behavioural characteristics in exchange relationships and how these can be managed to maximise cooperative goals (Hawkins *et al*., 2008; Dyer and Singh, 1998). Thus, both TCE and RET seek to offer valuable insights into inter-firm governance and management. The next section discusses these theories.

3.2.2 Institutional Theory

The core argument of institutional theory is grounded in the belief that behaviours and activities of individuals and firms are strongly influenced by institutions in a particular environment (Scott, 1995; DiMaggio and Powell, 1983; Meyer and Rowan, 1977). The theory posits that the combination of formal rules and informal constraints, and their enforcement mechanisms influence firms to adopt a pattern of behaviour that may not necessarily reflect true efficiencies in a rational economic sense (Ang and Michailova, 2008; Bruton *et al.*, 2002; Scott, 1995; North, 1990). Consequently, in addition to economic efficiency, firms require legitimacy by conforming to the prevailing formal and informal demands in their operating environment to operate and survive (Scott, 1995).

Borrowed from developments in cognitive psychology and cultural anthropology (Bruton *et al.*, 2002), institutionalism pays attention to regulatory, nominative and cultural-cognitive institutions and the mechanisms through which they shape societal behaviours and conducts (; Scott, 1995; DiMaggio and Powell, 1983; Rowan and Meyer 1977) and create structural isomorphism among firms operating in the same environment (Bruton *et al*., 2002). These constitute the underpinning pillars of the broad institutional framework (Scott, 1995). In particular, regulatory, nominative and cultural-cognitive institutions constitute formal and informal institutional governing

structures in an economy, and their relative influence and importance determine the nature and development of each economy (Bruton *et al*., 2002). These institutional pillars influence firms through the mechanisms of coercion, normative and mimetic (DiMaggio and Powell, 1983).

Regulatory institutions represent laws, rules and sanctions that govern the behaviours of firms and individuals (Scott, 1995; North 1990). They involve the process of setting out rules and their enforcement structures (Scott, 1995; DiMaggio and Powell, 1983). The regulatory environments influence organisational decisions and behaviours through the mechanisms of imposition and inducement (Grewal and Dharwadkar, 2002). While imposition represents the coercive power of regulatory institutions to impose restrictions directly through authoritative orders, and indirectly through rules, inducements are incentives offered in the form of grants, subsidies, tax rebate, or other interventions provided by the state to influence business behaviours (Bello *et al.*, 2004). By imposing constraints of law or providing inducements, the regulatory systems in a country effectively shape organisational behaviours and practices (Bello *et al*., 2004). Specifically, how firms are established and operated in a given industrial field is determined by the regulatory functions of IEs. Thus, laws, sanction and political powers that regulate firms and societal actions (Scott, 1995; DiMaggio and Powell 1983) represent the manifest functions of regulatory institution.

Nominative institutions pay attention to roles, values and actions expected of individuals and firms in a particular environment and function through social and industrial norms and education. Professional code of ethics and practice are institutional carriers of nominative functions (Scott, 1995; DiMaggio and Powell 1983). Organisations are compelled to conform to industrial norms of practice to be legitimate

for operation. Cultural-cognitive represents a more informal institution that emphasises on cultural beliefs, values, customs and the taken–for–granted conventions embedded in social structure, (Scott, 1995), and manifest through imitation (mimetic mechanism) (DiMaggio and Powell, 1983). Although often not documented, cultural-cognitive institutions can significantly shape business behaviours and characteristics through moral codes, social connections, and sense of loyalty (Bruton *et al*., 2002; Scott, 1995; DiMaggio and Powell, 1983)

By responding to coercive pressures, expected norms and the embedded conventions and taken-for-granted, firms demonstrate structural and procedural isomorphism. The notion that firms operating in the same environment are believed to behave structurally similar and become homogeneous as they face and respond to common institutional pressures is the central thrust of institutional theory (Ang and Michailova, 2008; Scott, 1995; DiMaggio and Powell, 1983; Rowan and Meyer, 1987). Thus, institutional theory provides the framework of principles that explain how institutional pillars, through their functioning mechanisms (coercion, normative and mimetic), shape the activities and characteristics of firms operating within their domain (Scott, 1995; DiMaggio and Powell, 1983) and give deeper insight and understanding of firm's behaviours and actions. The current study relies on the regulatory pillar of institutional theory to address the research objectives.

3.2.3 Transaction Cost Economies

One of the key motivations underlying governance in inter-firm relationships is to discourage opportunism while increasing commitment and compliance to achieve alliance goals. Opportunistic behaviour has negative consequences on exchange relationships (Hawkins *et al*, 2008; Wathne and Heide, 2000). In particular, the

presence of opportunism in exchange relationships requires considerable resources (that could have been deployed in other productive activities) on controls and monitoring (Wathne and Heide, 2000).

Opportunism has been defined as "self-interest seeking with guile" (Williamson, 1975, p.6). The notion of guile is key in discussing opportunism as a phenomenon. Building on prior works, Williamson (1985, p.47) explains guile to include "lying, stealing, cheating and calculated effort to mislead, distort, disguise, obfuscate or otherwise confuse". In the context of inter-firm exchanges, opportunistic tendencies manifest in the form of a party deliberately withholding or misrepresenting key information (information asymmetry), compromise of quality such as failure to deliver supplies to the right quality standard or at the right time, and other forms of infractions in the course of the relationship.

TCE provides theoretical and conceptual foundation for the notion of opportunism (Wathne and Heide, 2000; Williamson, 1985). The fundamental assumptions of TCE are the assumptions of bounded rationality and opportunism (Wathne and Heide, 2000; Williamson, 1985). The phenomenon of bounded rationality represents the reality of how managers actually make decisions in organisations. It explains the limitations of decision makers in terms of their cognitive capacity, incompleteness of pertinent information and constraint of time.

Bounded rationality rests on the assumption that individuals who make decisions (irrespective of their intelligence level) have limitations on cognition, access to complete relevant and reliable information, and sufficient amount of time (Simon, 1982). In particular, the cognitive limitations of decision makers restrict them to see, find or obtain, and use relevant information during decision-making. Given the limits

(bounds) associated with decision-making, managers' behaviour may not be rational at all times (Fiske, *et al*., 1991) because they may have to rely on rule of thumb. As such, managers' decisions may not always result in cost efficiency due to bounded rationality (Hawkins *et al*., 2008; Rindfleisch and Heide, 1997).

The second assumption of TCE is the notion of opportunism. The concept of opportunism assumes that given the opportunity, an individual is likely to behave opportunistically to the extent that such a behaviour will lead to profitable outcomes (Hawkins *et al*., 2008; John, 1984). In exchange relationships, dealing with opportunism would require resource-driven interventions, such as strict control and monitoring, resulting in increase in transaction cost (Wathne and Heide, 2000). Thus, inter-firm exchange may be characterised by a significant transaction cost as a result of bounded rationality and threat of opportunism in inter-firm exchange, which create a need for ex ante and ex-post safeguarding structures (Huang *et al*., 2014; Nakos and Brouthers, 2008; Das and Teng, 2001; Subramani and Venkratraman, 2003). Consequently, TCE examines how firms protect themselves from such hazards (Williamson, 1975, 1985) and choose the most cost-effective control mechanism that offers the best protection for their relationship-specific investments.

To mitigate the risks of opportunism and bounded rationality phenomena, as well as other exchange hazards such as measurement difficulty and task uncertainty (Poppo and Zenger, 2002), TCE suggests for the design of legal contracts to regulate commercial behaviours. Contracts represent a 'hard' governance characterised by formalised decision structures, procedures and economic safeguards (Ivens and Blois, 2004), that explicitly stipulate parties responsibilities and obligations to provide safeguards for minimising losses due to the inherent hazards of inter-firm exchanges (Williamson,

1985). Thus, contracts represent appropriate governance mechanisms for curtailing opportunism and hazards in exchanges to reduce cost of transaction (Hawkins *et al.*, 2008).

3.2.4 Relational Exchange Theory

RET argues that relational norms represent unique class of governance mechanisms that inspire (commitment) and discourage certain behaviours (opportunism) in exchange relationships (Joshi and Stump, 1999; Morgan and Hunt, 1994; Macneil, 1981). In other words, RET assumes that exchanges thrive on cooperation, trust and interdependencies of parties. While cooperation may be reflected through various activities between firms such as joint planning and collaboration, interdependence manifests in cohesive bonds that endure and safeguard inevitable conflicts (Fontenot and Wilson, 1997).

The distinguishing characteristics of RET is that relational norms are endogenous forms of control (Joshi and Stump, 1999) and as such, behaviour in relational norm-based relationships is controlled not through incentives but by internalisation (Kelman, 1958), moral control (Larson, 1992) and a system of mutual and self-regulation (Gundlach *et al*., 1995). The central idea of RET is that informal coordination, based on shared norms and trust, is an alternative to market transactions and hierarchical arrangements, and that such informal coordination offers benefits otherwise not available. More particularly, RET is underpinned by trust, long-term orientation, overlapping roles and high information exchange (Heide & John 1992). Thus, the relational exchange framework emphasises social embeddedness, trust building through open communication and other aspects of relationalism to mitigate the likelihood of opportunism while inspiring commitment to improve exchanges (Huang *et al*., 2014; Liu *et al.*, 2009; Dyer and Singh, 1998).

3.3 CONCEPTUAL MODEL AND HYPOTHESIS DEVELOPMENT

This section presents the research model and hypotheses relating to how and when the regulatory environment influences operational performance. Specifically, the moderated mediation model depicts the direct and indirect theoretical association of regulatory environment with operational performance, via formal control and social control, under differing levels of SNC. Prior studies (see e.g. Zhang *et al*., 2017; Huang and Yang, 2014; Adomako and Danso, 2014; Chen *et al*., 2014; Batjargal *et al*., 2013; Zailani *et al*., 2012 ; Testa *et al*., 2011; Zhu and Sarkis, 2007) have examined the link between regulatory environment and performance outcomes. Yet, empirical evidence has, so far, been largely inconsistent. The current study takes the view that the effect of regulatory environment on operational performance may be channelled through formal control and social control GMs, and that this indirect causal link from the regulatory environment to operational performance, via GMs is conditional upon levels of SNC. The study captures this reasoning in the proposed research model that overviews the research and hypotheses it subsequently develops (see Figure 3.1). By exploring the mechanisms through which the regulatory environment affects firms' operational performance, and the conditions under which such indirect relationship manifests, this study makes insightful theoretical contributions to theory building.

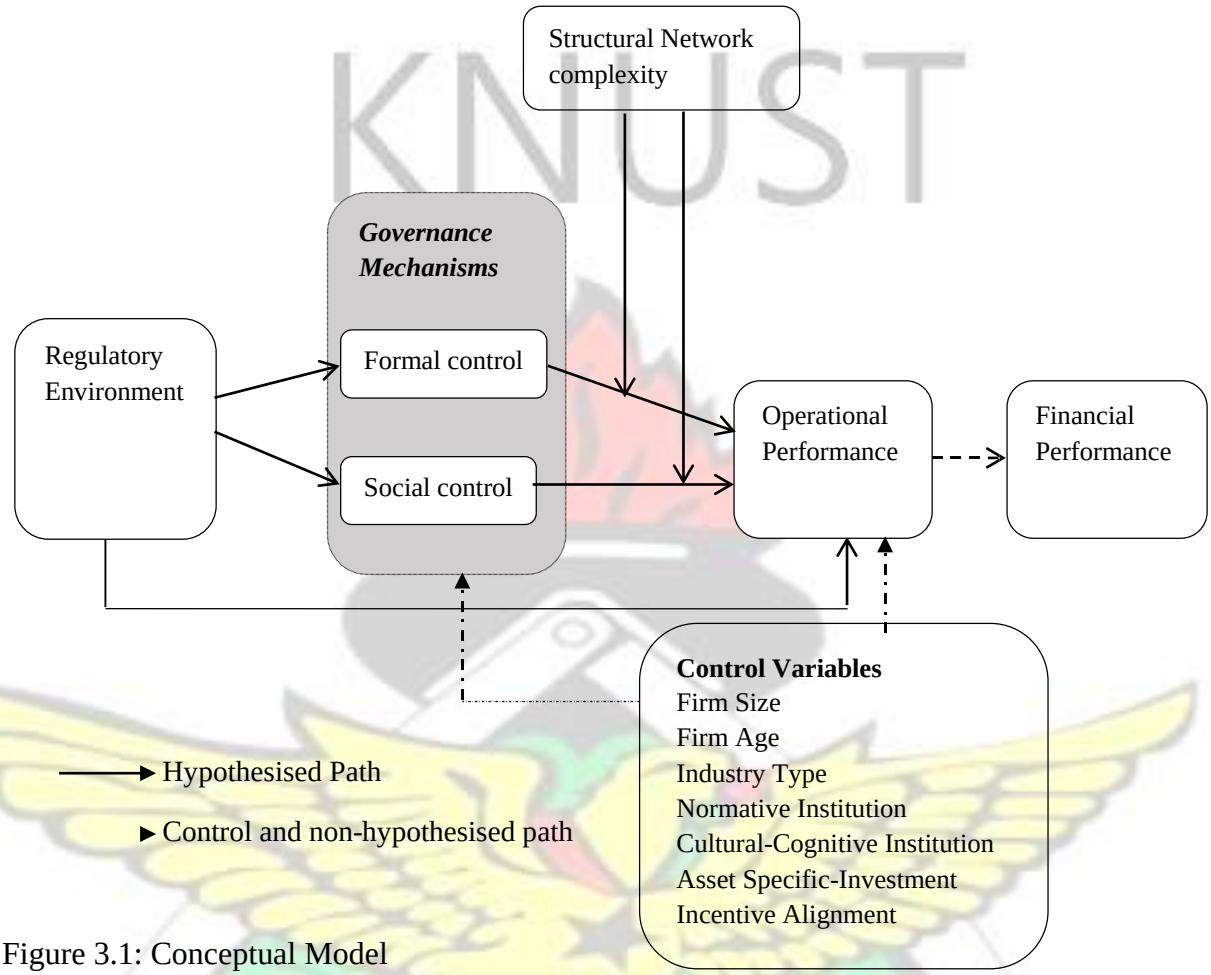


Figure 3.1: Conceptual Model

3.3.1 Regulatory Environment and Operational Performance

Regulatory environment depicts the extent to which firms perceive a country's law, policies and regulations as efficient in providing enabling environment for business operations (Díez-Martín *et al.*, 2016; Manolova *et al.*, 2008). State laws and regulations represent society's expectations and preferences to which firms must conform to achieve legitimacy, support and protection to transact business (Scott, 1995; North, 1990; DiMaggio and Powell, 1983). The study argues that perceived favourable

regulatory conditions across industrial sectors should facilitate business operations and performance.

As the macro aspect of institutional environment, regulatory institution is critical for business performance and growth as it provides rules, sanctions and enforcement structures to regulate organizational behaviour and practices (Adomako and Danso 2014; Martinez and William, 2012; Scott, 1995; North, 1990). Institutional theory argues that regulatory environment determines how organizations are established and operated in a particular environment (Scott, 1995; North, 1990; DiMaggio and Powell, 1983). In particular, the legal system and their enforcement structures seek to standardize procedures and processes, and protect property rights to ensure orderliness, reduce uncertainty in the industrial space and facilitate business operations and transactions (Zheng and Xu, 2012; Manolova *et al*., 2008). Specifically, a more developed regulatory environment with established financial and capital market infrastructure to provide local financial services, such as access to funds and payment channels stimulates business activities and reduce transaction cost (Xu and Hitt, 2015; Zheng and Xu, 2012). Further, managers' belief and confidence in the regulatory conditions across various industries, as well as policies on fair trade, competition, corporate tax, credit support systems for businesses (including SMEs), and legal structures (e.g. court and arbitration systems) are likely to encourage appropriate commercial behaviour, best practices, and drive business operations and performance (Zoogah *et al*., 2015). Thus, perception of efficient regulatory system, with structures and mechanisms to protect private and intellectual properties promotes entrepreneurial culture and creates enabling environment for business activities to thrive (Zheng and Xu, 2012; Manolova *et al*., 2008; Bekaert *et al*; 2005; Spicer *et al*, 2000; North, 1990), absence of which can impede business success (Broadman *et al*., 2004).

In keeping with the above, and drawing on the prescriptions of institutional theory, this study expects that perceived confidence among firms in a regulatory environment should drive vibrant industrial practices, boost business activities and improve operational performance (Cai *et al*., 2015; Bruton et al., 2002). This proposition is in alignment with empirical evidence in institutional literature (see Zhang *et al*. 2017; Huang and Yang, 2014; Testa *et al*., 2011; Zailani *et al*., 2012). Therefore, it is argued that:

H1**:** The Regulatory environment will have positive relationship with operational performance.

3.3.2 The Mediating Role of Governance Mechanisms

The study argues that the operational performance benefits of regulatory environment may be salient through the formal control and social control mechanisms of inter-firm exchanges. A key tenet of institutional theory is that firms need to move beyond economic efficiency to institutional legitimacy to succeed (Ang and Machailova, 2008; Yaibuathet *et al*., 2008) because legitimacy grants them societal endorsement and access to resources. Organisations acquire legitimacy through conformance to institutional demands and pressures (DiMaggio and Powell, 1983). Accordingly, firms are required to make their decisions and strategies within the remit of the various regulatory demands they face in their industries to secure legitimacy. As the strategic management literature well acknowledges, firms' decisions, choices and strategies can significantly affect performance outcomes (Baum and Wally, 2003; Dess *et al*., 1997). Since decisions and strategies are influenced by the prevailing regulatory demands (Scott, 1995; North, 1990), it is argued that the nature of the regulatory environmental conditions may facilitate or impede firms' operations and performance outcomes

(Yaibuathet, *et al*., 2008; Bello *et al*., 2004; Scott, 1995; DiMaggio and Powell, 1983). In the context of supply chain where inter-firm alliance is an integral part of management practice (Poppo and Zenger, 2002), the use of GMs (formal control and social control) represents an important strategic decision as they largely determine the success of collaboration and coordination of resources (Hoetker and Mellewigt, 2009). To the extent that institutional demands influence strategy formulation (DiMaggio and Powell, (1983), decisions on GMs by exchange partners are likely to be determined by their perceptions about the prevailing regulatory environment. This is in line with an assertion that "institutions directly determine what arrows a firm has in its quiver as it struggles to formulate and implement strategy and create competitive advantage" (Ingram and Silverman, 2002, P.20). As institutional literature suggests (e.g. Martinez and William, 2012; Ang and Michialova, 2008; Yaibuathet *et al*., 2008; Bello *et al*., 2004), an efficient regulatory system is crucial for business operations (including the effective functioning of GMs). Therefore, it can be said that the (perceived) efficient regulatory environment can drive firm's operations through its influence on inter-firm GMs decisions.

From the logic of TCE, formal control, with its role specific characteristics and the capacity to impose legal sanctions for undesirable conducts, is recognised as an effective inter-firm GM that can be utilised to address opportunism and exchange hazards to enhance operational performance (Huang *et al*., 2014; Poppo and Zenger, 2002; Cannon *et al*., 2000; Williamson, 1985). Drawing on institutional theory and synthesising with TCE line of reasoning, this study contends that firms' perceived confidence in the regulatory system is likely to facilitate the use and effective functioning of formal control mechanism to deal with exchange hazards. This should in turn lead to timely delivery of services, reduction in lead-time, adherence to quality

standards, and ultimately improve operational performance. The underlying reasoning lies in the belief that the effectiveness of formal control depends on an efficient regulatory regime that allows exchange challenges (such as contractual breaches and litigations) to be resolved through the court systems (Cai *et al*., 2015; Zheng and Xu, 2012; Ang and Michialova, 2008).

In sum, the extent of firms' perceived confidence regarding the efficiency of the regulatory system is expected to facilitate the use of formal control and its effective functioning. This in turn should facilitate seamless collaborative and coordinating efforts of exchanges to leverage resources and synergy and improve operational performance. This expectation is consistent with prior evidence that innovation capacity, eco-design and entrepreneurial orientation mediate regulatory environment and performance outcomes respectively (Chadee and Roxas, 2013; Roxas and Chadee, 2013; Zailani *et al*., 2012). Accordingly, the study posits that regulatory environment may drive operational performance through formal controls, and hypothesises that:

H2: Regulatory environment has an indirect, positive relationship, via formal control, with operational performance.

The study further argues that the operational performance consequences of regulatory environment may be channelled through social control mechanism. From the perspective of institutional theory, an efficient regulatory system should facilitate social control to function effectively in inter-firm exchanges by building a culture of trustworthiness, professionalism, fair business practices and ethics since rules and regulations are embedded in the socio-cultural context of the environment (Meyer and Rowan, 1977). Such culture of trustworthiness and honesty drives social bond and cooperativeness through social ties, and encourages exchange partners to act in good

faith (Wang *et al*., 2011). Further, RET asserts that social control, grounded in relational norms and trust building (Macneil, 1980), is crucial in mitigating opportunism and exchange hazards to improve inter-firm exchange performance outcomes (Cao and Lumineau, 2015; Huang *et al*., 2014; Wang *et al*., 2011; Poppo and Zenger, 2002). The logic is that shared relational norms and trust inspire common beliefs and commitment among exchange partners, which harmonise interests, curtail potential opportunistic behaviour, and motivate parties to commit to mutual goals (Poppo, Zhou and Li, 2016).

As Heide and John (1992) and Lu *et al.* (2015) submit, through relational norms, social control promotes *esprit de corps* and unity of action, facilitates information sharing to encourage conflict resolution, and allows for flexibility to adapt to unforeseen circumstances (Poppo and Zenger, 2002). On the other hand, trust promotes fair negotiations because exchange parties are motivated to act in good faith (Cannon *et al*., 2000). Thus, social control with its sense of honesty and oneness encourages bilateral approach to decision making, planning, demand forecasting, and problem solving to leverage exchange resources, thereby enhancing operational performance (Poppo and Zenger, 2002). This reasoning is in line with prior evidences that indicate positive association of social control with firm's performance outcomes (Wang *et al*., 2016; Wang *et al*., 2011; Malhotra, 2009; Lee and Cavusgil, 2006; Ferguson *et al*., 2005; Gulati, 1995). Accordingly, this study posits that firms' perception about the prevalence of efficient regulatory system is expected to drive and facilitate the use and effectiveness of social control in addressing exchange hazards. This should translate into timely delivery of services and reduction in lead- time to satisfy channel members, thereby improving operational performance. Combining the preceding arguments, the study hypothesises that:

H3: Regulatory environment has an indirect, positive relationship, via social control, with operational performance.

3.3.3 The Moderating Role of Structural Network Complexity

SCM literature argues that inter-firm network is crucial in enhancing performance and competitiveness as it allows partners to leverage resources to generate synergy (Christopher and Holweg, 2011; Cao and Zhang, 2011). Unique and innovative knowledge from both upstream and downstream partners can be incorporated into product development, reduce production cost and enhance performance (Lu and Shang, 2017; Flynn *et al.*, 2010). However, structural complexity is induced within the supply network as inter-firm relationships increase in size and scope (Bode and Wagner, 2015). The study proposes that the indirect effect of the regulatory environment on operational performance, via formal and social control mechanisms may depend on levels of structural complexity of firm's network. The following sub-section discusses the moderating roles of SNC.

3.3.3.1 Formal Control and Structural Network Complexity

When exchanges are characterised by complexity, firms may be compelled to rely on formal control as a mechanism to minimise associated exchange hazards. Nonetheless, the current study contends that at high levels of SNC, increased use of formal control will be detrimental to operational performance, and therefore argues that the indirect effect of regulatory environment on operational performance, via formal control, is contingent on different levels of SNC across inter-firm exchanges.

Prior research indicates that SNC induces increased complication and uncertainty within inter-firm exchanges (Bode and Wagner, 2015; Bozarth *et al.*, 2009). Opportunism and bounded rationality are also likely to be more pronounced with SNC

due to multiple actors and interactions. From TCE line of reasoning, SNC is a source of transaction cost in inter-firm exchanges (Williamson, 1975) because its mitigation demands more resources and efforts due to increased need for negotiations, contracting and monitoring (Lu and Shang, 2017; Williamson, 1975).

TCE argues that formal control, with its contractual structure, represents an effective inter-firm governance mechanism that can mitigate opportunism and other hazards associated with inter-firm exchanges to facilitate coordination and improve performance (Wang *et al*., 2011; Wathne and Heide, 2000; Williamson, 1985). As an administrative tool (Martinez and Jarillo, 1989; Macneil, 1978), formal control drives operational performance by specifying roles and responsibilities of parties such as delivery time, quality standards, volume and price requirements, monitoring procedures, and sanctions for non-compliance to regulate the behaviours of parties to exchanges (Wu *et al*., 2017; Huang *et al*., 2014; Wang *et al*., 2011; Poppo and Zenger, 2002).

However, the use and functionality of formal control largely requires a relatively predictable environment where it is possible to obtain stable information to accurately assess trade-offs (Poppo *et al*., 2016). In fact, Poppo *et al*. (2016) find that formal control is less suitable in conditions of high uncertainty due to the need for constant adaptation. In addition, because (inter-firm network related) complications and uncertainty create instability and frustrate prediction that is difficult for formal control to respond to (Carson, Madhok, and Wu, 2006), the efficacy of the latter diminishes under such conditions. Accordingly, the study contends that under conditions of high level of structural network complexity, increased adoption of formal control is likely to render its instrumental benefit for enhancing operational performance less effective.

The central logic underlying this is that at high levels of SNC, inter-firm exchanges tend to be prone to increased complications, uncertainty and hazards including opportunism and bounded rationality (Bozarth *et al*., 2009; Lu and Shang, 2017; Williamson, 1985).

Curtailment of such heightened uncertainty and hazards requires a rather detailed and a highly complex contract that is likely be too rigid and prohibitively costly to maintain. In particular, when formal control is more emphasised under high SNC, exchange partners are likely to spend significant time and resources on monitoring to ensure that the spirit of the agreement is fulfilled (Huang *et al*., 2014; Dyer and Chu, 2003). Further, the issue of rigidity characterising contractual arrangement is another limitation of formal control (Huang *et al*., 2014; Thorgren and Wincent, 2011). In interfirm exchanges, adjustment and adaptation are critical for exchange goals since unexpected contingencies are largely inevitable (Huang *et al*., 2014) particularly, under high levels of SNC. However, formal control tends to be insufficiently flexible to cope with the frequency of such changes, complications and uncertainty associated with high SNC. The underlying logic is that as formal control becomes more rigid, it loses it adaptive property and cost effectiveness. The resultant high cost of transaction (arising from monitoring, renegotiations and supervision) and the rigidity characterising complex contracts (Poppo and Zenger, 2002) make the use of formal control counterproductive when SNC is high, and thus potentially erode the incremental benefits and gains accrued (Lu and Shang, 2017).

In short, the lack of flexibility and high transaction cost associated with the increased use of formal control in responding to the exchange hazards and uncertainty under high level of SNC are likely to dilute the capacity of formal control to enhance operational

performance. Thus, in the face of high levels of SNC, it is expected that the direct positive effect of formal control on operational performance is likely to be attenuated. This is broadly consistent with prior evidence that firms may lose confidence in contracts as hazards become particularly severe (Poppo and Zenger, 2002; Crocker and Masten, 1991), which are likely to manifest under a high level of SNC.

Conversely, when SNC is low, the exchange environment is relatively stable and predictable because of less complications and uncertainty (Bode and Wagner, 2015). Such an environment provides fit condition for effective and efficient functioning of formal control in enhancing operational performance because exchange hazards and frequent adaptation to changes are less (Carson *et al*., 2006; Rousseau, *et al.*, 1998; Poppo *et al*., 2016). Consequently, under a low SNC conditions, the scope of transaction and associated cost is expected to be minimal, thereby, making the use of formal control more relevant and beneficial in driving operational performance. Thus, under low levels of SNC, increase use of formal control is likely to be associated with an increase in operational performance Therefore, it is argued that:

H4: Structural network complexity moderates the positive indirect effect of regulatory environment on operational performance, via formal control mechanism, such that at high levels of structural network complexity, the positive effect of formal control mechanism on operational performance is negative.

3.3.3.2 Social Control and Structural Network Complexity

The study further posits that the indirect causal link from regulatory environment to operational performance, via social control, is conditional upon levels of SNC across inter-firm exchanges. RET assumes that social control, through relational norms and trust, can mitigate exchange hazards and inspire commitment to improve exchange

performance. With its relational and trust building characteristics, social control facilitates information sharing and allows flexibility (Heide and John, 1992; Lu, Guo, Qian, He, and Xu, 2015). While effective information sharing reduces information asymmetry and encourages the culture of joint problem solving and conflict resolution within the exchange, flexibility on the other hand allows parties to adapt to unforeseen circumstances (Poppo and Zenger, 2002) to leverage cooperative benefits.

In particular, social control with its adaptability (Ivens and Blois, 2004), and receptive to complex and uncertain environment (Poppo *et al*., 2016) makes it more appropriate under conditions of SNC. Again, by its orientation to cooperativeness, good faith and sense of oneness (Poppo *et al*., 2016; Olander *et al*., 2010; Cai *et al*., 2009), social control is further expected to suppress opportunism, facilitate bilateral decision making and joint problem solving through timely flow of vital information to improve visibility and predictability. This reduces complexity and undercuts the need for rigorous negotiation, monitoring, and inspection (of quality processes and standards) and associated high cost of transaction to optimise operational performance. As Adler (2001) posits, social control reduces transaction costs by replacing contracts with ‘handshakes'.

In line with the foregoing, the study posits that due to its inherent flexibility and adaptive capabilities to respond to complexity-induced complications, uncertainty, and hazards in exchanges, social control is likely to be more beneficial to firms’ operations when it is utilised under the condition of high SNC. Accordingly, the study contends that at high levels of SNC, increased adoption of social control will bolster up the positive relationship between social control and operational performance. This contention is consistent with prior evidence (see Poppo *et al*., 2016; Rousseau *et al*.,

1998; Crocker and Masten, 1991) that the effect of relational trust on performance is positive when market uncertainty is high, and that relational norms are necessary in unpredictable environments.

Contrastingly, as prior evidence suggests, social control is less relevant in driving coordination of inter-firm exchange parties when uncertainty does not exist (Poppo *et al*., 2016; Rousseau *et al*., 1998). Poppo *et al.* (2016) find that the effect of relational trust on performance is insignificant at low levels of market uncertainty. In view of this, since uncertainty is less with low SNC (Bozarth *et al*., 2009; Bode and Wagner, 2015), increased use of social control becomes less beneficial when SNC is low. Thus, at low levels of SNC, the relevance of social control for enhancing operational performance is likely to be obscured as the need for continuous joint adaptation to changes and uncertainty becomes less necessary. This is in line with Rousseau *et al*.'s (1998) assertion that social control is less efficacious in less complex environments because the need for adaptability, which is an important capability of social control (Poppo *et al*., 2016) for facilitating coordination, is less in such environments. By this reasoning, and in consistence with prior research (see Poppo *et al*., 2016; Rousseau *et al*., 1998), the study expects that the indirect positive effect of regulatory environment on operational performance, via social control, will be dampened under condition of low SNC. Accordingly, the study hypothesises that:

H5: Structural network complexity moderates the positive indirect effect of regulatory environment on operational performance, via social control mechanism, such that at high levels of structural network complexity, the positive effect of social control mechanism on operational performance is strengthened.

3.4 CHAPTER SUMMARY

This chapter presented the conceptual model and the hypotheses describing the theoretical linkages (direct and conditional indirect) of regulatory environment and operational performance, and the central roles GMs and SNC play. In following these objectives, the chapter discussed institutional, transaction cost economics, and relational exchange logics as the theoretical underpinnings of the study. This was followed by the presentation of the conceptual framework and the hypotheses regarding the association between regulatory environment and operational performance. Again, the chapter presented hypothetical argument regarding the mediating roles of GMs between regulatory environment and operational performance. Finally, the section arguments on the moderation effects of SNC on the indirect relationship between regulatory environment and operational performance, via GMs. In the chapter that follows, detailed methodological approach for the study is discussed.

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 INTRODUCTION

It is important to outline the details of research design to explain how the research objectives and hypotheses would be tested. Research design is a key issue as it ensures that the information that is collected is reliable, valid and appropriate for theory testing (Rindfleisch *et al.*, 2008). This chapter presents detail discussions regarding the research design employed to gather data for the study. The chapter is organised into sections. The first sub-section presents the purpose of the research. This is followed by the philosophical foundation, which discusses the ontological and epistemological

underpinnings of the research method. The chapter also presents research design, research approach, and choice of survey strategy. Further, research population, sample size determination and sampling technique are presented. Next, questionnaire design and pre-testing process are presented. The section again discusses survey administration and data collection as well as the procedure employed in the data analysis. Finally, ethical consideration and study's setting are presented. The section concludes with chapter summary.

4.2 RESEARCH PURPOSE

Research may be either exploratory in nature, descriptive or may be conducted to test hypotheses to explain causal relationships or for multiple purposes (Saunders *et al*., 2009; Sakaran, 2003; Hussey and Hussey, 1997). An exploratory study may be conducted to seek new insight about a phenomenon in a new light. It is particularly useful when there is the need to clarify an understanding about a problem. More specifically, exploratory study is necessary when some facts are known yet, further information is needed for developing a theoretical framework (Bryman, 2012; Saunders *et al*., 2009). Thus, exploratory study helps to shed new light about a phenomenon of interest, build theories and subsequently test hypotheses (Saunders *et al*., 2009).

By contrast, descriptive study is conducted with the aim of learning about who, what, when, where and hows of topic of interest (Cooper and Emory, 1995). According to Saunders *et al*. (2009), the fundamental objective of descriptive studies is to portray an accurate profile of a person, events or situation, and may be an extension of exploratory research. They, however suggest that a descriptive study should be thought of as a means to an end rather than an end in itself. In other words, descriptive study may be

employed as a precursor to an explanation, an approach referred to as descriptoexplanatory study (Saunders *et al*., 2009).

Finally, explanatory study aims at establishing causal associations between variables of interest (Saunders *et al.*, 2009; Bryman, 2004). It focuses on testing whether or not one event causes another. Also refers to as causal study (Hair *et al.*, 2014), explanatory studies is used when there is the need to establish a conclusive cause-effect relationships. Since the current study seeks to examine the relationships between dependent variable (operational performance) and independent variables (regulatory environment and GMs), an explanatory approach becomes more appropriate. Thus, in general terms, this study is explanatory in nature given that the study seeks to explain how regulatory environment influences operational performance, via GMs.

4.3 RESEARCH PHILOSOPHY

The ultimate aim of social science research is to make sense of the social world by discovering enduring relationships among phenomena (Singleton and Straits, 2005). A general concern in achieving this aim is how best to study the social world to discover the enduring relationships in such a way that it is systematic, verifiable and replicable. Schutt (2009) indicates that there is a general consensus among researchers that a researcher's epistemological and ontological orientation largely influences the manner in which the social science research is carried out. This section discusses the philosophical foundation and the perspective that underpins this study.

4.3.1 Ontology

Ontology and epistemology represent different approaches of viewing research philosophy. Identifying the ontological perspective of research at the start of the research process is important since it informs the decision on the choice of research

design (Cohen *et al*., 2007). Ontology refers to the science or study of being and deals with the nature of reality (Blaikie, 2010). It lays emphasis on 'what is' with the nature of existence (Crotty, 1998). Blaikie (2010) suggests that ontological claims and assumptions are made about the nature of social reality in terms of what exists, what units make it up and how these units interact with others. That is, ontological principles assume that what we believe in constitutes social reality.

Examples of ontological positions are those contained within the perspectives of objectivism and subjectivism (or constructivism) (Bryman, 2012; Grix, 2002; Crotty, 1998). Thus, objectivism and subjectivism represent two important perspectives of ontology.

Objectivism assumes that social realities exist independent of social actors concerned with their existence. In other words, objectivism represents an ontological position that asserts that the existence of social phenomena and their meanings are independent of social actors (Bryman, 2012; Grix, 2002; Crotty, 1998). Alternatively, subjectivism (also referred to as constructivism or interpretivism) assumes that social phenomena are created from the perception and consequent actions of those social actors concerned with their existence (Bryman, 2012; Grix, 2002; Crotty, 1998). It is clear from these two examples that our ontological position informs our approach to research. According to Grix (2002), ontology provides the foundation on which the researcher's epistemological and methodological positions are logically built. This study is grounded in objectivism of ontological perspective given that the study objectively examines the relationships that exist between regulatory environment, GMs, SNC, and operational performance.

4.3.2 Epistemology

Epistemology concerns what constitutes an acceptable knowledge in a field of study (Cohen *et al.*, 2007). It involves an understanding about what is entailed in knowing, i.e., what we know and how we know (Crotty, 1998). It further concerns with providing a philosophical basis for deciding a particular kind of knowledge and how we can ensure that such knowledge is both adequate and legitimate (Crotty, 1998). To Crotty, people's perception about social world differ, and epistemology provides an assumption about the best way of enquiring into the nature. In particular, epistemology asks questions like what is knowledge, and how is knowledge acquired. Key perspectives of epistemology that dominate in management research are the positivism and interpretivism (Cohen *et al*., 2007; Henn *et al*., 2005; Esterberg, 2002; Scott and Usher, 1999). Epistemologically, positivism and interpretivism represent different perspectives of research approaches and provide different sets of assumptions about how issues of concern to the researcher should be studied (Henn *et al*., 2005). These are discussed in the sections that follow.

4.3.3 Interpretivism Paradigm

Interpretivism is conceived as a research paradigm that focuses on the meaningful nature of people's character and participation in social life (Kusi, 2012; Cohen *et al*., 2007). The paradigm of interpretivism is premised on the principles that knowledge of reality is a social construction of human actors (Crotty, 1998). As Chowdhury (2014) submits, the recognition of the subjectivity of human behaviour and actions has had a long history in terms of how we understand the social world. This view or notion of knowing about social world through subjective thoughts and opinions forms the philosophical foundation of interpretivism which assumes that the social world is seen

through the eyes of the people being studied, and recognises multiple perspectives of social reality rather than the "one reality" (the objective view of the world) (Chowdhury, 2014; May, 2011; Greener, 2008).

The dominant assumption of interpretivism is that meanings and motives behind people's actions such as behaviours and interactions with others in society constitute social reality (Chowdhury, 2014; May, 2011; Scott and Usher, 2011). Cohen *et al.* (2000) posit that interpretivism is about understanding the subjective world of human experience and that human behaviours cannot be explained by merely applying methods of natural science. Rather, as part of humans' consciousness, and given their interaction with the world they live in, behaviours can properly be understood by researchers through individuals who perform them in the context the actions occur (Assalahi, 2015).

Ontologically, interpretivism conceives social reality as relative and from multiple perspectives (subjectivism). This implies that the interpretivists see reality as a social construct that embraces multiple interpretations (Assalahi, 2015; Newman and Benz, 1998; Crotty, 1998). From the epistemological perspective, social constructionism is central and generally represents interpretivist philosophical stance. In particular, interpretivists believe that knowledge is constructed through the participants who are considered as active knowers as they understand and reflect the social phenomena.

Thus, the interpretivists believe that social reality is created jointly through meaningful interactions between the researcher and the researched in the socio-cultural context of the latter (Kusi, 2012; Grbich, 2007). In other words, interpretivism acknowledges the feelings, experiences and the viewpoint of the researched as data. To put it succinctly, interpretivism allows the researcher to access the experience and feelings of the researched. The tradition also recognises that both the researcher and the researched

play active role in the joint construction of knowledge and help understand a phenomenon in all its complexity in a particular socio-cultural context (Cohen *et al*., 2007; Crotty, 1998).

4.3.4 Positivism

Positivism is a term developed from positive science and positive philosophy (Crotty, 1998). Linked to the objectionist epistemological perspective (Kusi, 2012; Cohen *et al*, 2007), positivism tradition is based on the principles of universality of laws and emphasises on the existence of common reality on which people can agree (Newman and Benz, 1998). The central argument of positivist paradigm is that social reality exists 'out there' and is independent of the observer (Cohen *et al*, 2007; Assalahi, 2015), and these realities are meaningful as long as they are observable, replicable and verifiable (Assalahi, 2015; Anderson, 1998). The positivist tradition operates on the assumption that human behaviour is essentially rule-governed (Kusi, 2012; Cohen *et al*, 2007), and that one discovers the existing reality and truth by employing methods located in the natural sciences. This means that positivism primarily accepts direct experience and verifiable knowledge but rejects anything abstract, subjective and metaphysical (Crotty, 1998). Thus, the positivist researcher aims at discovering a set of laws that can be used to predict general human behaviour (Esterberg, 2002).

The ontological assumption underpinning positivism is the existence of independent reality outside the mind (objectivism). Epistemologically, positivism holds that meanings reside within entities as objective truth and is independent of the human mind (Crotty, 1998). Such objectionist epistemological assumption underlying positivism implies that research instruments, which have measuring qualities, are very important in sociological inquiries. Hence measuring instruments such as structured questionnaire

is employed to collect social data that can be subjected to statistical examinations and analyses (Crotty, 1998). Corbetta (2003:13) succinctly summarises the positivist paradigm as follows:

> *The study of social reality utilising the conceptual framework, the techniques of observation and measurement, the instrument of mathematical analysis, and the procedure of inferences of the natural sciences.*

The foregoing indicates that both interpretivist and positivist traditions hold polar point of views ontologically, epistemologically and methodologically. Ontologically, positivism assumes that reality is independent from the individual observing it. That is, the researcher (subject) and the phenomenon (object) are separate and independent.

On the other hand, interpretivism holds the belief that reality and the individual who observes it cannot be separated (Cohen *et al*., 2007; Crotty, 1998). The contention of the interpretivist is premised on the notion of life-world, which assumes that people's perception about the world is inextricably linked to a stream of experience they have had throughout their lives (Cohen *et al*., 2007; Weber, 2004; Crotty, 1998).

Methodologically, positivists assume that they can provide scientific explanation of social reality or phenomenon via utilisation of quantitative approaches of data collection and analysis through experiments, observation and survey. Thus, empirical research process involves formulating hypothesis, i.e., tentative supposition derived from previous theories (deductive approach) (Assalahi; 2015; Cohen *et al*., 2007; Perry, 1998; Carr and Kemmis, 1986).

On the other hand, the ontological and episternological foundation of interpretivism (quest for deeper insights in social reality) makes it appropriate to use qualitative

approach. This involves observing and interpreting reality through case studies, phenomenographic studies, ethnographic and grounded theory with the aim of developing theory (inductive approach) (Assalahi, 2015; Weber, 2004; Newman and Benz, 1998). The differences in ontological and episternological foundation of both interpretivism and positivism reflect more in the choice of research method, that is, quantitative (survey, experiment and observation) (Assalahi, 2015; Delanty, and Strydom, 2003) or qualitative (case studies, phenomenology, ethnographic and grounded theory) (Weber, 2004; Crotty, 1998).

The current study seeks to measure and examine the direct and indirect relationships between regulatory environment (an independent variable) and operational performance (a dependent variable), via GMs (mediating variables), under varying conditions of SNC (a moderator). From ontological and epistemological perspectives, the study falls within the realm of positivist (objectivism) paradigm. Accordingly, following guidelines from literature (Assalahi; 2015; Cohen *et al*., 2007; Crotty, 1998; Carr and Kemmis, 1986), a positivist paradigm is adopted in this study to address the research problems and meet the objectives. Adopting this paradigm requires a research methodology that tests hypotheses by collecting and analysing quantitative data through statistical analyses to generate findings that describe and explain the apparent phenomena in line with the research objective (Assalahi; 2015; Carr and Kemmis, 1986).

4.4 RESEARCH DESIGN

The research design is the conceptual structure within which a particular study is conducted (Bryman, 2004). It represents the strategy the researcher adopts to integrate different parts of the study in a coherent and logical fashion to address the research

problems and objectives. As Cavana *et al*. (2001) posit, research design represents a structured set of rational decision-making choices, through which a valid and reliable research outputs are generated. It covers decisions about the data collection methods and approach, measurement procedures, instrument to be used, sample and data analysis techniques (Cavana *et al*., 2001). Thus, it constitutes the blueprint that describes the planned framework for the collection, measurement and analysis of data to address the research problem. (Kothari, 2004). Research design is generally informed by the research purpose and philosophy (see Sections 4.2 and 4.3) (Robson, 2002; Kothari, 2004). Accordingly, given that this study is epistemologically underpinned by positivist paradigm, quantitative research method with survey strategy is employed to describe and explain the relationship between the variables under study.

4.4.1 Research Approach

As provided by Cohen *et al.* (2007), our understanding about the world could be made through three types of reasoning. These include deductive reasoning, inductive reasoning or inductive-deductive reasoning (also referred to as abductive) (Perry, 1998). In the inductive approach, the researcher does not use an existing theory as a starting point of the study rather, he uses his experience to collect empirical data, analyses it and develops a theory as a conclusion (Suanders *et al*., 2009; Perry, 1998). This means that when inductive method is used, the researcher starts from empiric to theory building where the researcher goes to the research field without any definite expectation about the research object (Suanders *et al*., 2009; Cohen *et al*., 2007). The use of inductive approach is particularly consistent with general pattern of qualitative research method such as grounded theory (Perry, 1998). In other words, inductive

reasoning is a theory-building approach, and it is often employed in relation to qualitative research method (Cohen *et al*., 2007; Suanders *et al*., 2009).

Contrarily, in the deductive approach, the researcher dwells on the existing theory of knowledge to develop hypothesis and collects empirical data to find out if the findings confirm the existing theory or otherwise (Cohen *et al*., 2007; Perry, 1998). The key characteristic of deductive reasoning is that it is viewed as a basic form of logical reasoning that is built on existing theoretical framework (Cohen *et al*., 2007; Suanders *et al*., 2009). In other words, deductive approach starts from theoretical background knowledge, then to hypothesis formulation, and empirical data collection to test the hypothesised theory (Alvesun & Skpoldberg, 2008; Pery, 1998). Thus, deductive reasoning is premised on empirical evidence (Suanders *et al*., 2009; Cohen *et al*., 2007). In some situations, some studies may adopt the two approaches of reasoning as complements. Such approach is grounded on inductive-deductive or abductive reasoning (Perry, 1998). Saunders *et al.* (2009) note that both inductive and deductive approaches may be linked to different research paradigms. While the former is linked to interpretivist, the latter owes more to positivist paradigm.

This study, being quantitative in nature with the purpose of describing and explaining the theoretical relationships between the variables under investigation, falls within the realm of deductive reasoning (Suanders *et al*., 2009; Cohen *et al*., 2007). Again, the research objectives are developed based on an understanding of relevant existing theories of the variables being studied. Accordingly, in line with the positivists epistemological stance of this study, deductive approach is adopted as it represents an appropriate reasoning approach that better explains the specified theoretical relationship between the variables under study.

4.4.2 Choice of Cross -Sectional Research Design

Time horizon of research design may take cross-sectional or longitudinal (also panel) form (Churchill, 2005). Cross-sectional design has to do with the collection of data on more than one case at a single point in time to gather quantitative or qualitative data about two or more variables to examine a pattern of association (Bryman, 2004). Usually the data on the variables of interest are collected at the same time and therefore there is no time ordering to the variables used in cross-sectional research (Bryman, 2004).

Contrary to cross-sectional design, longitudinal research design spans over a longer period of time. As an extension of cross-sectional research design in terms of time, longitudinal design represents a distinct form of research design (Bryman, 2004). The key characteristics of longitudinal research design involves the capacity to deal with issues such as common method variance (CMV) and causal influence (CI) (Rindfleisch *et. al*., 2008). Thus, longitudinal research design is able to deal with the issues of CMV and CI better than with cross-sectional design (Bryman, 2004). As such, to minimise the CMV threat and enhance CI, survey based researchers are encouraged to employ three data collection strategies. 1) using multiple respondents, 2) gathering multiple types of data and 3) collecting data over multiple periods (Rindfleisch *et al*., 2008). Longitudinal research design by its nature is more appropriate to accommodate these data collection strategies.

However, the practical challenges associated with longitudinal design restrict its implementations to a large extent, particularly when it comes to doctoral studies that are required to complete within a specific period of time, usually within 3-4 years. First, longitudinal studies require additional resources in terms of cost and time, making it

practically challenging to employ in academic research with budgetary and time constraints (Bryman, 2004). The additional resource demands of longitudinal design make it less desirable to use (Boso, 2010). As Bryman (2004) observes, because of time and cost, it is relatively least-used design in social research. Second, guidelines regarding its usage in terms of when to conduct is unclear and thus restrict its frequency of use (Bryman, 2004). Bryman particularly raises issues of panel conditioning effect, where the continued participation of respondents in a study influences the way they respond to subsequent questions. In the light of this, Rindfleisch *et al*. (2008, p. 262) succinctly put it that "longitudinal survey research is easier to advocate than to implement."

As a result of the challenges associated with the implementation of longitudinal research design (such as time and financial resource demands), and in line with prior studies (see Rhee *et al*., 2014; Cao and Zhang, 2011; Cai *et al*., 2009), a cross sectional research design is adopted in this study to collect primary data and examine the relationships among the variables in the proposed research model. More specifically, cross-sectional design provides means of evaluating pattern of association between constructs of interest (Bryman, 2012). Accordingly, examining the associations of regulatory environment, GMs and SNC with operational performance using crosssectional data should help shed theoretical insight for knowledge contribution.

Although criticised for reliability issues (Rindfleisch *et al*., 2008, Bryman, 2004), collecting primary data through cross-sectional design has been widely used in management literature (see for example Poppo *et al*., 2016; Huang *et al*., 2014; Hernandez-Espallardo *et al*., 2010; Cai *et al*., 2009; Cavusgil *et al*., 2004). As Chandler and Lyon (2001) observe, the dominant rise of cross-sectional design may be attributed

to the problem of data collection and the complex statistical technique required to analyse longitudinal data. Again, building on earlier studies, Boso (2010) explains that the challenge of respondents' attrition where respondents leave their jobs or simply lose interest after a longitudinal study is initiated undermines the desirability of longitudinal design.

Previous studies have observed that some of the key benefits associated with longitudinal design may be achieved in cross-sectional design. For example, Rindfleisch *et al*. (2018) suggest that, the use of multiple respondents, multiple data sources or multiple periods in cross-sectional designs can reduce CMV and enhance C1. In fact, Lyon *et al*. (2000) recommend that the timing issues in cross-sectional studies can be addressed by incorporating three–year time lagged data in cross-sectional survey studies. Following Lyon *et al*.'s (2000) recommendation, a three year time lag was built in the questionnaire for this study. Again, guided by Golden's (1992), respondents were frequently reminded about the need to provide honest and accurate responses. Further, to address the issue of reliability and validity associated with crosssectional designs, the study conducted validity and reliability assessments (see Chapter five) as recommended in literature (Rindfleisch *et al*., 2008).

4.4.3 Choice of Survey Strategy

Following the choice of cross-sectional research design as an approach to collecting primary data for this study, it was important to choose the appropriate strategy through which to collect the data. Yin (2003) defines research strategy as an empirical inquiry that investigates a phenomenon within its real context. Several research strategies are available. Saunders *et al*. (2009) for example identify research strategies to include case study, experiments, action research, grounded theory, ethnographic research archival

and survey. According to Bryman, (2004), survey research is well suited for studies that require data for testing hypotheses and explain theoretical associations between variables. In SCM literature, several studies have used survey (see Huang *et al*., 2014; Cao and Zhang 2011; Cai *et al*., 2009). Accordingly, following these prior studies, and based on the philosophical stance of this study (positivist paradigm), this study adopted survey strategy.

Survey involves the selection of a relatively large sample of respondents from a predetermined population (Kelly, 2003). Widely applied in social research (Saunders *et al*., 2009), survey allows data to be collected in a standardised form, usually but not necessarily, done by questionnaire or interview (Kelly, 2003). Survey-based data collection methods available include face-to-face interview, telephone interviews, online questionnaires, mail questionnaires, and interviewer administered questionnaires, (Churchill, 1995).

Despite the advantages associated with the use of telephone interviews, online and mail questionnaires data collection methods (Churchill 2005; Bryman, 2004), they were not used in this study due to their implementation challenges in the study context. For example, the challenges associated with the mailing address systems and internet connectivity make the use of online and mailing questionnaires in Ghana particularly challenging. In particular, telephone interview appeared inconvenient to most managers who, on the spare of the moment, would have to search for some information before responding to some issues. Again, the length of time required to complete the questionnaire via telephone made this method less desirable to use. In the light of these challenges associated with telephone interview, online and mail questionnaires, the

researcher relied on self-administered and face-to-face interviewer administered questionnaires survey approach.

4.4.4 Research Population

Defining research population is an important step prior to determining and selecting research sample (Bryman, 2012). Research population refers to the full complements of cases from which a sample is drawn (Saunders *et al*., 2009). In other words, population of a study describes the individuals or objects that meet the criteria of the sample for inclusion in a study (Burns and Grove, 1993).

The target population for this study comprised small, medium and large organisations in the manufacturing and service sectors in Ghana. The United Nations Industrial Development Organization (UNIDO) defines SMEs based on the number of employees, where micro enterprise consists of employees less than 5, small enterprise 5-19, medium enterprise 20-99, while enterprise with employees above 100 are classified as large (UNIDO, 1983). The National Board for Small Scale Industries (NBSSI) in Ghana also defines SMEs based on the number of employee, where micro enterprise consists of employees between 1-5, small enterprise 6-29, medium enterprise 30-99, while enterprise with employee above 100 are classified as large. Based on NBSSI's definition, this study regards firms with employees between 6-29 as small scale, those with employees between 30 and 99 as medium and those above 100 as large. The rationale for targeting these categories of firms (ie, small, medium and large organisations) as sources of data was informed by two key reasons.

First, all the firms within the research setting face various forms of regulatory demands in their respective sectors. Again, since the regulatory institutional forces emanate from the macro or national level, it is presumed that these organisations operate within the

broader regulatory framework in Ghana regardless of size and the sector of operation. Second, these sectors are well defined and their operational characteristics better fit into the concepts and relationships being examined in the study. In fact the use of small, medium and large organisations together in this study is consistent with prior research (see Knight and Kim 2009; Jantunen *et al*., 2008; Knight and Cavusgil 2004).

Generally, obtaining a reliable database on businesses in Ghana is a challenge (Adomako *et al*. 2016; Boso *et al*., 2013b). Different institutional databases (such as Ghana Statistical Service (GSS), Registrar General's Department, the Association of Ghana Industries (AGI), the Ghana Business Directory, Yellow Pages Ghana, and Ghana Yello) provide different information and thus make it difficult to obtain a reliable population in Ghana. In addressing this challenge, prior studies conducted in Ghana have used different approaches. While some draw on single sources (see e.g. Adomako *et al*., 2018; Acquaah *et al*., 2011; Acquaah 2007) to obtain a list of firms of interest to study, others (e.g., Adomako *et al*., 2016; Boso *et al.*, 2013b) draw on multiple sources. Much as the use of multiple sources seems appropriate, the difficulty associated with harmonising the information (due to different formats) makes its implementation particularly challenging.

Accordingly, in following some previous works in Ghana (Adomako *et al.*, 2018; Acquaah *et al*., 2011), this study relied on a single source to determine the size of population for the study. Specifically, the study drew on the Integrated Business Establishment Survey (GSS, 2016) to identify a list of firms of interest. The study relied on GSS database because beyond being authoritative source, it provides comprehensive information of the firms (e.g., firm size, date of registration, location addresses and contacts) to help identify and access firms easily. Further, from GSS (2016) data, the service sector constitutes over 80% of firms established in Ghana while the

manufacturing sector accounts for less than 20%. Based on GSS report, the estimated population for the study and the distribution across the service and the manufacturing sectors were determined as shown in Table 4.1.

Table 4.1: Study Population

Cluster	Total number of Establishment	Service Sector	Manufacturing Sector	Percentage (100%)
Southern Sector	31,738	25,390	6,348	61
Middle Sector	11, 668	9,334	2,334	22
Northern Sector	8,776	7,021	1,755	17
Total	**52,182**	**41,745**	**10,437**	**100**

Source: Ghana Statistical Service (2016)

4.4.5 Sample Size Determination

A sample of a study represents a segment of the population that is selected for the study (Bryman, 2012). Obtaining an appropriate sample size is key for survey research (Bryman, 2012). Ding *et al.* (1995) suggest a minimum sample of 100-150 is appropriate for quantitative studies while others (see e.g. Kelloway, 1998) recommend a minimum of 200. Schumacker and Lomax (1996) recommend rule of thumb of 10-20 cases per indicator. Relatedly, Hair *et al*. (2014) suggest that a ratio of 1 item to 10 cases is ideal for determining appropriate sample size.

Further, Krejcie and Morgan (1970) have developed a model for determining sample size applicable for scientific research based on target or estimated population. The study's estimated population per the Integrated Business Establishment Survey (GSS, 2016) was 52,182 (see Table 4.1). The study followed Krejcie and Morgan (1970) model to determine the sample size for this study. Given that the target population of the study was 52,182, a sample size of 655 (confidence level of 99% with 5.0% margin of error (see Krejcie and Morgan, 1970) was deemed appropriate. Accordingly, 655 firms were used for this study comprising 524 and 131 from the service and

manufacturing sectors respectively. This approach of sample size determination is largely consistent with Hair *et al*.'s (2014) recommendation of 10 cases minimum per each questionnaire item. Table 4.2 shows the sample size and its distributions across the sectors.

Table 4.2: Sample Size

Cluster	Service Sector	Manufacturing Sector	Total Sample	Percentage (%)
Southern Sector	318	80	398	61
Middle Sector	118	29	147	22
Northern Sector	88	22	110	17
Total	**524**	**131**	**655**	**100**

Source: Ghana Statistical Service (2016)

4.4.6 Sampling Technique

Sampling is concerned with the process of selecting a subset of cases as a segment of the population to draw conclusion about the whole set (Bryman, 2004; Singleton and Straits, 2005). The study adopted both probability and non-probability sampling techniques and used a multi-levels approach to select the sample. According to Bryman (2012), one way of dealing with heterogeneous and geographically dispersed population is to employ cluster sampling technique. Accordingly, given the heterogeneity and geographically dispersed nature of the target population for the study, and to ensure a representative sample that reflects the target population, cluster sampling technique was employed (Bryman, 2012). In doing so, the study's population was divided into three geographical clusters, namely, Southern, Middle and Northern Clusters. Firms within the various clusters were further categorised into service and manufacturing groups and quotas assigned to each sub-group proportionally (see Table 4.2). Within each category, a systematic random sampling method was adopted for its simplicity and quickness (Wu, 2008). Using Ghana Statistical Service's generated list

of firms in the data base, firms corresponding to every third number were selected. Thus, firms within each category were randomly selected until the minimum overall sample size requirement for each stratified group, and ultimately for the study (i.e., 665), was met. In contacting the sampled firms, names, contact addresses and telephone numbers provided by Ghana Statistical Service were used as a guide.

Firms in the various clusters were selected based on the following criteria. (1) a firm should be in operation for not less than three years. (2), a firm should have employees of not less than 6, and (3) a firm should be operating either within the service or the manufacturing sector. At the firm level, one respondent at the managerial level (such as Managing Director, General Manager, Accountant and Operations Manager) was purposively selected. As Sudgvist (2012) suggests, these categories of individuals were targeted because they are considered to be the most suitable and knowledgeable informants about their own firms, and particularly about the regulatory and interorganizational matters. Again, in selecting the respondents, only those with managerial experience, and have worked with their current firm for at least 3 years were involved.

4.4.7 Unit of Analysis

As Cai *et al*. (2009) observe, managers' perceptions of the regulatory institutional environment vary across sectors and industries of a particular country. Consequently, in consistence with prior research (Adomako and Danso, 2014; Boso *et al*., 2013a; Boso *et al*., 2013b; Abdi and Aulakh, 2012), the empirical model for the current study was tested by measuring the regulatory environment at the firm level. The theoretical reasoning underpinning this approach is that measuring regulatory institutional

conditions at firm level allows for variability in managers' perception of their business environment and subsequent influence on strategic decisions they make (Abdi and Aulakh,. 2012).

4.5 QUESTIONNAIRE DESIGN

This section focuses on the questionnaire design process. In line with the philosophical foundation and the research method chosen (see Section 4.3) the study adopts questionnaire as the data collection instrument. In designing the questionnaire, Churchill's (1979) and Devellis's (2003) psychometric guidelines and procedure of questionnaire design were followed (see Figure 4.1). The questionnaire design focuses on the questions and how they were developed including the statements included in the questionnaire. The questionnaire was developed such that the questions asked were reflective of conceptualisations and hypotheses of this study.

Step 1

Determine the type of information needed.

Step 2

Decide on the method of questionnaire administration.

Step 3

Decide the content of individual questions relying on current literature and interviews with experts in the field.

Step 4

Decide the kind of response expected for each question.

Step 5

Decide on how to word each question.

Step 6

Decide on the sequencing of the questions to derive more participation.

Step 7

Decide on the physical characteristics the questionnaire should have.

Step 8

Review steps 1-7 and revise any of them if necessary.

Figure 4.1: Procedure for Questionnaire Development

Adapted from Churchill (1979)

Following procedure and guidelines recommended by Churchill, (1979), and to avoid scale proliferation (Bruner, 2003), institutional and inter-firm governance literatures were reviewed based on the study's objectives to select the appropriate existing scale

to measure the constructs of interest. In consistent with past studies (Gligor, 2014; Cao and Zhang, 2011), multiple items were used to measure all the constructs to help increase reliability, decrease measurement errors, and to ensure that there is greater variability among respondents to improve validity (Churchill, 1997). In particular, the search focused on existing scales for measuring operational performance, GMs, SNC and regulatory environment in literature.

To ensure that the measurement items used suit the study context, it became necessary to modify some of the measures adopted. In doing so, the views of experts in academia and industry were solicited. These experts comprised two research fellows who form the research supervision team and 10 practising industrialists with considerable degree of experience. These categories of experts were used in view of their background and knowledge about the constructs used for the study. First, the academics were asked to review the modified measures such that item descriptions do not only reflect the conceptualisation of their respective constructs but also suit the study's context. Having refined the measures based on the feedback received, they were sent to 10 managers for further revision to ensure that the constructs and their associated measure reflect the realities of industrial practice. Based on the inputs from the managers, some modifications were made in terms of sentence structure to ensure that the measures truly reflect industrial practice and are clearly worded to solicit the relevant information. The refined measures were pre-tested (discussed later in Section 4.6) for further purification through statistical validation (see Chapter five, Sections 5.4.2 and 5.4.3). Table 4.3 presents the information the questionnaire solicited from the respondents.

Table 4.3 Information Sought from Respondents

Operational Performance Perceived satisfaction of operational effectiveness
Financial Performance The extent of firm's financial objective met.
Institutional Environment 1. Regulatory institution
Governance Mechanism 1. Formal control 2. Social control
Structural Network Complexity Perceived complicatedness of supply network
1. Relationship-specific investment 2. Relationship incentive alignment
Firm profile information 1. Total employees 2. Firm experience 3. Sector of operation 4. Industry type

The questionnaire was structured into sections (see Appendix A) covering ten key constructs, firm and respondent profiles. A detailed description of the measures for these constructs is presented in the sections that follow.

4.5.1 Operational Performance

Operational performance refers to a firm's ability to respond to, and delivers its customers' needs (Zhang *et al*., 2016; Cao and Zhang, 2011; Panayides and Lun, 2009; Huo *et al*., 2008). As Whitten *et al.* (2012) argue, achieving overall performance is dependent on the extent to which a particular supply chain achieves its operational objectives. Additionally, in SCM context, operational performance, from the extended view of flow of value from the supplier to the ultimate customer, is conceived as the

ability to satisfy the end consumer in terms of quality and cost (Whitten *et al*., 2012; Chen, Paulraj, 2004). In this regard, the performance of supply chain is viewed from the operational perspective, where performance outcome is measured in terms of the ability to deliver products and services to the ultimate customer in the right quality, at the right time, and at affordable cost (Whitten *et al*., 2012; Chen and Paulraj, 2004).

In keeping with prior research, the current study operationalises operational performance as the extent to which a firm responds to, and delivers its customers' needs (Zhang *et al.*, 2016; Cao and Zhang, 2011; Panayides and Lun, 2009; Huo *et al*., 2008). The extent of perceived operational effectiveness was measured using five scale items from Panayides and Lun's (2009). Respondents were asked to indicate the extent to which they were satisfied or dissatisfied with statements regarding their firm's operational performance. Seven-point Likert scale was used and anchored at 1 = very dissatisfied and 7 = very satisfied. Table 4.4 provides the items used to assess operational performance.

Table 4.4: Scale Item for Operational and Financial Performance

Construct and Definition	**Measurement Items**	**Item Sources**

Operational Performance Operational performance refers to the extent to which a firm responds to, and delivers its customers' needs (Panayides and Lun (2009; Huo *et al*., 2008; Cao and Zhang, 2011; Zhang *et al*., 2016).	How satisfied are you with your business's performance over the past three years in terms of the following? 1 = "very dissatisfied"; "7 = very dissatisfied". 1. Responsiveness to customer needs 2. Reduction in lead time 3. Reduction in time-to-market 4. Process improvement 5. On-time deliveries	Item 1 was sourced from Flynn *et al*. (2010). Items 2-4 were sourced from Panayides and Lun (2009).
Financial Performance Refers to as the extent to which firm achieves its financial and market goals (Huo, 2012).	Rate the extent to which your organisation has met or not met the following objectives over the past 3 years. 1= Objective Not Met at all , 7= Objective Absolutely Met 1. Increase in sales. 2. Increase in profit. 3. Increase in return on investment. 4. Increase in return on sales. 5. Increase its market share	All items used were sourced from (Huo, 2012).

4.5.2 Regulatory Institutional Environment

Institutional environment refers to the rules of the game (North, 1991). Regulatory institution, a key dimension of formal institution, represents the macro level of

institution and consists of written rules and regulations that emerge from established legislation at the national level (Martinez and Williams, (2012). The current study draws on Manolova *et al.*'s (2008) and Díez-Martín *et al.*'s (2016) conceptualisation and operationalises regulatory environment as the extent to which firms perceive a country's laws and regulations as desirable, appropriate and efficient in providing enabling environment for business operation.

To capture the regulatory environment construct, the scale developed by Manolova *et al* (2008) and Cai *et al*. (2010) were adopted. Specifically, two items each were sourced from Cai *et al*. (2010), and Manolova *et al*. (2008) respectively. Two items were also developed based on the insight from these scales to reflect the circumstance of the study setting. Respondents were asked to indicate the extent to which they agree or disagree with six statements relating to regulatory institution in the study's context. A sevenpoint Likert scales were used and were anchored at 1= "very strongly disagree" to 7 = "very strongly agree". Table 4.5 provides a complete list of the items used to measure the regulatory environment construct.

Table 4.5: Scale Item for Regulatory Institutional Environment

Construct and Definition	Measurement Items	Item Sources

Regulatory Institutional Environment The extent to which firms perceive a country's laws and regulations as desirable, appropriate and efficient in providing enabling environment for business operation (Manolova *et al*., 2008; Díez-Martín *et al*., 2016).	Indicate the extent of your agreement or disagreement with the following statements. 1 = "strongly disagree"; 7 = "strongly agree" 1. The legal system in this country prevents us from being cheated. 2. The legal system in this country protects our interests. 3. Government provides enabling environment for businesses. 4. Government implemented laws that help businesses develop 5. The legal system is efficient 6. Overall, we have confidence in the legal system	Items 1-2 were sourced from Cai *et al*. (2010) "Regulatory Institution" Scale. Items 3-4 were adapted from Manolova *et al*. (2008) "Regulatory Institution" Scale. Items 5-6 were newly developed based on Manolova et al. (2008) and Cai *et al.* (2010).

4.5.3 Governance Mechanisms

GM refers to the underlying control activities designed to manage exchange relationships (Huang *et al.*, 2014; Hoetker and Mellewigt, 2009). It involves the application and utilisation of formal contract and social or informal arrangements designed within inter-firm alliance setting to manage exchange relationship (Huang *et al*., 2014; Cai *et al*., 2009). Following prior research (see e.g. Huang *et al*., 2014; Cai *et al.*, 2009, Poppo and Zhang, 2002), GM is conceptualised in this study into two dimensions; that is, formal control and social control mechanisms.

Formal control refers to the extent to which exchange relationship is governed by formally written contract, which explicitly stipulates the responsibilities and obligations

of each party (Huang *et al*., 2014; Abdi and Aulakh, 2012; Ryall and Sampson, 2009) By contrast, social control is conceived as the extent to which exchange relationship is governed by shared values, social and cooperative norms, and trust (Cao, and Lumineau, 2015; Huang *et al*. 2014; Li *et al*., 2010; Cai *et al*., 2009; Poppo and Zenger, 2002). To capture formal and social control constructs, the inter-firm alliance governance mechanism scale developed by Huang *et al*. (2014), Cai *et al*. (2009) and Homburg *et al*. (2009) were adopted for the current study. All items were measured on a 7-point rating scale, where respondents were asked to indicate the extent to which the statements provided occur in their organisation. Table 4.6 presents details of measurement scale of GMs.

Table 4.6: Scale Item for Governance Mechanism (Formal and Social Controls)

Construct and Definition	Measurement Items	Item Sources

Formal Control Formal control refers to the extent to which exchange relationship is governed by formally written contract, which explicitly stipulates the responsibilities and obligations of each party (Abdi and Aulakh, 2012; Huang *et al*., 2014; Ryall and Sampson, 2009).	Indicate the extent to which these occur in your organisation. 1 = "not at all "; 7 = "to an extreme extent" 1. My organisation ensures specific, well-designed agreements with its business partners (eg, suppliers and customer). 2. My organisation ensures formal agreements that detail the obligations of all parties. 3. My organisation ensures formally agreed set of rules to monitor our partner's actions. 4. My organisation ensures compliance with contractual terms and conditions. 5. My organisation makes reference to contracts to settle differences of opinions.	Items 1-2 were sourced from Cai *et al.* (2009) "Formal control governance" Scale. Items 3-4 were adapted from Huang *et al*. (2014) "Formal control governance" Scale. Items 5 was adapted from Homburg et al. (2009)

Table 4.6: Scale Item for Governance Mechanism *(continued)*

Construct and Definition	**Measurement Items**	**Item Sources**

Social Control Social control refers to the extent to which exchange relationship is governed by shared values, social and cooperative norms and trust (Huang *et al*. 2014; Li *et al*., 2010; Poppo and Zenger, 2002; Cao, and Lumineau, 2015).	Indicate the extent to which these occur in your organisation. 1 = "not at all "; 7 = "to an extreme extent" Trust building with your business partners (eg, suppliers and customer) 2. Team building with your business partners 3. Joint planning with your business partners 4. Joint workshop /meetings with your partners 5. Social events with your business partners.	All items were sourced from Huang *et al*. (2014) "Social control" Scale.

4.5.4 Structural Network Complexity

SNC represents key operational issues of management practice. SNC refers to the extent of the numerousness of actors characterising a firm's network (Birkie *et al*., 2017; Bozarth *et al*., 2009; Vollmann *et al*., 2005; Choi and Hong, 2002; Anderson, 1999). SNC emanates from inter-firm alliances and their associated transactions within the supply chain (Christopher, 2012; Christopher and Holweg, 2011). Drawing on existing conceptualisation, the study adopted three measures from Bozarth *et al*.'s (2009). Respondents were asked to rate the degree of complexity in relation to their supply network. A seven-point Likert scales were used and were anchored at 1= "extremely low" to 7 = "extremely high". Complete list of the items used is presented in Table 4.7.

Table 4.7: Scale Item for Structural Network Complexity

Construct and Definition	Measurement Items	Item Sources
Structural Network Complexity Refers to the extent of the numerousness of actors characterising a firm's network (Bozarth *et al.*, 2009; Birkie *et al.*, 2017; Vollmann *et al.*, 2005; Choi and Hong, 2002).	Rate the following in relation to the external linkages of your organisation with others. 1 = "extremely low"; 7 = "to an extremely high" 1. The number of customers your organisation serves. 2. The number of suppliers does this firm deals with. 3. The number of product/service models produced outside your firm.	All items were sourced from Bozarth *et al.* (2009) "Structural Complexity" Scale.

4.5.5 Control Variables

It was necessary to control for some variables likely to have confounding effect on the dependent variable and or the mediating variables in the proposed model of the study. In particular, the study controlled for the possibility that operational performance and GMs evaluation may be coloured by certain factors (Hoeker and Mellewigt, 2009). First, management literature indicates that firm size and industry type (service or manufacturing) may affect performance (Boso *et al.*, 2017; Gligor, 2014; Boso *et al.*, 2013a; Wu, 2008; McEvily and Zaheer, 1999; Liu, 1995).The logic stems from the fact that smaller firms tend to have fewer resources to deploy and implement their strategies and practices. Also, as Cai *et al.* (2009) suggest, industry types react differently to factors from both the task and external environments. Second, according to Gligor (2014), age of firm can influence decision and implementation of management practice because of learning curve effect and, therefore, might affect firm's performance outcome. Accordingly, in consistent with management literature (Boso *et al.*, 2017;

Gligor, 2014; Wu, 2008; McEvily and Zaheer, 1999), the current study controlled for firm's size and age and measured by the number of employees and years of existence respectively (all logarithmised)

In addition to firm size, age and industry type (Gligor, 2014), four other constructs that have been identified to have impact on the effect of GMs and performance outcome (Poppo *et al*., 2016; Chung *et al*., 2016; Huang *et al*., 2014; Tate *et al*, 2014; Roxas and Chadee, 2013; Cao and Zhang, 2011; Zhu and Sarkis, 2007) were employed. These include normative and cultural-cognitive institutions, relationship specific investment and relationship incentive alignment as discussed in the sections that follow.

4.5.5.1 Normative and Cultural - Cognitive Institutions

Normative and cultural-cognitive together with regulatory institution constitute the three pillars of IE. Normative institutions refer to the extent of firms' perception about a society's values and norms that manifest in standards and commercial conventions such as those established by professional and trade associations, and business groups (Tate *et al*., 2014; Manolova *et al*.,2008). Cultural-cognitive on the other hand refers to the degree of generalised perception of beliefs and assumptions about the expected standards of behaviour specific to a culture, which manifest through social interactions and networks of informal relationships in a society (Cai *et al*., 2010; Ren *et al*. 2010; Manolova *et al*., 2008). As indicated in institutional literature, both normative and cultural-cognitive institutions have impact on firms' operations (such as GMs) and performance outcomes (Yaibuathet *et al*., 2008). Based on this evidence, the study expects that normative and Cultural-cognitive institutions may affect GMs and operational performance, and were accordingly controlled for in estimating regulatory environment-operational performance relationship. For the normative institution, five

measures were developed from Tate *et al*. (2010). For the cultural-cognitive institution, three measures were sourced from Cai *et al.* (2010) while one was taped from Ren *et al*. (2010). For both normative and Cultural-cognitive institutions, a seven-point Likert scales were used and were anchored at 1= "very strongly disagree" to 7 = "very strongly agree". Full measures used are shown in Table 4.8.

Table 4.8: Scale Item for Normative and Cultural - Cognitive Institutions

Construct and Definition	**Measurement Items**	**Item Sources**
Normative Institution Refers to the extent of firms' perception about a society's values and norms that manifest in standards and commercial conventions such as those established by professional and trade associations, and business groups (Tate *et al*., 2014; Manolova *et al.*,2008).	Indicate the extent of your agreement or disagreement with the following statements**.** 1 = "strongly disagree"; 7 = "strongly agree" 1. My firm belongs to industry groups that encourage good business practices. 2. My firm actively participates in industry groups that encourage ethical business practices. 3. This profession expects all of its members to comply with ethics and standard requirements. 4. Adherence to professional ethics and industry norms are admired in this country. 5. Following due process is important in my industry (own construction)	Items 1-3 were sourced from Tate *et al*. (2010). "Normative" Scale. However, items 4-5 were newly developed based on Tate *et al.* (2010) and Manolova *et al* (2008

Table 4.8: Scale Item for Normative and Cultural - Cognitive Institutions (*continued)*

Construct and Definition	**Measurement Items**	**Item Sources**
Cultural - Cognitive Institution Refers to the degree of generalized perception of beliefs and assumptions about the expected standards of behaviour specific to a culture, which manifest through social interactions and networks of informal relationships in a society (Cai *et al*., 2010; Ren *et al*. 2010; Manolova *et al*., 2008).	Indicate the extent of your agreement or disagreement with the following statements**.** 1 = "strongly disagree"; 7 = "strongly agree" 1. In this country, businesses depend on good connections. 2. In this country, one's personal connection is very important. 3. In this country, good personal connections is a requirement for business success. 4. Business partners are viewed as friends who care about each other wholeheartedly.	Items 1-3 were sourced from Cai *et al*. (2010) "cognitive" Scale. However, items 4 was adapted from (Ren *et al*, 2010).

4.5.5.2 Relationship Specific Investment and Incentive Alignment

SCM literature indicates that GMs and operational performance may be driven by relationship specific investments and incentive alignment respectively (Cao and Zhang, 2011; Hoeker and Mellewigt, 2009). In expectation of this, it becomes necessary to control for these variables in examining the relationships between the variables under study. Specifically, both relationship specific investments and incentive alignment were controlled for in examining the effect of regulatory environment on GMs, and for evaluating the relationship between GMs and operational performance.

While relationship specific investments refers to the extent to which both knowledgebased and property-based resources are invested in inter-firm exchanges by parties (Hoeker and Mellewigt), incentive alignment is concerned with the degree to which exchange partners share costs, risks, and benefits (Cao and Zhang, 2011). Five relationship specific investment measures were adopted from Hoeker and Mellewigt (2009) where respondents were asked to indicate the extent to which their firms invest in inter-firm alliance exchanges. A seven-point Likert scales were used and were anchored at 1= “extremely low” to 7 = “extremely high”. Similarly, five measures were sourced from Cao and Zhang (2011) for incentive alignment where respondents were asked to indicate the extent to which they disagree or agree to statements regarding the constructs. A seven-point Likert scales were used and were anchored at 1= “very strongly disagree” to 7 = “very strongly agree” as indicated in Table 4.9.

Table 4.9: Scale Item for Relationship Specific Investment

Construct and Definition	Measurement Items	Item Sources
Relationship Specific Investment Relationship specific investments refers to the extent of both knowledge-based and propertybased resources exchange parties invest into alliance (Hoeker and Mellewigt)	Indicate the extent to which the relationship(s) between your organisation and its business partners involve/use the following assets. 1 = "extremely low"; 7 = "to an extremely high" 1. Knowledge about marketing and sales know-how. 2. Knowledge about business planning and development networks. 3. Knowledge about business operations. 4. Knowledge about information and Technology development. 5. Knowledge about Customer care.	All items were adapted from Hoeker and Mellewigt (2009) "knowledge –based asset investment" scale.

Table 4.9: Scale Item for Incentive Alignment (*continued)*

Construct and Definition	Measurement Items	Item Sources
Incentive Alignment Incentive alignment refers the degree to which exchange partners share costs, risks, and benefits (Cao and Zhang, 2011).	Indicate the extent to which you agree or disagree to each statement as applicable to your organisation's relationship incentives. 1 = "strongly disagree"; 7 = "strongly agree. 1. My organisation and its business partners (eg, suppliers and customer) evaluate each other's performance. 2. My organisation and its business partners share costs together. 3. My organisation and its business partners share benefits together. 4. My organisation and its business partners share risks that occur together. 5. The incentive for my organisation commensurate with our investment and risks.	All items were sourced from Cao and Zhang (2011) "Incentive alignment" scale.

4.5.6 Profiling Variables

A total of 5 questions were used to profile the firms sampled for the studies. In line with prior research, (Huang *et al*., 2014, Cai *et al*., 2009) three of the profile variables (firm size, firm experience and industry type) were used as control variables. Following previous research (eg, Wang, 2008; Cavusgil and Naor, 1987), firm size was measured by total number of employees while firm's experience was measured by the number of years the firms have been in existence. Finally industry type was measured using dummy where 0 = manufacturing, and 1 = service. Respondents were asked to indicate the industry and sector their firms operate in. Specifically, respondents were asked to indicate whether they were in manufacturing or services. Firm sectors of operation were also measured in terms of for profit or not for profit. As indicated in Boso's (2010), these profile variables help to develop an initial impression of the characteristics of the firms involved in the study. Table 4.10 presents the profile questions.

Profile Variables
1. How many full-time employees are there in your organisation?..... (Please give an approximate number if you are not sure.
2. In which industry does your organisation operate? Manufacturing ☐ Service ☐
3. In which sector does your organisation operate? For profit ☐ Not for profit ☐
4. How many years old is your organisation?..... (Please give an approximate number if you are not sure)
5. Does your organisation have premises in more than one location? Yes ☐ No ☐

Figure 4.2: Profile Variables

4.5.7 Response Format

According to Churchill (1995), response formats may take the form of open-ended answers, multidichotomous answers, dichotomous answers and closed-ended answers. In this study, a closed-ended answer format was used. The rationale for using this format was based on the following reasons. First, as Churchill (1995) and Boso (2010) explain, the closed ended answer format reduces potential misinterpretations among

respondents. Second, because the closed-ended answer format requires relatively shorter time to complete the questionnaire, respondent fatigue is minimised. This reduces non-response rate. Finally, the closed-ended format represents less expensive data collection technique compared to other response format (DeVellis, 1991).

In developing the questionnaire, it was necessary to consider the possibility of repetitiveness. To avoid this, respondents were asked to simply fill boxes with the appropriate values provided for each corresponding question. In some instances, respondents were required to either tick or circle the number that best represented their views. Additionally, the type of measurement scale to use was considered when developing the questionnaires. The interval and ratio scale have been extensively employed in SCM research (see e.g. Huang *et al*., 2014; Cao and Zhang, 2011; Cai *et al*., 2009). These scales allow researchers to perform parametric statistical analysis that is not possible with ordinal and nominal scales (Churchill, 2005). Accordingly, interval scales were used in this study. Also, to the extent that the study's key constructs were conceptualised as continuous and were considered as normally distributed in the population, it became appropriate to use interval scales (Hair *et al*, 2014). As with similar studies in prior research (Huang *et al*., 2014,Cai *et al*., 2009, Cao and Zhang, 2011) multiple rating scales were used to rate the responses of participants. In particular, Likert type with different anchors were used.

4.5.8 Physical Characteristics of the Questionnaire

Churchill (1995) observes that the physical characteristics of a questionnaire is critically important since it has a significant impact on the extent of respondents' willingness and cooperation to provide responses. Devellis (2003) also submits that poorly designed questionnaire may cause participant to under estimate the importance and credibility placed on the research, resulting in low response rate. As such, it was therefore

important to ensure that the questionnaire was developed to make it physically presentable and professionally delivered (Devellis, 2003). Accordingly, the questionnaires were designed and printed clearly using a good quality paper.

Additionally, the questionnaires were accompanied with cover letters printed on Kwame Nkrumah University of Science and Technology School of Business letterhead to make it formal (see Appendix B).

Further, as suggested by Devellis (2003), long questionnaires potentially reduce response rate as they place an increased burden on respondents. In the light of this, the comprehensiveness of information required and associated cost involved in collecting the data were considered. Accordingly, a 6–page questionnaire was developed into a booklet form. This was to make it presentable and create a sense of quality. Also, following the approach used by Boso (2010), the questions were properly numbered with consistent spacing to improve clarity and credibility of the study to the participants.

Again, Devellis (2003) notes that the length of questionnaires also has impact on response rate. As such, it is important to design a questionnaire length capable of meeting reliability requirement. While respondents may feel reluctant to complete longer questionnaire, too short a questionnaire may raise issues of reliability though yields higher response rate. In line with the objectives of survey, which is to have majority of questionnaires returned fully completed to be able to undertake statistical analyses, Devellis (2003) recommends that researchers develop optimal length of questionnaires that balances the need for high response rate and high reliability. Following this, this study designed a reasonably longer questionnaire that adequately captured all the constructs in the study's model.

4.6 PRE-TESTING

As Hair *et al.* (2014) suggest, it is important to establish reliability and validity prior to testing any theory. In particular, assessing face validity is critical when measurement scales used for a particular study were adopted from previous studies. Hardesty and Bearden (2004) submit that assessment of face validity is important because (1) it provides an understanding of the content and meaning of a measure, and (2) it is critical if measurement model is to be correctly specified. In other words, the content of scale should represent the underlying theoretical constructs (Ping, 2004). In this regard, pretesting can represent an appropriate tool (Gligor, 2014). Accordingly, pre-testing was undertaken to increase reliability, minimise measurement errors, and improve the validity of the constructs (Gligor, 2014; Dillman, 2000).

In doing so, 100 questionnaires were sent to Executive Master of Business Administration students of KNUST School of Business and Institute of Distance Learning. 70 out of the 100 questionnaires were retrieved and subjected to reliability tests. Specifically, Exploratory Factor Analysis (EFA) and Crumbach's Alpha (CA) tests were run. With the exception of cultural cognitive, which had three of its seven items cross loading with other constructs, all other item loaded well on their respective constructs and exceeded the recommended minimum of 0.5 (Hair *et al.*, 2014).

Accordingly, the 3 items were removed from the cultural-cognitive measures.
The remaining four were used for the main survey. Again, all CA tests exceeded the recommended minimum cut off point of 0.7, indicating sufficient internal consistency of all the constructs being studied. All comments and suggestions from the pre-test were taken into accounts in designing the final version of the questionnaire. The final version was then used for pilot testing involving 50 firms. This was used to assess respondents' understanding of the measures and potential response rate. Out of 50 questionnaires

sent, 32 were received representing a response rate of 64%. In all, both the pretesting and pilot testing allowed the researcher to refine the initial instruments to make the final version clearer, user-friendly and estimate in advance the potential response rate of the survey.

4.7 SURVEY ADMINISTRATION AND DATA COLLECTION

Having finalised the questionnaire design, the main survey was administered for data collection. As stated earlier in this chapter (see Section 4.4.3), self-administered questionnaire survey approach was mostly used although on a few occasions, interviewer-administered questionnaire was also employed when necessary. In doing so, senior-level managers with a minimum of three years of strategic and operational knowledge and experience were identified and selected. Thus, following convention in extant literature (see e.g. Gligor, 2014; Huang *et al*., 2014; Cao and Zhang, 2011), one respondent at the management level such as Managing Directors/Owner managers, Accountants and Operations Managers of each selected firm was contacted and given a questionnaire to be completed within a reasonable length of time. Thus, with this approach, respondents had enough time to complete the questionnaire at his or her convenience and the researcher later on made follow-ups for collection as had been agreed upon. In consistent with Gligor (2014), reminders were sent to the respondents via text messages.

With the face-to-face interviewer administered approach, the researcher identified the respondents and held face-to-face interview to complete the questionnaire. Specifically, the researcher read out the questions and their corresponding scales for the respondent to select an option that best represented his or her opinion. Occasionally, the researcher provided clarification where necessary but care was taken to ensure that the researcher did not influence respondent's responses to induce any form of bias. The main survey

covered a period of three months across the northern, middle and southern sectors of Ghana. In all, 655 questionnaires were distributed out of which 363 were received. Of the 363 questionnaires received, 32 were rejected, bringing the actual number of questionnaires received to 331 for subsequent analysis as presented later in Chapter five. The analysis procedure and the statistical method used for the data analysis is discussed in the section that follows.

4.8. DATA ANALYSIS

This section discusses the main statistical tools and procedures employed in analysing the study's model. The analyses involved a two-stage approach, measurement model analysis and structural model analysis. The measurement model analysis involves validation of the study's measures using CA, EFA, Confirmatory Factor Analysis (CFA) and common method bias assessment while the structural model analysis involved assessment of the structural relations between constructs in the research model using SEM. In addition, the section presents discussion on CFA/SEM model assessment techniques followed in the study. With the exception of the CFA and the SEM which were conducted using LISREL 8.5, all other analyses were conducted using SPSS 20.0. The sections that follow provide detailed discussions on these statistical tools and procedures.

4.8.1 Measurement Model Analysis

The measurement model analysis started with an evaluation of the scale reliability of the measures using CA. This was followed by EFA, which was used to explore the underlying patterns of relationships among the measures. Next, CFA model was used as the main statistical tool to evaluate the reliability and the validity of the measures (Hair *et al*., 2014). In addition, CFA procedure was used to assess the extent of common method bias present in the data.

4.8.1.1 Scale Reliability Assessment

Scale reliability refers to the extent to which scale items are devoid of random error (Hair *et al*., 2014). This is commonly expressed as the ratio of the variance of the true score to the variance of the observed score (Netemeyer *et al*. 2003). Kline (1998) argues that whether existing scales or newly developed scales are used in a study, the degree to which they are free from random error needs to be established. Although several methods exist for measuring the reliability of a construct (split-half reliability, test-retest reliability, and coefficient alpha reliability) (Nunnally and Bernstein, 1994), a common practice among researchers is to measure reliability using CA.

Following this convention, this study assessed the reliability of the scales using CA (coefficient alpha) as it is more suitable for assessing the internal consistency of a construct measured with multiple reflective items (Hair *et al*., 2014). Kline (1998) asserts that reliability coefficients around 0.90 are regarded as excellent, those near 0.80 are very good, values around or close to 0.70 are adequate, and those in the range of 0.50 and below should be avoided. The rule of thumb is for scale to be reliable, the coefficient alpha should be at least 0.70 (Hair *et al.*, 2014; Nunnally and Bernstein, 1994). Section 5.4.1 presents the results of scale reliability test in Chapter five.

4.8.1.2 Exploratory Factor Analysis

This study used EFA for item selection and purification purposes. EFA offers an appropriate analytical approach for initial item reduction and selection (Clark and Watson, 1995). Hair *et al.* (2014) observe that researchers may use factor analysis to determine the interrelationships among a set of variables to define a construct. Thus, factor analysis allows researchers to establish dimensions within a data and therefore serves as a data reduction and summarisation technique (Boso, 2010). Consistent with previous research approach, the study relied on Principal Component Analysis (PCA)

and varimax as the EFA estimation method and rotation method respectively (Field, 2009) as presented in Chapter five (Section 5.4.2).

4.8.1.3 Confirmatory Factor Analysis

CFA was used as the main statistical tool for assessing the reliability and validity of the measures for the following reasons. First, unlike EFA, CFA takes into account measurement errors (Hair *et al*., 2014). Second, the traditional approaches (e.g., interitem correlations, item-scale correlation and EFA) for assessing dimensionality do not account for external consistency, and as such, they fail to discriminate between set of items that present distinct but correlated factors (Hair *et al*., 2014). Third, CFA offers a stricter interpretation of unidimensionality than can be provided by an EFA (Hair *et al*., 2014). In particular, CFA enables the researcher to assess whether the theoretical links between items and their underlying constructs are sufficiently validated (Ping, 2004; Netemeyer *et al*., 2003). Accordingly, CFA was used in this study to assess internal consistency as well as unidimensionality, convergent validity, and discriminant validity (Hair *et al*., 2014; Ping 2004). The study followed procedures outlined by Diamantopoulos and Siguaw (2000) in the use of LISREL to conduct the CFA (see Section 5.4.3).

4.8.1.4 Common Method Bias Assessment

Common method bias (CMB) is a key issue in behavioural research as it represents a key source of measurement errors (Podsakoff *et al*, 2003) and poses threats to validity and conclusions of research findings. Method variance refers to "variance that is attributable to the measurement method rather than to the construct of interest" (Podsakoff *et al.*, 2003, p.879). Cambell and Fiske (1959) observe that method bias could result in systematic error variance and can have a serious confounding influence on the empirical results. As such, it is important to address potential threat of CMB.

CMB may result from the fact the predictor and criterion variables are obtained from the same source (common rater) whereas others are produced by the measurement items themselves (e.g. common scale anchors), the context of the items within the measurement and/or the context in which the measures are obtained (Podsakoff *et al*., 2003). In this study, both the predictors and criterion variables were sourced from the same respondents in the main survey, and as such, the issues of CMB might be present in the data (Podsakoff *et al*., 2003). To address CMB issues, both ex ant and ex post remedial measures were employed (Reinfleisch *et al*, 2008; Podsakoff *et al.*, 2003). Thus, the researcher used both procedural and statistical approaches (Podsakoff *et al.* 2003).

Faced with the challenge of relying on multiple sources or multiple informants to obtain data on measures of the predictors and criterion, the researcher, ex ante, took procedural measures to minimise the extent of CMB. Some of the procedural approaches utilised in the study included mixing the order of questions, using different rating scales, separating the predictor and criterion measures, and including breaks in the questionnaire design (Podsakoff *et al*, 2003) to minimise any potential consistency artefact. Moreover, respondents were assured of absolute confidentiality of information they provided and were further reminded that there was no right or wrong responses to answers asked, and should provide as honest and accurate response as possible (Podsakoff *et al.*, 2003). Besides this procedural approach, the researcher ex post, adopted statistical approach (Podsakoff *et al.*, 2003). Specifically, and in consistence with Boso *et al.* (2013a), three computing models were used; method only, trait-only and method and trait-only to further assess CMB (see Section 5.4.4).

4.8.2 Structural Model Analysis

SEM is a statistical technique for testing measurement, functional and predictive, and causal models (Bagozzi and Yi, 2012). As an extension of the general linear model, SEM is designed primarily to test substantive theory from empirical data by simultaneously estimating relationships between multiple independent, dependent and latent variables (Bagozzi and Yi, 2012). Broadly, SEM is composed of two parts—a measurement part, which links the constructs to observed variables, and a structural part, which links the constructs to each other. Both measurement and structural parts involve the use of regression equations to specify the relationships between variables (Bagozzi and Yi, 2012). While the measurement model analysis (which constitutes the first step of SEM) involves specifying and testing the causal linkages between observed variables and their respective latent variables (that is, via CFA), the structural model analysis (which is the second step) involves specifying and analysing the causal relationships between latent variables (Tabachnick and Fidell, 2013; Diamantopoulos and Siguaw, 2000).

SEM based approach was employed in this study (Section 5.5.2) based on the following reasons. First, unlike the traditional statistical approach (for example, correlation analysis, multiple regression analysis), SEM allows for estimating models involving complex relationships—for example, models with multiple independent and dependent variables, and multiple independent-dependent relations (as in the case of this study) (Hair *et al*., 2014; Bagozzi and Yi, 2012; Tomarken and Waller, 2005). Second, the study's model involves both intervening and moderating variables, which would require for mediation and moderation testing. In this regard, using SEM is more appropriate since it has the capability to simultaneously analyse models involving both mediators (Bagozzi and Yi, 2012) and moderators (for example, as implemented in Boso *et al.*

2017 and Lu *et al*., 2010). Third, SEM provides more accurate estimates of the relationship between the latent independent variables and the criterion than does standard multiple regression (McCoach *et al*., 2007). Fourth, SEM explicitly accounts for measurement errors (Raykov and Marcoulides, 2000) and allows researchers to separate "true variance" (variance that is common among indicators of a single construct) from "error variance" or "disturbance" (variance due to other factors, including error in measurement). Finally, SEM allows the researcher to test competing theoretical models to determine which model best reproduces the observed variance/covariance matrix.

4.8.3 Confirmatory Factor Analysis and Structural Model Assessment

Hair *et al.* (2014) propose a number of indices for assessing the overall fit of both CFA and structural models. This study made use of a good number of them. The indices employed in this study include chi-square with the associated degrees of freedom, comparative fit index (CFI), goodness of fit index (GFI), non-normed fit index (NNFI), and root mean square error of approximation (RMSEA).

The chi-square (χ^2) and its associated degrees of freedom is a very widely used model fit assessment approach (Hair *et al.*, 2014; Welch and Comer, 2001) as it offers a test of impeccable fit in which the null hypothesis is the proposed model that fits the population data perfectly. This means that the χ^2 provides an opportunity for the test of residual differences between the hypothesised model and sample covariance matrix. The acceptable criterion in this respect is that the difference should approach zero or non-significant value (Marsh *et al.*, 1988). Thus, large χ^2 with a significant p value (<0.05) indicates that there are significant differences between the proposed model and the observed data (Hair *et al*., 2014). As Jaccard and Wan (1996) assert, where the χ^2 is

statistically significant, the null hypothesis is rejected; indicating that there is an imperfect model fit.

The degrees of freedom (*df*) explains the difference between the number of observations and the number of parameters the CFA and structural models have to estimate. In this respect, an over-identified model is considered the most ideal and better than justidentified model (Byrne, 1998). A just-identified model is one with no degrees of freedom and an over-identified model is one with a positive degree of freedom. In the opinion of Hoyle and Panter (1995), the χ^2 compares the over-identified and justidentified models to assess if the over-identified model provides a worse fit than it was just-identified. However, Hair *et al.* (2014) argue that the use of $\chi 2$ is also susceptible to model complexity to the extent that in large and complex models with many variables and large degrees of freedom, the observed χ^2 is usually statistically significant even where the fit to data is reasonably good. In view of this, Jöreskog and Sörbom (1996) argue that given the challenges with sample size and model complexity associated with χ^2 statistics, it is highly recommended that in assessing model fit, researchers should combine the χ^2 with other fit indices.

The goodness of fit index (GFI) is one of such indices (Jöreskog and Sörbom, 1996). The GFI is similar to the squared multiple correlation (R^2), which indicates the proportion of the observed covariance explained by the model covariance in regression analysis (Hair *et al.*, 2014). The GFI values ranges from 0 (indicating a no fit) to 1 (indicating a perfect fit). Jöreskog and Sörbom (1996) and Hair *et al.* (2014) recommend that for a model to be described as having a good fit, the GFI should be at a minimum 0.90. However, Etezadi-Amoli and Farhoomand (1996) indicate that a GFI value of 0.80 is generally accepted as a rule of thumb for establishing goodness of fit.

The adjusted GFI (AGFI) has also been recommended by some researchers to take account of model complexity because GFI has a tendency to increase when additional variables are added to the model. The AGFI thus adjusts the GFI for extra degrees of freedom in the measurement model. It also ranges from 0 to 1, where values above 0.90 indicate a good fit to the data (Hair *et al.*, 2014).

Other recommended model fit indices are NNFI and CFI (Hair *et al.*, 2014). Normed Fit index (or NFI) shows the percentage in the improvement of the overall fit of the CFA model relative to a null model, normally referred to as the "independent" model (Bentler, 1987). The independent model refers to a model in which all variables are uncorrelated. To deal with model complexity, NNFI (also known as the Tucker-Lewis index) is usually relied upon (Bentler, 1987). The interpretation of the CFI and IFI are similar to the NNFI, except that the CFI and IFI are not influenced by small size (Bentler, 1987). To establish a good fit, these indices should be 0.90 or better. Therefore, NNFI, IFI, and CFI of 0.90 or more indicate that the overall fit of the tested model is 90% better than the independent model (Bentler, 1987).

Yet, another fit index usually used to test for model fitness commonly reported in CFA and structural models is the root mean square error of approximation (RMSEA) (Hair *et al*., 2014). It shows the standardised summary of the average covariance residuals; which describes the difference between the implied model and observed covariance (Hair *et al*., 2014). The value of the RMSEA increases as the average discrepancy between the observed and predicted covariance widens. This implies that when a model is perfect, the RMSEA should be as close as possible to zero. In this regard, Hu and Bentler (1999) recommend that the values of RMSEA should be 0.1 or less, while values less than 0.08 suggest a better fit. Hair *et al.* (2014) recommend that RMSEA

should be between 0.03 and 0.08 even though other researchers (Kelloway, 1998; Browne and Cudeck, 1993) recommend that RMSEA values less than 0.5 or 0.8 are still good enough to suggest satisfactory model fit.

4.9 ETHICAL CONSIDERATION

As Bryman (2004) notes, issues of ethics are of concern in research projects. Ethical issues arise when participants are not given absolute details on a piece of research (Bryman, 2004). It is important that in conducting research, researchers must follow rules and standards to address any ethical issues. Research ethics refer to the norms and rules governing the conduct of a particular study (Saunders *et al.*, 2009; Bryman, 2004).

In complying with ethical standards, some ethical issues were considered and addressed in this study. First, since respondents' participation in a research project should be voluntary (Saunders *et al.*, 2009; Bryman, 2004), only firms willing to participate in the research were involved in this study. In doing so, a Letter of introduction from Kwame Nkrumah University of Science and Technology (KNUST) School of Business (see Appendix B) was sent to the participating firms in line with the ethics standards of KNUST Graduate School prior to undertaking the study. This exercise was made to seek formal consent of the respondents (Robson, 2002). Second, aanonymity and confidentiality of the respondents and information respectively were also taken into consideration. Specifically, respondents were assured of confidentiality and all responses were treated anonymously.

4. 10 GHANA AS THE RESEARCH SETTING

The study is undertaken in a sub-Saharan African market, Ghana, for several reasons. First, as with other developing economies, the Ghanaian business environment is

characterised by a unique and an underdeveloped institutional structures (Adomako and Danso, 2014; Boso *et al*., 2013a) and continues to experience regulatory reforms with their associated impact on businesses. For example, Ghana introduced new banking regulations in 2018, which resulted in the merger of First Atlantic Merchant Bank Limited with Energy Commercial Bank, and Omni Bank with Bank Sahel Sahara respectively (Bank of Ghana, 2018). Relatedly, some other financial institutions also had their licences revoked (Bank of Ghana, 2019). Therefore, investigating the regulatory conditions and their implications on business operations in Ghana offers an important and interesting developing economy perspective (Adomako *et al*., 2016) in understanding regulatory environment- performance relationships, and the basis for generalising the findings to related developing economies.

Second, Ghana represents one of the most conducive environments for business activities in the sub-Saharan Africa (World Bank, 2017), and operates an open market economy which has increased the presence of privately owned businesses (Adomako *et al*., 2016) and foreign direct investments. With its fast growing economy in the subregion (African Development Bank, 2018), coupled with rapid institutional and structural changes (World Bank, 2017), firms in Ghana face increasing levels of uncertainty and dynamism (Dadzie, Winston, and Hinson, 2015) and a growing need to collaborate in inter-firm relationships. Given this background, Ghana provides relevant economic, social, and environmental context within the sub-Sahara African economy to test the generalisability of existing Western-born theories (Wu, 2008) that are assumed 'universally plausible'.

Third, models of regulatory environment and GMs are premised on conditions such as institutional void (Abdi and Aulakh, 2012) uncertainty and, opportunism (Huang *et al*.

2014; Williamson, 1985). Typical of a developing economy, institutional void, uncertainty, opportunism, and conflicts, major setbacks to business transaction and effective collaborative effort, are inherently part of business operations in Ghana (Shantz, Kistruck, Pacheco, and Webb, 2019; Boso *et al*., 2013), making such a context equally suitable for testing models of regulatory environment and inter-firm GMs (Huang *et al.* 2014).

Fourth, due to high levels of resource constraint faced by Ghanaian firms (Banin, Boso, Hultman, Souchon, Hughes, and Nemkova, 2016), opportunistic behaviours is likely to be prevalent in inter-firm relationships, making GMs key for securing resources and safeguarding exchanges. Given the institutional landscape in Ghana, effectuation of formal controls in such an environment may be unique and intriguing, and the use of social control as a governance tool may be prevalent. Additionally, the socio-cultural condition in this society places greater emphasis on interdependency and communality (Shantz *et al.*, 2019), making social control relevant in inter-firm relationship management.

4.11 BRIEF PROFILE OF GHANA

Ghana, a lower middle level-income economy, is located in West Africa with a population of about 28,206,728 million and GNI Per Capita of (US$) 1,380 (World Bank Group, 2018). Accra as its capital and seat of Government, Ghana sits on the Atlantic Ocean and shares borders to the west with La Cote d'Ivoire, to the east with Togo, and to the north with Burkina Faso. In the past two decades, it has taken major strides toward democracy under a multi-party system, with its independent judiciary

winning public trust. This together with press freedom provides Ghana with solid social capital.

Ghana has a market-based economy with a relatively few policy barriers to trade and investment in comparison with other countries in the region. Endowed with natural resources, Ghana's economy is characterised by fair competition and provides conducive environment for business in the West African sub-region (Ghana Export Promotion Council, 2018). Trade is significant for Ghana's economy, and expansion of Ghana's nascent oil industry has boosted economic growth. The combined value of exports and imports equals 89 percent of Gross Domestic Products (GDP). The average applied tariff rate is 10.0 percent, and Government openness to foreign investment is above average (Ghana Export Promotion Council, 2018).

Service sector dominates economic activities and accounts for 49.5% of GDP, followed by industry (Including manufacturing) with 28.5% of GDP. Agriculture also accounts for about 22% of GDP and employs more than half of the workforce, mainly small landholders (GSS, 2017). According to the Ghana Statistical Service (2018), Ghana's economy is estimated to have expanded by 8.5% in 2017 from 3.6% driven by the mining and oil sectors. Ghana's score for ease of doing business, which examines the important dimensions of the regulatory environment in Ghana, is 57.24 compared to regional average (sub-Saharan Africa) score of 50.43, making it the 120th among 190 economies captured across the world in the 2018 index. Specifically, with respect to ease of starting business, which measures the paid-in minimum capital requirement, number of procedures, time and cost for small and medium-sized limited liability companies to start up and formally operate in the economy, Ghana ranks 110th with a score of 84.2 compared to regional average of 76.82. On ease of registering property,

which examines the steps, time and cost involved in registering property, Ghana ranks 119th with a score of 55.5 compared to regional average of 51.71. In terms of enforcing contracts which assesses the time and cost for resolving a commercial dispute through a local first-instance court, and the quality of judicial processes index, Ghana ranks 116th with a score of 54.0 compared to regional average of 48.15 (World Bank Group, 2018).

Laws applicable to the operation of businesses in Ghana conform to international standards and best practices. These laws are based on a framework of legislation relating to business activities, copyrights, patents, trademarks, disputes and labour relations. Further, Ghana subscribes to a number of International Conventions on Industrial and Intellectual property such as the World Intellectual Property Organization (WIPO). Sanctity of contracts ensures respect for commercial rights and obligations. Damages are compensatory, not punitive, and an Independent Court system ensures equitable protection of rights. Mediation, arbitration and other alternative forms of dispute resolution are readily available and routinely used. Culturally, Ghana has a strong sense of national identity and unity that supersedes other affiliations such as ethnicity and tribe, arising out of an educational system in which people from different backgrounds tend to mix.

Politically, the country is considered one of the most stable countries in West Africa since its transition to multi-party democracy in 1992. Ghana's wealth of resources, stable democratic political system and dynamic economy boost investors' confidence and create potential investment climate for foreign direct investment and local investors. Thus, the conducive social, political and economic environment make Ghana attractive business destination (Ghana Export Promotion Council, 2018).

4.12 CHAPTER SUMMARY

The chapter presented the methodological approach for the study. In particular, the purpose of the study and the justification was presented. In addition, positivist paradigm was adopted as the philosophical underpinning of the study. Again, a case was made for cross sectional research design as more appropriate for the current study. Further, the choice of survey strategy, population, determination of sample size and sampling technique were brought into perspective. Following Krejcie and Morgan's (1970) model, a sample size of 655 (confidence level of 99% with 5.0% margin of error) was arrived at. The study relied on a questionnaire-based survey with unit of analysis being the organisational level. Managers with considerable degree of knowledge and experience (three years in managerial position) constituted the respondents of the study.

Given that this study seeks to estimate the structural relationships among the constructs under study, SEM was considered more appropriate for analysing the data (Hair *et al*., 2014). In doing so, efforts were made to control for possible non-response and common method bias to ensure that the data analysed in this study was valid. Finally, in complying with ethical standards, some ethical issues were considered and addressed by seeking informants' consent, ensuring anonymity of respondents, and confidentiality of information collected. Then a brief profile of Ghana, the study's geographical context was presented.

CHAPTER FIVE

DATA PRESENTATION, ANALYSIS AND RESULTS

5.1 INTRODUCTION

This chapter presents the results of the study and the statistical procedures followed in generating them. The major sections of the chapter include response analyses (i.e. response rate, non-response bias test, missing values analysis and remedy, and the profile of the firms and the informants) and measurement model analyses (i.e. empirical assessment of the validity and reliability of the study's scales). The chapter also presents the structural model analyses with particular focus on estimating the research model and evaluating the associated hypotheses. Finally, further analyses exploring how operational performance relates to financial performance and chapter summary are presented.

5.2 RESPONSE ANALYSIS

5.2.1 Response Rate

A total of 655 questionnaires were distributed to firms in Ghana. Specifically, 398, 147, and 110 questionnaires were administered to firms located within the southern sector, the middle sector, and the northern sector of Ghana respectively. In all, 363 out of the 655 of the questionnaires administered were received. After a preliminary check for incompleteness and missing values, 32 out of the 363 received were rejected. Of the 32 rejected questionnaires, 14 were incomplete (e.g. omitted items under most constructs) while 8 were not properly filled (e.g. double responses to one item). The rest (10 of the rejected questionnaires) were filled by wrong informants—those who did not have the minimum level of managerial experience. Thus, 331 of the questionnaires were

considered usable for the study, representing effective response rate of 50.5% as shown in Table 5.1.

Table 5.1 Results of Response Rate Analysis

Study area	*Questionnaires administered (A)*		*Questionnaires received (B)*		*Questionnaires used (C)*		*Effective response rate = (C/A)*100%*
	No.	*Percent*	*No.*	*Percent*	*No.*	*Percent*	
Southern Sector	398	61	173	47	159	48	40%
Middle Sector	147	22	118	33	109	33	73.2%
Northern Sector	110	17	72	20	63	19	57.3%
Total	655	100	363	100	331	100	50.5%

Source: Field Study (2019)

5.2.2 Non-Response Bias Test

Non-response, and accordingly, non-response bias, is not only common in survey research (Bryman, 2012), but also, poses threat to conclusions from such research (McDaniel and Gates, 2012). Armstrong and Overten (1977) note that non-respondents share similar characteristics with late respondents. As such, concerns about nonresponse bias can be investigated by comparing the characteristics of late respondents with those of early respondents. This recommendation, which the present study followed, has been widely employed in prior research in assessing the presence of nonresponse bias in survey research. Consistent with prior research (e.g. Zheng *et al*., 2010), this study treated all questionnaires received within 2 weeks after administering as early response while those retrieved between the 3rd and the 4th weeks as late response. Three salient demographic characteristics of the firms in the study, namely, firm size (number of employees), firm age (number of years in operation), and firm industry (manufacturing versus service), were compared between early respondents and late respondents. The results obtained (see Table 5.2) show no

statistically significant difference in the characteristics of the two groups of respondents, indicating that nonresponse bias does not characterise the data, and thus, does not pose threat to the study's conclusion (Armstrong and Overten 1977).

Table 5.2 Results of Non-Response Bias Test

Firm characteristics	Response time	N	Mean	t-value	χ^2	P
Firm size	Early response	230	43.8599	-.639		.523
	Late response	101	48.4455			
Firm age	Early response	230	12.7981	-.492		.623
	Late response	101	13.3535			
		Manufacturing	Service			
Industry type	Early response	43	187		3.131	.077
	Late response	11	90			

Source: Field Study (2019)

5.2.3 Missing Values Analysis and Remedy

As Hair *et al.* (2014) and Kline (2011) observe, missing values are of major concern to statistical analysis (including exploratory factor analysis, confirmatory factor analysis, and structural equation modelling as applied in this study). As such, it was necessary to identify and treat all missing values prior to analysing the data. Using missing value analysis tool in SPSS, the study statistically checked for the extent of missing values present in the dataset. The results indicated that the extent of missing values was less than 5%. Approaches to treating missing values are many and each presents its own challenges (see Hair *et al*., 2014). Expectation-Maximization (EM) algorithms represents one of the most commonly used approaches for dealing with missing or incomplete data in literature (Hair *et al*., 2014; Cox *et al*., 2014; Schafer and Graham,

2002; Schafer and Olsen, 1998). Accordingly, the current study relied on EM algorithm to address missing values in the dataset.

5.2.4 Firm Demographic Profile

This section analyses and describes the general characteristics of the firms engaged in the study. As indicated by Boso (2010), knowledge about the firms being studied is particularly important considering that they vary in different dimensions such as size and business experience. Firm size may be assessed in terms of the number of full-time employees and total annual revenue (Cooper and Kleinschmitlt, 1985; Cavusgil and Nevin, 1981). In line with this, this study assessed firm size based on the number of full time employees. As shown in Table 5.3, the size of the firms studied ranged between 7 and 1000 employees, with mean of 55. Firm industry was classified into manufacturing and services. An assessment of firm industry type in Table 5.3 shows that 277 service firms, representing 83.7%, were involved in the study, indicating that service firms dominate the industry in the study context. Firm's level of experience was assessed in terms of number of years the firms have been in business. The characteristics of the samples show the spread of the firm's number of years in business. As indicated in Table 5.3, firm number of years in business ranged from a minimum of 5 to maximum of 56 with an average being 13 years. Generally, these characteristics of the study's sample represent those of the target population (see Ghana Statistical Service, 2016), indicating that the findings from the study can be extended to the population under study.

Table 5.3: Firm demographic profile

Variable	Category	Count	Percentage%
Industry Type	Manufacturing	54	16.31

Service/Distribution	277	83.69

Variable	Min	Max	Mean	Stand. Dev.
Firm Size (No. of employees)	7	1000	55.255	89.903
Firm Experience (years)	5	56	12.613	8.282

Source: Field Study (2019)

5.2.5 Demographic Profile of the Informants

Table 5.4 presents demographic profile of the study's informants to provide a fair understanding about their characteristics. The informants' characteristics were assessed to cover their gender, age, educational level, position and managerial experience. These informants were considered for this study because they are in the managerial positions in their respective firms, and believed to have adequate capacity to provide relevant information for the study. As Table 5.4 suggests, 67.7% (224) of the informants are males, indicating male's dominant at the managerial level of firms, which is a typical characteristic of the Ghanaian business environment. In terms of age, majority of the informants (44.1%) fell between 40 and 49 years.

Regarding the informants' level of education, majority of them (54.1%) were 1st Degree holders, suggesting that most of them had the ability to read and understand the study's data collection instrument. Also, an average informant had held his/her current position for 7 years (standard deviation = 4.868). This indicates adequate knowledge level of the informants regarding their organisational settings and the issues they provided responses to. In terms of informants' position, 21.1% held General Manager's position, 16% each of the informants were Operations Managers and Accountants respectively, 15.1% were Managing Directors, 13.3% being Supervisors while 18.4 % of them were classified as others. Drawing informants with diverse background is consistent with prior research (e.g. Boso *et al*., 2013a; Adomako *et al*., 2018).

Table 5.4: Informant demographic profile

Variable	Category	Count	Percentage (%)
Informant's Gender	Male	224	67.7
	Female	107	32.3
Informant's Age	20 - 29 Years	24	7.3
	30 - 39 Years	79	23.9
	40 - 49 Years	146	44.1
	Above 50 Years	82	24.8
Informant's Education	Basic Education	5	1.5
	Senior High School	32	9.7
	Diploma	78	23.6
	First Degree	179	54.1
	Second Degree	34	10.3
	PhD	2	0.6
Informant's Position	Managing Director	50	15.1
	General Manager	70	21.1
	Operations Manager	53	16.0
	Accountant	53	16.0
	Supervisor	44	13.3
	Others	61	18.4

Variable	Min	Max	Mean	Stand. Dev.
Informant's managerial experience (years)	3	35	6.719	4.868

Source: Field Study (2019)

5.2.6 Informant's Competence Level

Although the study relied on informants with managerial capabilities and experience, it was necessary to subject their competence level to statistical scrutiny to ascertain whether their knowledge level on the issues they responded to was adequate. As Boso *et al.* (2013a) suggest, informants' level of competence is important. In keeping with this, the study evaluated the competence level of informants in terms of four criteria adopted from Boso *et al*. (2013a): (1) knowledge of the issues that the questionnaire captured, (2) confidence about responses provided, (3) how sure the informants were

with their responses, and (4), understanding of items captured in the questionnaire. A seven-point scale that ranged from" strongly disagree (=1)" to "strongly agree (=7)" was used. As shown in Table 5.5, an average informant could be said to be competent enough, given that the mean scores (5.3384) on the criteria were all significantly above the middle-point of the scale (that is, 4.00), suggesting that the source of data could be relied on for the study (Morgan *et al*., 2004).

Table 5.5 Informant's Competence

Item	Min	Max	Mean	Std. Dev.
I have adequate knowledge on the issues I provided responses on	4.00		5.3384	
I am confident in the responses I provided	4.00	7.00	5.3807	.9786
I am sure that the responses I provided represent the realities in my firm	4.00	7.00	5.4532	.9375
		7.00		.8844
I understood the questions/statements I respondent to	4.00	7.00	5.3988	.9364
Average score	**4**	**7**	**5.3928**	**.9342**

Source: Field Study (2019)

5.3 MEASUREMENT MODEL ANALYSIS

This section presents statistical validation of the study's scales used in measuring the variables—regulatory environment, formal control, social control, SNC, operational performance, financial performance, normative institution, cultural-cognitive institution, relationship specific investment, and incentive alignment.

4.3.1 Descriptive and Normality Analyses of the Study's Scales

In this section, descriptive results (mean) and normality results on the scales capturing the study's variables are presented. In Tables 5.6 to 5.15, the items for the constructs, their various scale anchors, the mean, spread, and normality results for each item in each scale are presented. As the results indicate, the scores obtained on all items generally fall within the range of their respective scale lengths. In particular, the results show that an average score for all items within their respective constructs was above the mid-point of their respective scale anchors. Specifically, mean scores obtained for the regulatory, normative and cultural cognitive environments (or institutions) ranged from 4.21 to 4.48, 4.98 to 5.21, and 5.12 to 5.29 respectively. Also, formal control and social control recorded mean scores ranging from 4.94 to 5.08, and 4.75 to 5.05 respectively, while operational performance and financial performance recorded mean scores ranging from 4.96 to 5.25, and 4.75 to 4.89 respectively. With respect to SNC and relationship specific investment, mean scores obtained ranged from 4.95 to 5.25 and 4.90 to 5.06 respectively while incentive alignment obtained mean scores ranged from 4.18 to 4.56.

Further, ensuring the normality of metric variables is key since most multivariate analyses generally assume normality of data (Hair *et al*., 2014; Tabachnick and Fidell, 2013). In following this, the study assessed the normality of the distributions of the individual observed variables by evaluating their skewness and kurtosis. As shown in Tables 5.6 to 5.15, the skewness and kurtosis analyses suggest that the distribution of scores on all items measuring each construct are satisfactorily normal, given that the skewness and kurtosis indices fall within the recommended thresholds of |3.00| and |8.00| (Kline, 2011) respectively. The greatest skewness and kurtosis indices obtained

across all items were 0.334 and -0.877 respectively, indicating that non-normality is not a major issue in the study since deviation from normality was not considered severe (Kline, 2011).

Table 5.6: Descriptive Statistics and Normality Results on Regulatory Environment

Items	Min	Max	Mean	SD	Skewness	Kurtosis
1. The legal system in this country protects our interests	1	7	4.48	1.474	-.576	-.245
2. The legal system in this country prevents us from being cheated	1	7	4.21	1.478	-.426	-.497
3. Government provides enabling environment for businesses in Ghana	1	7	4.47	1.317	-.513	-.172
4. Government implements laws that help businesses develop	1	7	4.47	1.326	-.664	.154
5. The legal system in this country is efficient	1	7	4.23	1.546	-.388	-.669
6. Overall, we have confidence in the legal system	1	7	4.21	1.523	-.434	-.461

SCALE: 1= "strongly disagree" to 7= "strongly agree"

Source: Field Study (2019)

Table 5.7: Descriptive Statistics and Normality Results on Normative Institution

Items	Min	Max	Mean	SD	Skewness	Kurtosis
1. My organisation belongs to industry groups that encourage good business practices	1	7	5.21	1.180	-.506	.422
2. My organisation actively participates in industry groups that encourage ethical business practices	1	7	4.98	1.117	-.530	.974
3. The profession my organization represents expects all of its members to comply with ethical standard	1	7	5.09	1.076	-.657	.696
4. Adherence to professional ethics and industry norms are admired in this country	1	7	4.98	1.064	-.686	1.288
5. Following due process is important in my industry	1	7	5.05	1.068	-.541	.797

SCALE: 1= "strongly disagree" to 7= "strongly agree"

Source: Field Study (2019)

Table 5.8: Descriptive Statistics and Normality Results on Cultural-Cognitive Institution

Items	Min	Max	Mean	SD	Skewness	Kurtosis
1. In this country, businesses depend on good connections	1	7	5.29	1.308	-.468	-.410
2. In this country, one's personal connection is very important	2	7	5.14	1.155	-.529	-.023
3. In this country, good personal connections is a requirement for business success	2	7	5.12	1.098	-.372	-.170
4. Business partners are viewed as friends who care about each other wholeheartedly	2	7	5.15	1.151	-.670	.194

SCALE: 1= "strongly disagree" to 7= "strongly agree"

Source: Field Study (2019)

Table 5.9: Descriptive Statistics and Normality Results on Formal Control

Items	Min	Max	Mean	SD	Skewness	Kurtosis
1. My organisation ensures specific, welldesigned agreements with its business partners	1	7	5.01	1.196	-.451	.273
2. My organisation ensures formal agreements that detail the obligations of all parties	1	7	4.94	1.188	-.652	.674
3. My organisation ensures formally agreed set of rules to monitor our partner's actions	1	7	5.00	1.147	-.703	.873
4. My organisation ensures compliance with contractual terms and conditions	1	7	5.08	1.160	-.693	.759
5. My organisation makes reference to contracts to settle differences of opinion	1	7	5.05	1.162	-.445	.438

SCALE: 1 = "Not at all", 7 = "to an extreme extent" Source:

Field Study (2019)

Table 5.10: Descriptive Statistics and Normality Results on Social Control

Items	Min	Max	Mean	SD	Skewness	Kurtosis
1. My organisation ensures trust building with its business partners	1	7	5.05	1.209	-.638	.823
2. My organisation ensures team building with its business partners	1	7	4.90	1.224	-.580	.253
3. My organisation engages in joint planning with its business partners	1	7	4.85	1.180	-.656	.357

4. My organisation engages in joint workshop /meetings with its business partners	1	7	4.83	1.250	-.553	.427
5. My organisation arranges social events with its business partners	1	7	4.75	1.250	-.608	.711

SCALE: 1 = "Not at all" , 7 = "to an extreme extent"

Source: Field Study (2019)

Table 5.11: Descriptive Statistics and Normality Results on Operational Performance

Items	Min	Max	Mean	SD	Skewness	Kurtosis
1. Responsiveness to customer needs	2	7	5.25	1.136	-.554	.037
2. Reduction in lead time	2	7	4.96	1.008	-.397	.300
3. Reduction in time-to-market	2	7	5.02	1.049	-.427	.096
4. Process improvement	2	7	5.02	1.087	-.268	.077
5. On-time deliveries	1	7	5.01	1.106	-.257	.141

SCALE: 1= "very dissatisfied" to "7= very satisfied"

Source: Field Study (2019)

Table 5.12: Descriptive Statistics and Normality Results on Financial Performance

Items	Min	Max	Mean	SD	Skewness	Kurtosis
1. Increase in sales	2	7	4.77	1.054	-.092	-.220
2. Increase in profit	1	7	4.75	1.045	-.101	.131
3. Increase in return on investment	1	7	4.89	1.039	-.548	.458
4. Increase in return on sales	2	7	4.81	1.029	-.310	-.109
5. Increase its market share	1	7	4.86	1.062	-.355	.731

SCALE: 1= "objective Not Met at all" to 7= "objective Absolutely Met"

Source: Field Study (2019)

Other Variables

Table 5.13: Descriptive Statistics and Normality Results on Structural Network Complexity

Items	Min	Max	Mean	SD	Skewness	Kurtosis
1. The number of customers your organisation serves	1	7	5.25	1.293	-.825	1.092

2. The number of suppliers your organization deals with	1	7	4.95	1.229	-.780	1.553
3. The number of product/service models produced outside your organisation	1	7	5.11	1.311	-.667	.704

SCALE: 1="extremely low" to 7="extremely High"

Source: Field Study (2019)

Table 5.14: Descriptive Statistics and Normality Results on Relationship Specific Investment

Items	Min	Max	Mean	SD	Skewness	Kurtosis
1. Knowledge about marketing and sales expertise	1	7	4.90	1.321	-.443	-.262
2. Knowledge about business planning and development networks	1	7	4.92	1.218	-.496	.194
3. Knowledge about business operations	1	7	5.04	1.229	-.617	.236
4. Knowledge about information and technology development	1	7	4.99	1.226	-.543	.268
5. Knowledge about customer care	1	7	5.06	1.254	-.579	.507

SCALE: 1 = "extremely low£ to 7 = "extremely high"

Source: Field Study (2019)

Table 5.15: Descriptive Statistics and Normality Results on Incentive Alignment

Items	Min	Max	Mean	SD	Skewness	Kurtosis
1. My organisation and its business partners evaluate each other's performance	1	7	4.22	1.530	-.284	-.453
2. My organisation and its business partners share costs together	1	7	4.20	1.462	-.490	-.383
3. My organisation and its business partners share benefits together	1	7	4.27	1.388	-.536	-.345
4. My organisation and its business partners share risks that occur together	1	7	4.18	1.370	-.487	-.049
5. The incentive for my organisation commensurate with our investment and risks	1	7	4.56	1.157	-.420	.404

SCALE: 1= "strongly disagree" to 7= "strongly agree""

Source: Field Study (2019)

5.3.2 Item-wise Correlations

Sufficient within-scale-item correlations (at least 0.30) is a necessary requirement for evaluating both the reliability and validity of reflective measurement scales (Diamantopoulos *et al*., 2008; Hair *et al*., 2014). Thus, prior to conducting EFA and

CFA, the study subjected all the study's multi-item scales to correlational analysis. Results obtained as shown in Table 5.16 indicate sufficient correlations between each pair of items within each scale (most being greater than .50), indicating that the scales are factorable and could demonstrate adequate internal consistency (Tabachnick and Fidell, 2013). Again, the results also indicate that the between-scale items correlated low (compared to the within-scale items), indicating that each scale appears to measure a distinct construct (Hair *et al*., 2014).

Table 5.16: Item-wise Correlations

Item		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		1.00																							
1	REG1																								
2	REG2	**.71**	1.00																						
3	REG3	**.66**	**.57**	1.00																					
4	REG4	**.66**	**.62**	**.61**	1.00																				
5	REG5	**.68**	**.68**	**.65**	**.60**	1.00																			
6	REG6	**.66**	**.65**	**.63**	**.63**	**.75**	1.00																		
7	NORM1	.10	.02	.09	.11	.05	.05	1.00																	
8	NORM2	.06	.01	.07	.16	.07	.05	**.58**	1.00																
9	NORM3	.06	.01	.10	.10	.12	.03	**.55**	**.47**	1.00															
10	NORM4	.12	.04	.08	.16	.07	.05	**.60**	**.55**	**.48**	1.00														
11	NORM5	.03	.00	.05	.10	.02	-.01	**.53**	**.58**	**.54**	**.56**	1.00													
12	CCOG1	.09	.13	.12	.02	.09	.10	.07	-.02	.04	-.01	-.04	1.00												
13	CCOG2	.02	.04	.03	-.02	.00	.04	.03	.07	.02	.04	.04	**.57**	1.00											
14	CCOG3	.03	.03	.03	.00	-.01	.02	.01	.01	.05	.04	.03	**.54**	**.47**	1.00										
15	CCOG4	.04	.08	.04	.02	-.01	.06	.01	.03	.03	.03	.03	**.57**	**.88**	**.47**	1.00									
16	FCG1	.16	.18	.17	.18	.13	.19	.18	.13	.11	.20	.12	.07	.02	.07	.06	1.00								
17	FCG2	.14	.24	.14	.15	.16	.16	.12	.13	.11	.16	.14	.00	.00	.03	.03	**.53**	1.00							
18	FCG3	.12	.17	.22	.19	.12	.20	.13	.12	.07	.17	.15	.11	.10	.08	.12	**.60**	**.56**	1.00						
19	FCG4	.20	.22	.18	.24	.21	.20	.13	.10	.10	.06	.07	.12	.09	.11	.12	**.62**	**.60**	**.55**	1.00					
20	FCG5	.15	.14	.16	.17	.10	.13	.13	.13	.13	.14	.18	.08	.06	.07	.07	**.57**	**.60**	**.62**	**.60**	1.00				
21	SCG1	.09	.08	.04	.09	.14	.13	.13	.09	.10	.09	.02	.19	.16	.15	.16	.25	.33	.16	.34	.19	1.00			

Table 5.16: Item-

22	SCG2	.05	.07	.03	.05	.05	.07	.13	.13	.09	.12	.11	.15	.20	.16	.21	.32	.34	.30	.35	.33	**.55**	1.00		
23	SCG3	.10	.06	.05	.07	.13	.11	.12	.11	.07	.16	.05	.13	.13	.11	.17	.25	.30	.21	.29	.21	**.52**	**.44**	1.00	
24	SCG4	.11	.04	.09	.12	.08	.10	.14	.20	.08	.14	.04	.14	.17	.14	.19	.30	.31	.30	.35	.22	**.53**	**.52**	**.49**	1.00

Note: Bolded values are within scale correlations

wise correlations (continued 1)

Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
25	.09	.05	.08	.05	.07	.06	-.02									.20	.22	.23	.24	.21	**.51**	**.54**	**.54**	**.51**
SCG5	.09	.02	.05	-.04	.20	.21	.17	.25 26	SNC1	-.05	.05	.01	.07	.06	.02	.02	.04	.01	.06	.06	-.05	-.02	-.01	-.05
.09	.01	.04	.04	.07	.02	.19	.15	.20	.20 27	SNC2	.00	.08	.06	.09	.03	.03	.00	-.01	-.09	.01	.01	-.06	-.06	-.08
-.08	.01	.02	-.02	-.02	-.02	.12	.08	.10	.13 28	SNC3	-.06	.00	-.02	.01	.03	-.02	.03	.02	-.02	.04	.00	-.11	-.11	-.08
-.14	.02	.03	-.03	.08	.04	.07	.13 29	RSI1	-.02	.06	.06	.10	.03	.05	.10	.08	.08	.09	.07	.03	.04	-.01	.05	.15
.20	.20	.18 30	RSI2	-.02	.04	.06	.05	.05	.07	.06	.09	.06	.07	.07	.03	.07	.06	.09	.20	.11	.20 31	RSI3	.02	.11
.13	.15	.07	.09	.05	.15	.15	.13 32	RSI4	.02	.09	.04	.07	.05	.09	.07	.09	.05	.08	.08	.03	.08	-.03	.05	.08
.17	.22	.17	.16	.05	.15	.12	.14 33	RSI5	-.04	.06	.04	.03	.04	.07	.12	.15	.07	.10	.08	.09	.05	.03	.23	.24
.18	.16	.09	.15	.03	.13	34	INCENT1	.04	.09	.05	.04	.04	.06	.08	.05	.11	.07	.00	.04	.06	.01	.05	.10	.18
.12	.09	.08	.10	.14	.20	.14 35	INCENT2	.07	.04	.06	.05	.05	.06	.06	.00	.07	.03	-.01	-.02	.03	.05	.03	.13	.16
.18	.11	.12	.09	.12	.12 36	INCENT3	.05	.12	.00	.08	.07	.05	.05	-.06	.02	.05	-.05	-.03	-.05	-.04	-.02	.07	.14	.14
.11	.06	.10	.09	.15	.08 37	INCENT4	.05	.03	.00	.02	-.01	.01	.06	.04	.06	.11	.00	-.01	.05	-.01	.02	.12	.14	.18
.11	.13	.05	.10	.17	.08 38	INCENT5	.02	-.04	-.03	.00	-.04	-.03	.12	.06	.09	.10	.14	.13	.14	.10 39	OPERF1	.08	.10	.13
.18	.19	.16	.20	.15	.18	.17	.10	.18	.23	.27	.22	.25	.22	.22	.20	.19	.28 40	OPERF2	-.05	-.02	.04	.00	-.03	.05
.18	.20	.15	.16	.13	.09	.15	.07	.16	.23	.25	.28	.19	.20	.16	.22	.13	.17 41	OPERF3	-.01	.04	.06	.05	.01	.05
.13	.22	.24	.23	.21	.20	.17	.18	.10	.10	.12	.10	.07	.10	.10	.22	.24	.23	.21	.20	.17	.18	.14	.17 42	OPERF4
.01	.04	.08	.03	.01	.09	.09	.11	.14	.15	.11	.15	.16	.19	.17	.16	.23	.23	.17	.20	.23				

Table 5.16: Item-

.21	.15	.20 43	OPERF5	.03	.07	.07	.11	.06	.11	.10	.15	.04	.11	.15	.10	.12	.10	.10
.19	.23	.22	.22	.20	.18	.18	.14	.16 44	FPERF1	-.01	.05	.02	.07	.05	.02	.15	.12	.11
.13	.11	.08	.06	.06	.06	.14	.14	.11	.12	.13	.16	.16	.15	.22 45	FPERF2	-.03	.08	.03
.05	.01	.03	.04	.07	.10	.12	.07	.06	.04	.05	.07	.24	.31	.24	.23	.21	.18	.24
.19	.15 46	FPERF3	.02	-.02	.06	.10	.07	.08	.11	.08	.13	.11	.09	.04	.08	.06	.07	.24
.24	.26	.28	.25	.19	.22	.14	.18 47	FPERF4	.09	.07	.06	.20	.08	.10	.09	.11	.01	.14
.02	.00	.06	.02	.10	.23	.22	.21	.24	.17	.26	.27	.29	.25 48	FPERF5	.05	.11	.09	.11
.09	.08	.12	.08	.09	.14	.12	-.04	.00	-.04	.02	.28	.37	.33	.35	.31	.16	.21	.17
.17																		

Note: Bolded values are within scale correlations

wise correlations (continued 2)

Item		25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
		1.00																							
25	SCG5																								
26	SNC1	.14	1.00																						
27	SNC2	.06	**.65**	1.00																					
28	SNC3	.01	**.54**	**.61**	1.00																				
29	RSI1	.06	.24	.23	.20	1.00																			
30	RSI2	.08	.21	.21	.22	**.61**	1.00																		
31	RSI3	.12	.19	.17	.17	**.57**	**.59**	1.00																	
32	RSI4	.10	.19	.17	.14	**.50**	**.57**	**.55**	1.00																
33	RSI5	-.01	.16	.21	.22	**.56**	**.64**	**.57**	**.56**	1.00															
34	INCENT1	.04	-.03	-.05	-.03	.04	-.02	.12	.16	.08	1.00														
35	INCENT2	.07	-.02	-.03	.01	-.04	-.03	.03	.05	-.01	**.54**	1.00													

Table 5.16: Item-

36	INCENT3	.04	-.02	.00	.04	.05	.01	.04	.10	.02	**.55**	**.54**	1.00												
37	INCENT4	.02	.06	-.01	.03	-.02	-.02	.04	.08	-.03	**.55**	**.67**	**.58**	1.00											
38	INCENT5	.00	.00	-.03	.04	.06	.05	.05	.08	.10	**.40**	**.52**	**.45**	**.48**	1.00										
39	OPERF1	.18	.10	.17	.12	.18	.12	.12	.18	.20	.12	.09	.09	.13	.14	1.00									
40	OPERF2	.10	.05	.06	.10	.21	.14	.08	.13	.19	.13	.10	.04	.11	.09	**.52**	1.00								
41	OPERF3	.16	.05	.05	.00	.14	.12	.09	.17	.15	.12	.10	.13	.12	.02	**.47**	**.39**	1.00							
42	OPERF4	.14	.13	.12	.07	.20	.19	.11	.16	.22	.16	.08	.10	.07	.14	**.55**	**.49**	**.45**	1.00						
43	OPERF5	.06	.12	.13	.06	.20	.13	.12	.08	.22	.12	.05	.05	.04	.04	**.46**	**.54**	**.38**	**.52**	1.00					
44	FPERF1	.08	.21	.19	.13	.28	.22	.19	.19	.20	.09	-.02	-.03	-.04	.00	.20	.15	.17	.21	.27	1.00				
45	FPERF2	.16	.17	.14	.11	.21	.24	.20	.10	.23	.11	-.01	.03	.00	.07	.21	.21	.20	.25	.33	**.52**	1.00			
46	FPERF3	.09	.15	.06	.11	.24	.17	.11	.06	.10	.07	.09	.09	.09	.13	.22	.21	.13	.18	.11	**.41**	**.36**	1.00		
47	FPERF4	.20	.17	.10	.06	.21	.17	.16	.14	.08	.18	.14	.11	.10	.16	.10	.10	.20	.11	.18	**.45**	**.43**	**.31**	1.00	
48	FPERF5	.13	.12	.08	.03	.13	.18	.13	.15	.13	.07	.01	.04	.07	.11	.20	.16	.21	.20	.23	**.43**	**.58**	**.39**	**.44**	1.00

Note: Bolded values are within scale correlations Source:
Field Study (2019)

5.4 VALIDITY AND RELIABILITY TESTS

For reflective scales, empirical demonstration of reliability and validity is a prerequisite for structural model analysis (Hair *et al*., 2014; Baggozi and Yi, 2012). To this end, scale reliability test, EFA, and CFA were relied on to establish the validity and reliability of items used to measure the constructs in the study's model (O'Leary-Kelly and Vokurka, 1998). Results from the analyses are presented in the sub-sections that follow.

5.4.1 Scale Reliability Test

The study tested for reliability of the study's scales using Cronbach's alpha (O'LearyKelly and Vokurka, 1998). As shown in Table 5.17, the results indicate that all scales had Cronbach's alpha values above the minimum threshold of .70 (Hair *et al*. 2014), indicating that they had good internal consistency (Field, 2009).

Table 5.17: Scale Reliability Results

Construct	No. of Items	Cronbach's alpha
1. Regulatory Institution	6	.918
2. Normative Institution	5	.856
3. Cultural-cognitive Institution	4	.849
4. Formal Control	5	.876
5. Social Control	5	.842
6. Structural Network Complexity	3	.817
7. Relationship Specific Investment	5	.870
8. Incentive Alignment	5	.848
9. Operational Performance	5	.802
10. Financial Performance	5	.792

Source: Field Study (2019)

5.4.2 Exploratory Factor Analysis

Following O'Leary-Kelly and Vokurka (1998), the study conducted EFA for item selection purpose, and to explore the unidimensionality and external validity of the scales. The analysis of EFA was done in two stages. First, to meet sample adequacy requirement (given the large items in the study), it became necessary to first conduct the EFA based on parcels of theoretically related items. The four parcels of items analysed measured (1) institutional environment (regulatory, normative and culturalcognitive institutions), (2) GMs (formal control and social control), (3) firm performance (operational performance and financial performance), and (4) other factors (SNC, relationship specific investment and incentive alignment).

In the second stage, the EFA was conducted on all items extracted in the first stage. This stage of the analysis was necessary for exploring the external validity of the scales—that is, between-scale items relationships. Principal component was used as method of estimation as it is psychometrically sound and conceptually less complex. Varimax was used as the method of rotation as it simplifies the interpretation of components (Field, 2009). Again, the study retained components with Eigenvalues of at least 1.00. Furthermore, items with weak loadings (i.e. below .50) and those loading high (i.e. at least .50) on multiple components were dropped (Field, 2009).

Prior to running the EFA, the factorability and sample adequacy were assessed. An analysis of the inter-item correlations showed that most of the associations between items of the same scales were high (greater than .50) (see Table 5.16). The Kaiser–Meyer–Olkin (KMO) value for each analysis conducted was above the minimum threshold of 0.60 (Pallant, 2007). In addition, the Bartlett's test of Sphericity for each analysis reached statistical significance level (see Tables 5.18, 5.20, 5.21, 5.22, and

5.23). Overall, these results respectively suggest that the sample data for EFA was adequate and factorability was appropriate (Tabachnick and Fidell, 2013; Pallant, 2007).

5.4.2.1 EFA on the Scales for Institutional Environment

EFA was conducted on fifteen items that were expected to tap into the three dimensions of IE, namely, regulatory, normative, and cultural-cognitive institutional environments. As shown in Table 5.18, the analysis produced three components, accounting for 68.31% of the variance explained. Also, the items loaded high (that is, greater than 0.70) onto their respective constructs and low (below 0.20) on the constructs they were not supposed to measure, providing initial evidence of unidimensionality and convergent validity of each scale (O'Leary-Kelly and Vokurka, 1998).

Table 5.18: EFA Results on the Scales for Institutional Environment Factors

Item code	Item statement	Component		
		1	2	3
REG1	The legal system in this country protects our interests	**.864**	.049	.026
REG2	The legal system in this country prevents us from being cheated	**.840**	-.030	.066
REG3	Government provides enabling environment for businesses in Ghana	**.812**	.061	.036
REG4	Government implements laws that help businesses develop	**.808**	.130	-.027
REG5	The legal system in this country is efficient	**.867**	.034	-.007
REG6	Overall, we have confidence in the legal system	**.857**	-.004	.043
NORM1	My organisation belongs to industry groups that encourage good business practices	.046	**.819**	.015
NORM2	My organisation actively participates in industry groups that encourage ethical business practices	.044	**.801**	.009
NORM3	The profession my organization represents expects all of its members to comply with ethical standard	.048	**.753**	.024
NORM4	Adherence to professional ethics and industry norms are admired in this country	.065	**.798**	.015
NORM5	Following due process is important in my industry	-.006	**.808**	.006
CCOG1	In this country, businesses depend on good connections	.095	-.016	**.798**
CCOG2	In this country, one's personal connection is very important	-.007	.037	**.898**
CCOG3	In this country, good personal connections is a requirement for business success	-.003	.025	**.723**
CCOG4	Business partners are viewed as friends who care about each other wholeheartedly	.019	.019	**.896**
Eigenvalue		4.406	3.097	2.744
Variance explained (%)		29.374	20.649	18.291
Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy = .838; Chi-Square = 2800.191; df = 105, p < .001				

Note: Items loading on components 1 through 3 measure regulatory institution, normative institution, and cultural cognitive institution respectively

Source: Field Study (2019)

5.4.2.2 EFA on the Scales for Governance Mechanisms

Ten items, supposed to measure GMs (formal control and social control), were subjected to EFA. As expected, the analysis produced two components with five items measuring each component. The first five items loaded on formal control while the remaining five loaded on social control. Together, the two components explained 64.39% of the variance. As shown in Table 5.19, all the ten items loaded high (greater than 0.70) on their respective constructs and low (below 0.30) on the constructs they were not supposed to measure, providing initial evidence of unidimensionality and convergent validity of each scale (O'Leary-Kelly and Vokurka, 1998).

Table 5.19: EFA Results on the Scales for Governance Mechanisms

Item code	Item statement	Component	
		1	2
FCG1	My organisation ensures specific, well-designed agreements with its business partners	**.794**	.169
FCG2	My organisation ensures formal agreements that detail the obligations of all parties	**.765**	.234
FCG3	My organisation ensures formally agreed set of rules to monitor our partner's actions	**.812**	.123
FCG4	My organisation ensures compliance with contractual terms and conditions	**.785**	.247
FCG5	My organisation makes reference to contracts to settle differences of opinion	**.831**	.109
SCG1	My organisation ensures trust building with its business partners	.136	**.793**
SCG2	My organisation ensures team building with its business partners	.270	**.731**
SCG3	My organisation engages in joint planning with its business partners	.143	**.753**
SCG4	My organisation engages in joint workshop /meetings with its business partners	.213	**.747**
SCG5	My organisation arranges social events with its business partners	.095	**.793**
Eigenvalue		4.571	1.868
Variance explained (%)		45.708	18.678
Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy = .887; Chi-Square = 1470.068; df = 45, p < .001			

Note: Items loading on components 1 and 2 measure formal control and social control respectively

Source: Field Study (2019)

5.4.2.3 EFA on the Scales for Performance Outcomes

EFA was conducted on ten items used to measure firm performance (i.e. operational performance and financial performance). Two components were produced, explaining 56.68% of the variance. As shown in Table 5.20, the items loaded high (mostly above 0.70) on their respective components but low (below 0.30) on the other components that they were not supposed to measure. This indicates that the scales measuring operational and financial performances show initial evidence of unidimensionality and convergent validity (O'Leary-Kelly and Vokurka, 1998).

Table 5.20: EFA Results on the Scales for Performance Outcomes

Item code	Item statement	Component	
		1	2
OPERF1	Responsiveness to customer needs	**.786**	.114
OPERF2	Reduction in lead time	**.774**	.083
OPERF3	Reduction in time-to-market	**.670**	.138
OPERF4	Process improvement	**.787**	.119
OPERF5	On-time deliveries	**.736**	.194
FPERF1	Increase in sales	.137	**.755**
FPERF2	Increase in profit	.198	**.772**
FPERF3	Increase in return on investment	.129	**.622**
FPERF4	Increase in return on sales	.036	**.721**
FPERF5	Increase its market share	.140	**.763**
Eigenvalue		3.790	1.878
Variance explained (%)		37.898	18.776
Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy = .841; Chi-Square = 1042.503; df = 45, p < .001			

Note: Items loading on components 1 and 2 measure operational performance and financial performance respectively

Source: Field Study (2019)

5.4.2.4 EFA on the Scales for Other Factors

The scales expected to measure relationship specific investment, incentive alignment and SNC were also subjected to EFA. Three components emerged from the analysis as expected. The results as shown in Table 5.21 show that items loading on components one, two, and three measure relationship specific investment, incentive alignment, and SNC. Together, they explained 64.58% of the variance. All items loaded high (i.e. above .70) on their respective constructs but low (i.e. below .30) on any other constructs. These results point to initial evidence of unidimensionality and convergent validity (O'Leary-Kelly and Vokurka, 1998) of the scales measuring relationship specific investment, incentive alignment, and SNC.

Table 5.21: EFA Results on the Scales for the Other Factors

Item code	Item statement	Component		
		1	2	3
SNC1	The number of customers your organisation serves	.138	-.004	**.841**
SNC2	The number of suppliers your organization deals with	.134	-.035	**.870**
SNC3	The number of product/service models produced outside your organisation	.128	.022	**.824**
RSI1	Knowledge about marketing and sales expertise	**.786**	-.006	.150
RSI2	Knowledge about business planning and development networks	**.838**	-.035	.123
RSI3	Knowledge about business operations	**.804**	.053	.077
RSI4	Knowledge about information and technology development	**.775**	.111	.074
RSI5	Knowledge about Customer care	**.820**	.010	.096
INCENT1	My organisation and its business partners evaluate each other's performance	.089	**.769**	-.071
INCENT2	My organisation and its business partners share costs together	-.034	**.839**	-.002
INCENT3	My organisation and its business partners share benefits together	.026	**.790**	.013
INCENT4	My organisation and its business partners share risks that occur together	-.033	**.842**	.053
INCENT5	The incentive for my organisation commensurate with our investment and risks	.071	**.701**	-.006
Eigenvalue		3.728	3.102	1.824
Variance explained (%)		28.676	23.865	14.028
Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy = .837; Chi-Square = 1811.854; df = 78, p < .001				

Note: Items loading on components 1, 2, and 3 measure relationship specific investment, incentive alignment and structural network complexity respectively Source: Field Study (2019)

5.4.2.5 Full Measurement EFA Model

To establish an initial evidence for discriminant validity of the scales, all items retained from the first-stage of the EFA were further subjected to EFA (O'Leary-Kelly and Vokurka, 1998). Consistent with the study's expectation, ten components were produced (see Table 5.22), which together explained 77.380% of the variance. Specifically, components 1 to 10 accounted for 17.01%, 8.51%, 6.99%, 6.40%, 6.25%,

5.08%, 4.58%, 4.33%, 3.64%, and 2.84% of the variance explained respectively. All items loaded high (that is, greater than .60) on their theoretical constructs but weak (i.e. below .40) on other constructs. These findings provide sufficient initial evidence of convergent validity and discriminant validity (O'Leary-Kelly and Vokurka, 1998) of the scales.

Table 5.22: Results on Full EFA Model

Item code	Component									
	1	2	3	4	5	6	7	8	9	10
REG5	**.865**	.021	.034	.033	.002	.073	-.009	-.016	.024	.020
REG1	**.861**	-.051	.075	.055	.036	.065	-.041	.025	-.019	-.042
REG6	**.849**	.044	.074	-.018	.004	.054	.093	.026	.007	-.014
REG2	**.833**	.047	.112	-.043	.033	-.002	.010	.058	.030	.031
REG3	**.804**	.041	.101	.052	-.010	-.009	.054	.039	.001	.000
REG4	**.801**	.029	.093	.118	.015	.018	.004	-.025	.091	.049
RSI2	.000	**.815**	.112	.026	-.047	.067	.046	.035	.128	.110
RSI5	-.001	**.801**	.103	.069	-.004	-.025	.170	.028	.048	.092
RSI3	.067	**.797**	.115	.010	.043	.065	-.005	.024	.077	.063
RSI4	.042	**.778**	.046	.041	.105	.071	.074	.003	.022	.048
RSI1	.016	**.752**	.084	.047	-.019	.062	.120	.003	.161	.132
FCG5	.076	.096	**.800**	.096	.049	.101	.105	.037	.102	-.039
FCG1	.114	.021	**.761**	.101	.045	.167	.105	.010	.126	.038
FCG3	.107	.170	**.760**	.067	.118	.094	.145	.074	.106	-.045
FCG4	.166	.112	**.746**	.014	.053	.233	.091	.063	.139	-.008
FCG2	.110	.139	**.698**	.056	.101	.227	.174	-.078	.154	-.035
NORM1	.042	.046	.064	**.812**	.062	.051	.056	.007	.045	.010
NORM5	-.008	.024	.110	**.799**	-.064	-.051	.074	.015	.032	.030
NORM2	.040	.068	.028	**.786**	-.022	.110	.126	-.017	.013	-.011
NORM4	.058	.006	.064	**.782**	.063	.063	.091	.001	.088	.031
NORM3	.047	.036	.023	**.748**	.061	.022	.056	.024	.049	-.065
INCENT4	-.010	-.041	.113	.042	**.835**	.014	.043	.018	-.021	.064

INCENT2	.039	-.040	.094	.006	**.828**	.061	.027	.018	-.019	.005
INCENT3	.067	.031	.023	-.045	**.786**	.060	.056	-.073	.008	-.005
INCENT1	.050	.081	-.030	.032	**.756**	.096	.110	.008	.099	-.106
INCENT5	-.066	.048	.090	.067	**.698**	.023	.020	.025	.075	.009
SCG5	.032	.017	.112	-.045	-.028	**.790**	.046	.153	.032	-.001
SCG1	.063	-.002	.111	.038	.036	**.760**	.134	.085	.109	.087
SCG3	.056	.048	.101	.066	.151	**.737**	.049	.053	.114	.058
SCG4	.046	.099	.172	.090	.058	**.717**	.118	.088	.077	.112
SCG2	-.015	.098	.252	.074	.065	**.689**	.102	.120	.131	.017
OPERF4	.012	.110	.064	.045	.076	.097	**.759**	.124	.099	.057
OPERF5	.058	.070	.087	.029	-.006	.039	**.743**	.037	.192	.046
OPERF2	-.059	.071	.162	.121	.055	.045	**.739**	.072	.052	.037
OPERF1	.100	.067	.120	.131	.078	.120	**.733**	.117	.060	.113
OPERF3	.003	.076	.107	.111	.069	.126	**.647**	.004	.098	-.064
CCOG2	-.007	.032	-.008	.030	.026	.103	.077	**.887**	.030	-.031
CCOG4	.018	.028	.017	.006	.007	.136	.082	**.873**	.046	-.080
CCOG1	.094	.037	.023	-.022	-.019	.100	.085	**.783**	-.009	-.054
CCOG3	-.007	-.008	.055	.015	-.014	.090	.064	**.715**	-.001	-.020
FPERF2	-.014	.125	.137	.001	-.020	.080	.203	.016	**.754**	.044
FPERF1	.012	.172	-.059	.102	-.047	.078	.140	.048	**.753**	.107
FPERF5	.050	.045	.294	.051	.011	.051	.126	-.074	**.718**	-.008
FPERF4	.086	.087	.048	.029	.145	.264	.005	-.006	**.682**	.013
FPERF3	.005	.032	.242	.080	.085	.032	.072	.079	**.577**	.114
SNC2	.056	.146	-.059	-.043	-.040	.063	.096	-.064	.079	**.845**
SNC3	-.023	.145	-.010	.006	.026	.023	.045	-.108	.025	**.821**
SNC1	.011	.130	-.003	.023	-.018	.167	.021	-.017	.140	**.814**
Eigenvalue	8.163	4.087	3.359	3.071	3.000	2.436	2.200	2.077	1.749	1.362
Variance explained (%)	17.006	8.515	6.998	6.397	6.250	5.075	4.582	4.328	3.644	2.838
Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy = .838; Chi-Square = 7970.875; df = 1128, p < .001										

Note: Items loading on components 1 through 10 measure regulatory institution, relationship specific investment, formal control, normative institution, incentive alignment, social control, operational performance, cultural-cognitive institution, financial performance, and structural network complexity respectively.

Source: Field Study (2019)

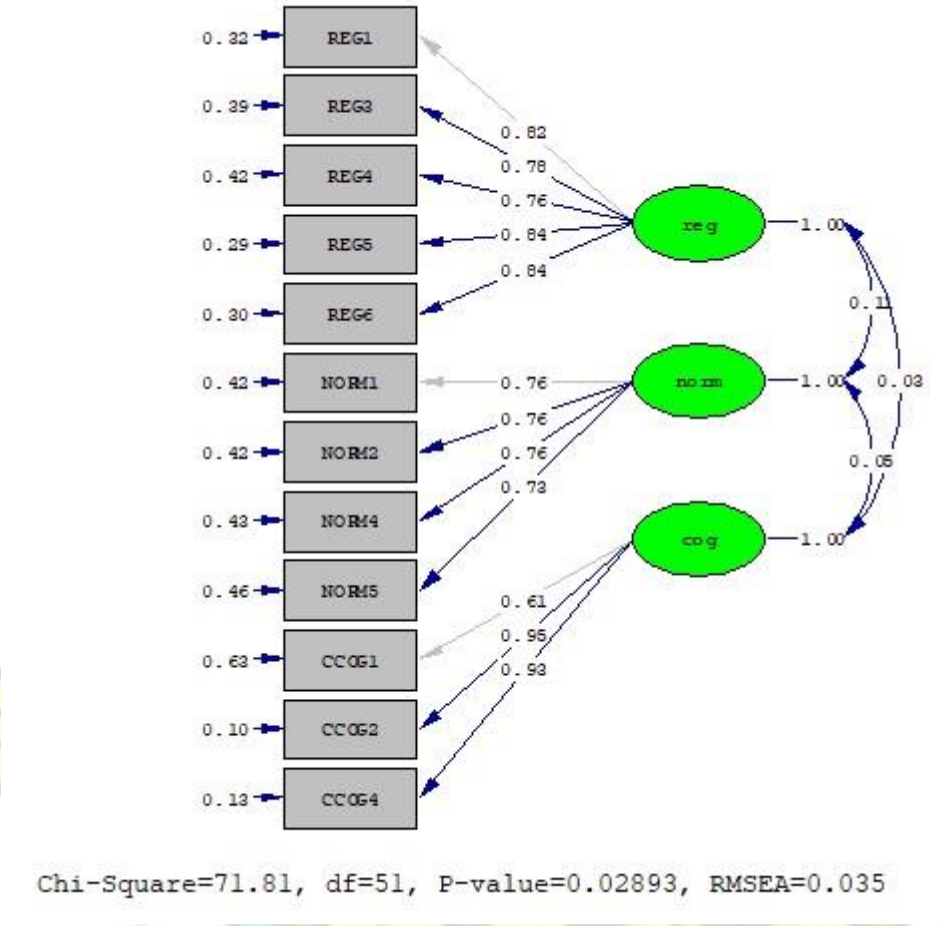
5.4.3 Confirmatory Factor Analysis

CFA was used to confirm the initial evidence of unidimensionality, convergent validity and discriminant validity of the scales found using EFA (Hair *et al*., 2014). Unlike EFA, CFA is conducted for the purpose of hypothesis-testing (regarding the linkages between items and their theoretical constructs), and it represents a rigorous statistical tool for assessing unidimensionality, reliability, and validity of scales (Hair *et al.* 2014; Bagozzi and Yi, 2012; O'Leary-Kelly and Vokurka, 1998). The analysis was conducted on all the items in Table 5.22. As was done in the EFA, a two-stage procedure was followed in the CFA as implemented in Boso *et al.* (2013a). The study used LISREL 8.5 (SIMPLIS procedures) as the statistical software package to conduct the CFA. Maximum likelihood method was used as the estimation method while covariance matrix was used as the input for the analysis (Hair *et al*., 2014; Diamantopoulos and Siguaw, 2000).

5.4.3.1 CFA on the Scales for Institutional Environment Factors

In reference to Section 5.4.2.1 of the EFA results on the scales measuring IE, a threefactor CFA model was estimated. As shown in Figure 5.1, after dropping three items (Reg1, Norm3 and Cog3) through analysis of their modification fit indices (Hair *et al*., 2014), a good model fit to data was obtained, given chi-square (χ^2) = 71.81, degree of freedom (df) = 51, normed chi-square (χ^2/df) = 1.408, p = .029, root mean square error of approximation (RMSEA) = .035, nonnormed fit index (NNFI) = .988, comparative fit index (CFI) = .990, standardized root mean square residual (SRMR) =

.034 (see Tables 5.23 and 5.24) (Bagozzi and Yi, 2012; Hair *et al*., 2014). Each item loaded significantly high (i.e. greater than 0.60) on its theoretical construct at 1%.



Note: latent variables with labels reg, norm, and cog represent regulatory institution, normative institution, and cultural-cognitive institution respectively

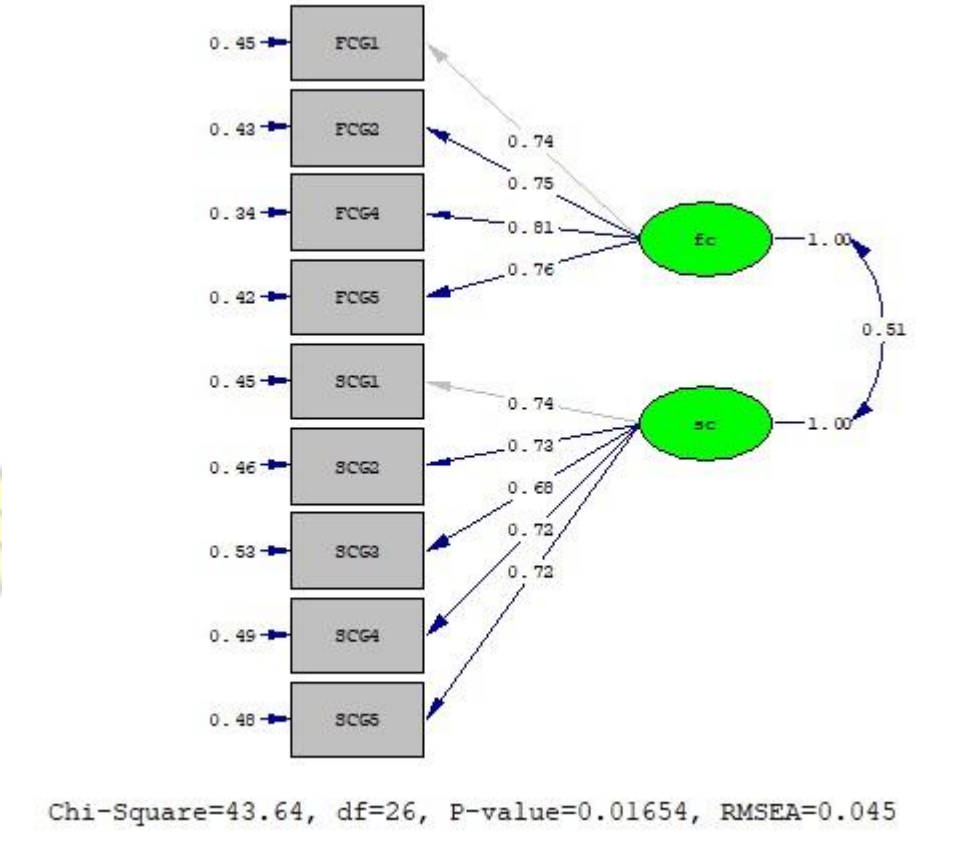
Figure 5.1: CFA on the Scales for Institutional Environment Factors

Source: Field Study (2019)

5.4.3.2 CFA on the Scales for Governance Mechanisms

The items measuring the two dimensions of GMs—formal control and social control—as presented in Section 5.4.2.2 were subjected to CFA. After dropping FCG3 whose error terms cross-loaded highly with the error terms of other items, a good fit to data was obtained for the two-factor CFA model, given $\chi^2 = 43.64$, df = 26, χ^2 / df = 1.678, p = .017, RMSEA = .045, NNFI = .978, CFI = .984, SRMR = .036 (see Tables 5.23 and

5.24). As shown in Figure 5.2, all retained items loaded positive, high (i.e. greater than .70), and significant on its theoretical construct. These results indicate that the scales in CFA model set two demonstrate good convergence validity as well as unidimensionality (Hair *et al.*, 2014; O'Leary-Kelly and Vokurka, 1998).



Note: latent variables with labels fc and sc represent formal control and social control respectively

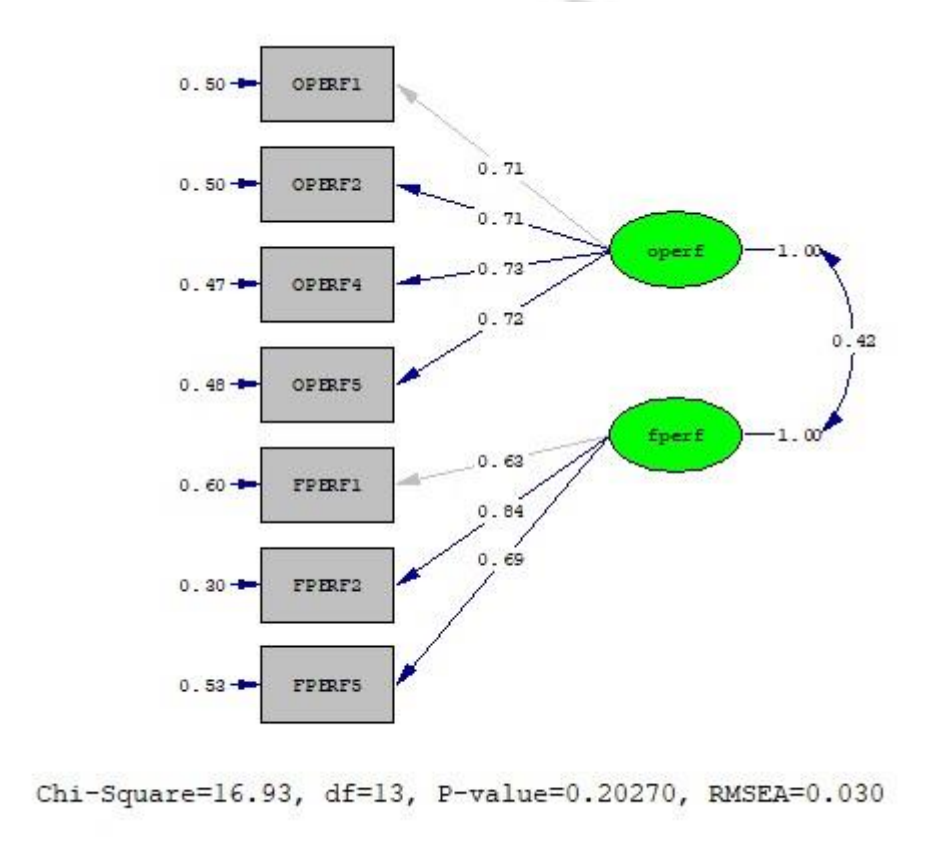
Figure 5.2: CFA on the Scales for Governance Mechanisms

Source: Field Study (2019)

5.4.3.3 CFA on the Scales for Performance Outcomes

CFA was conducted on the scales measuring operational performance and financial performance. After few purification involving dropping cross-loaded error terms, the model obtained a good fit to data for the two-factor CFA model, given $\chi^2 = 16.93$, df = 13, χ^2 / df = 1.392, p = .203, RMSEA = .030, NNFI = .990, CFI = .994, SRMR = .029

(see Tables 5.23 and 5.24). As Figure 5.3 shows, the item loadings were positive and high (i.e. greater than 0.60) and significant on their theoretical constructs. Together, these results demonstrate good convergence validity as well as unidimensionality of the scales measuring the two firm performance outcomes (Hair *et al*., 2014; O'Leary-Kelly and Vokurka, 1998).



Note: latent variables with labels operf, and fperf represent operational performance and financial performance respectively

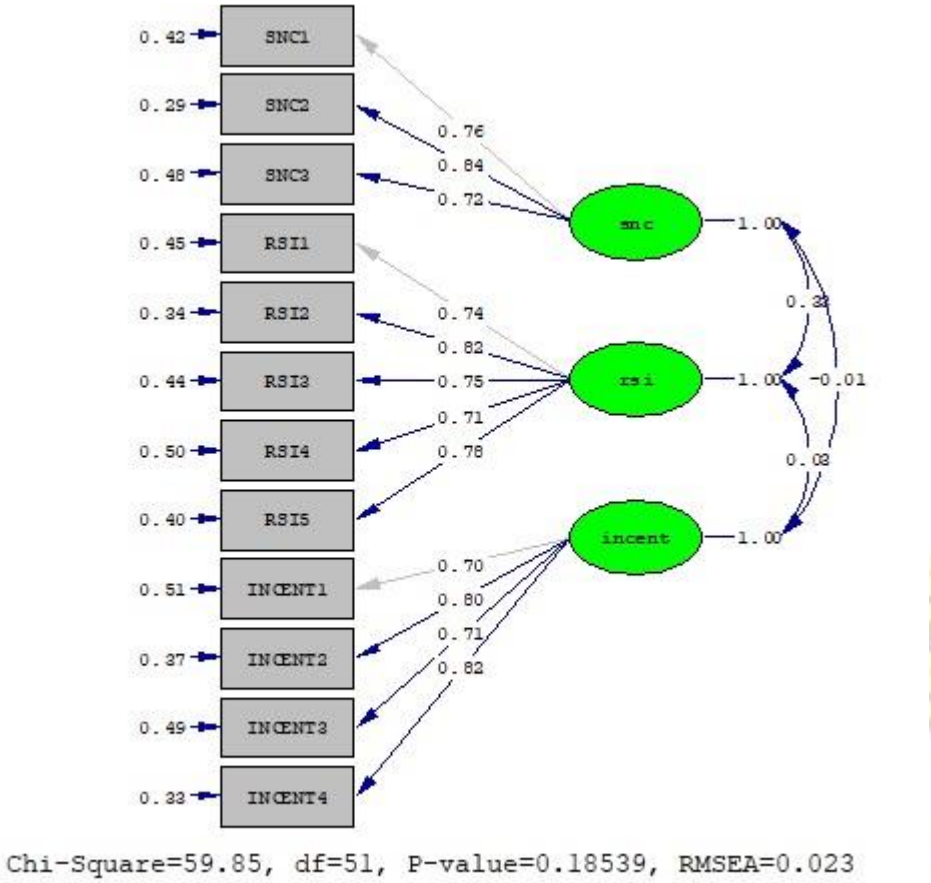
Figure 5.3: CFA on the Scales for Performance Outcomes

Source: Field Study (2019)

5.4.3.4 CFA on the Scales for the Other Factors

CFA was conducted on the scales measuring the three remaining constructs— SNC, relationship specific investment, and incentive alignment. After dropping one item from incentive alignment scale (Incent 5), the model (see in Figure 5.4) fitted the data well,

given $\chi^2 = 59.85$, df = 51, χ^2 / df = 1.174, p = .185, RMSEA = .023, NNFI = .993, CFI = .995, SRMR = .035. The item loadings were high (above .70) and significant (see Tables 5.23 and 5.24), demonstrating a good convergence validity as well as unidimensionality (Hair *et al.*, 2014; O'Leary-Kelly and Vokurka, 1998).



Note: latent variables with labels snc, rsi, and incent represent structural network complexity, relationship specific investment, and incentive alignment respectively

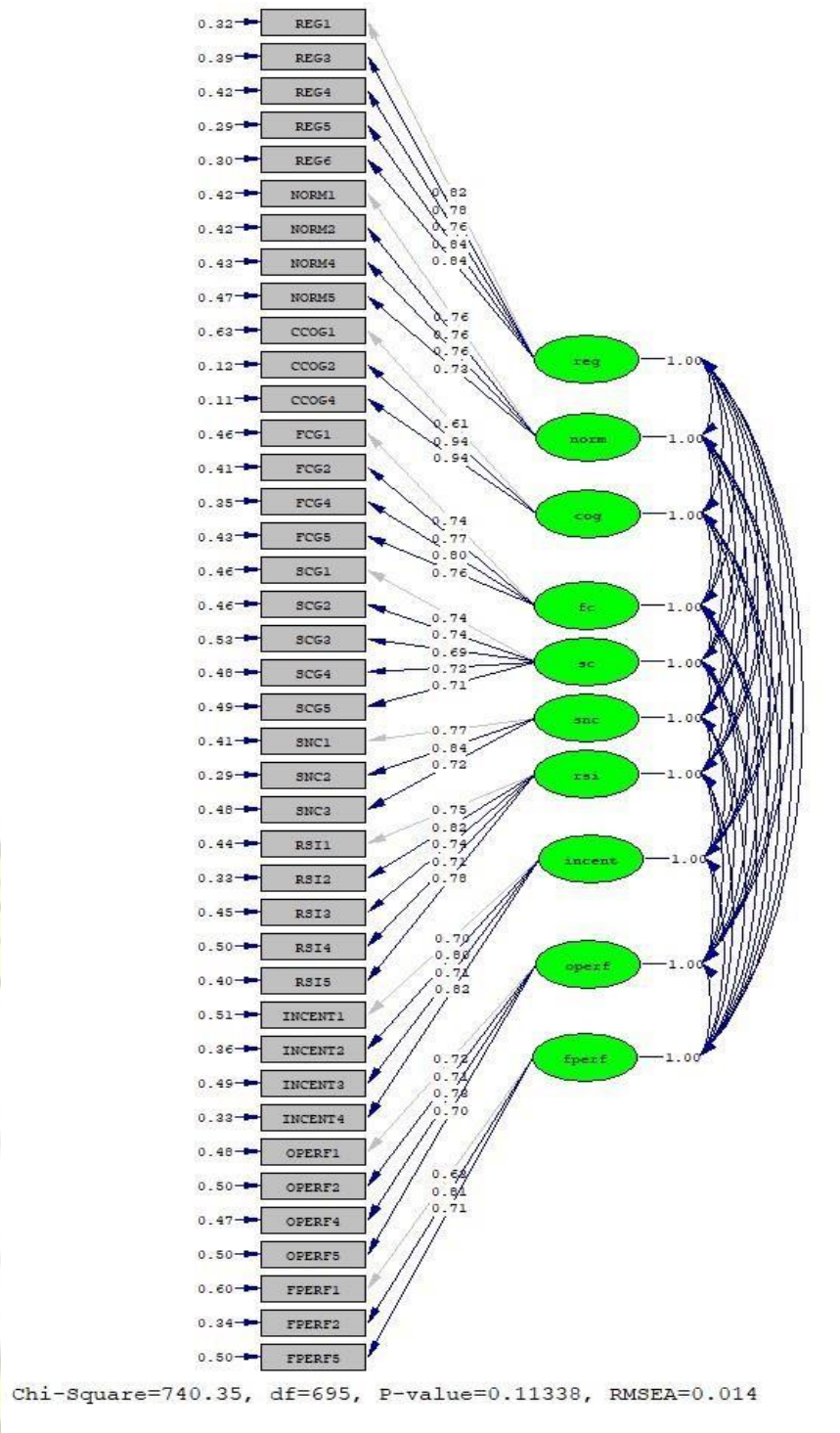
Figure 5.4: CFA on the Scales for the Other Factors

Source: Field Study (2018)

5.4.3.5 Full CFA Model and Main Validity and Reliability Results

To check for robustness of the validity and reliability of the scales, another CFA was conducted on all retained items in Sections 5.4.3.1, 5.4.3.2, 5.4.3.3, and 5.4.3.4. As shown in Figure 5.5, the results show that the full measurement CFA model

demonstrated a good fit to data, given χ^2 = 740.35, df = 695, : χ^2/df =1.065, p = .113, RMSEA = . .014, NNFI = .986, CFI = .967, SRMR = .039 (Bagozzi and Yi 2012; Hair *et al.*, 2014). All items from the subset CFAs were retained, loaded high (i.e. above .60) and significant on their respective theoretical constructs. The composite reliability (CR) and the average variance extracted (AVE) values were reported in Table 5.23.



Note: latent variables with labels reg, norm, cog, fc, sc, snc, rsi, incent, operf, and fperf represent regulatory institution, normative institution, cultural-cognitive institution, formal control, social control, structural network complexity, relationship specific investment, incentive alignment, operational performance, and financial performance respectively.

Figure 5.5: Full CFA Model

Source: Field Study (2019)

As shown in Table 5.23, the CR and the AVE values were greater than the minimum thresholds of 0.60 and 0.50 respectively (Hair *et al*., 2014). The lowest CR and AVE values were 0.764 and .513 respectively. These results demonstrate sufficient unidimensionality and convergence validity of the study's scales (Hair *et al*., 2014; Bagozzi and Yi, 2012). Also, as shown in Table 5.23, each scale's Cronbach's alpha scores was above the minimum threshold of.70, indicating good internal consistency (Hair *et al*., 2014; Bagozzi and Yi, 2012).

To strictly assess discriminant validity, the study compared the AVE values with the shared variance between the scales (Hair *et al*., 2014). Higher shared variance (relative to AVE values) is an indication that the scales demonstrate poor discriminant validity (Hair *et al*., 2014). In this study, the highest shared variance (R^2) was 0.261 (see Table 2.25). Comparing this to the lowest AVE value of 0.513, it is clear that the study's scales demonstrate good discriminant validity. Regarding the path from, regulatory environment to operational performance, the correlation results (see Table 2.25) demonstrate sufficient level of nomological validity, given the significant positive correlations as expected in the study (Hair *et al*., 2014).

Table 5.23: Full Measurement CFA Model Results

Constructs/Measures/CR/AVE/CA	Loadings	T-values
Regulatory Institution (CR = .905, AVE = .655, CA = .904)		
REG1	.822	Fixed
REG3	.781	15.95
REG4	.762	15.42
REG5	.843	17.72
REG6	.836	17.50
Normative Institution (CR = .840, AVE = .567, CA = .839)		
NORM1	.762	Fixed
NORM2	.764	12.87
NORM4	.756	12.76
NORM5	.731	12.37
Cultural-cognitive Institution (CR = .878, AVE = .713, CA = .855)		

CCOG1	.609	Fixed
CCOG2	.937	12.71
CCOG4	.944	12.70
Formal Control (CR = .851, AVE = .588, CA = .850)		
FCG1	.737	Fixed
FCG2	.767	13.02
FCG4	.804	13.58
FCG5	.757	12.87
Social Control (CR = .842, AVE = .516, CA = .842)		
SCG1	.737	Fixed
SCG2	.735	12.32
SCG3	.686	11.53
SCG4	.721	12.09
SCG5	.713	11.97
Structural Network Complexity (CR = .820, AVE = .604, CA = .817)		
SNC1	.766	Fixed
SNC2	.842	12.92
SNC3	.719	12.09
Relationship Specific Investment (CR = .871, AVE = .575, CA = .870)		
RSI1	.746	Fixed
RSI2	.816	14.29
RSI3	.743	13.02
RSI4	.705	12.34
RSI5	.777	13.63
Incentive Alignment (CR = .844, AVE = .576, CA = .842)		
INCENT1	.699	Fixed
INCENT2	.797	12.46
INCENT3	.712	11.39
INCENT4	.820	12.67
Operational Performance (CR = .808, AVE = .513, CA = .807)		
OPERF1	.724	Fixed
OPERF2	.710	11.19
OPERF4	.727	11.40
OPERF5	.704	11.10
Financial Performance (CR = .764, AVE = .522, CA = .758)		
FPERF1	.633	Fixed
FPERF2	.814	9.96
FPERF5	.709	9.68

Notes: Loadings above 1.96 are significant at 1%; CR = construct reliability, AVE = average variance extracted, CA = Cronbach's alpha Source: Field Study (2019)

Table 5.24: Summary of Fit Indices for the CFA Models

CFA Models	χ^2	DF	χ^2/DF	pvalue	RMSEA	NNFI	CFI	SRMR
Measurement set 1	71.81	51	1.408	.029	.035	.988	.990	.034

Measurement set 2	43.64	26	1.678	.017	.045	.978	.984	.036
Measurement set 3	16.93	13	1.392	.203	.030	.990	.994	.029
Measurement set 4	59.85	51	1.174	.185	.023	.993	.995	.035
Measurement set 5	740.35	695	1.065	.113	.014	.986	.987	.039

Notes:

1. Measurement set 1: Scales for institutional environment factors: regulatory, normative, and cultural-cognitive
2. Measurement set 2: Scales for governance mechanisms: formal control and social control
3. Measurement set 3: Scales for performance: operational and financial
4. Measurement set 4: Scales for the other factors: structural network complexity, relationship specific investment, and incentive alignment
5. Measurement set 5: Full measurement model (all measures retained in measurement set 1 through 4 were modelled simultaneously)

Source: Field Study (2019)

Table 5.25: Result of Discriminant Validity Test

	Variable	1	2	3	4	5	6	7	8	9	10
1	Regulatory Institution	**.655**	.013	.001	.072	.020	.001	.006	.004	.011	.004
2	Normative Institution	.113	**.567**	.002	.050	.030	.001	.020	.003	.076	.030
3	Cultural-cognitive Institution	.036	.047	**.713**	.007	.077	.010	.005	.001	.052	.004
4	Formal Control	.268	.224	.086	**.588**	.261	.001	.094	.040	.151	.183
5	Social Control	.142	.174	.277	.511	**.516**	.040	.045	.032	.118	.104
6	Structural Network Complexity	.034	.035	-.099	.029	.200	**.604**	.106	.000	.036	.051
7	Relationship Specific Investment	.075	.140	.073	.307	.213	.326	**.575**	.001	.085	.112
8	Incentive Alignment	.064	.059	.031	.199	.178	-.009	.032	**.576**	.027	.002
9	Operational Performance	.103	.275	.228	.389	.344	.189	.292	.163	**.513**	.179
10	Financial Performance	.063	.172	.063	.428	.323	.225	.334	.040	.423	**.522**

Notes:

1. Values below and above the principal diagonal are correlations and shared variances respectively
2. Correlation coefficients are based on full information scales (i.e., CFA output from LISREL)
3. Values on the principal diagonal are average variance extracted (AVE)

Source: Field Study (2019)

5.4.4 Common Method Bias Test

This section statistically examines whether CMB is sufficiently present in the study's data. First, the evidence of discriminant validity as discussed above is an indication that CMB may not adequately describe the study's data (Bagozzi and Yi, 2012; Podsakoff *et al*., 2003). That notwithstanding, the study followed Cote and Buckley's (1987) approach to statistically test for potential CMB problems in this study. Accordingly, following Boso *et al*. (2013a), the study estimated three competing models—methodonly, trait-only, and Method and Trait models (Cote and Buckley, 1987)—by relying on the full items captured in the study to further assess CMB. In the method-only model, all the items were specified to load onto a single latent construct: χ^2 = 8800.54; df = 1084; χ^2/df = 8.119; RMSEA = 0.147; NNFI = 0.238; CFI = 0.268; SRMR = 0.132. In the trait-only model, each item was specified to load unto its latent construct: χ^2 =

1206.85; df = 1035; χ^2/df = 1.166; RMSEA = 0.022; NNFI = 0.964; CFI = 0.967; SRMR = 0.042 (see Table 5.26). The Method and Trait model involved inclusion of a common factor linking all the indicators in model 2: χ^2 = 1203.97; df = 981; χ^2/df = 1.227; RMSEA = 0.022; NNFI = 0.965; CFI = 0.969; SRMR = 0.038. Comparison of the three models indicates that model 2 and model 3 are superior to model 1, and that model 3 is not substantially better than model 2. This suggests that common method bias does not sufficiently describe the data, and therefore, does not pose major threat to the validity of the results regarding the hypothesised paths (Boso *et al*., 2013a).

Table 5.26. Fit Indices for CMB Assessment

Measurement model	χ^2	df	χ^2/df	*P*	RMSEA	NNFI	CFI	SRMR
Method-only	8800.54	1084	8.119	.000	.147	.238	.268	.132
Trait-only	1206.85	1035	1.166	.000	.022	.964	.967	.042

Trait and Method	1203.97	981	1.227	.000	.022	.965	.969	.038

Source: Field Study (2019)

5.5 STRUCTURAL MODEL ANALYSIS AND RESULTS

The research model for the study depicts a moderated mediation model (Hayes, 2013) in that it specifies the indirect relationship between the regulatory environment and operational performance, via GMs under varying conditions of SNC. To address the concern of omitted variable bias and obtain consistent estimates (Antonakis *et al*., 2010), the study controlled for potential effects of other institutional variables (i.e. normative institution and cultural-cognitive institutions), inter-firm governance-related variables (i.e., incentive alignment, and relationship specific investment), and firmlevel variables (i.e. log of firm size , log of firm age, and industry (service = 1, manufacturing = 0) on both the mediator variables (formal control and social control) and the outcome (operational performance). As justified in Section 4.8 of Chapter Four,

SEM was used to analyse the study's proposed model. The following section presents the descriptive statistics and inter-variable correlation results.

5.5.1 Key Descriptive Statistics and Correlation Results

The descriptive statistics of the variables included in the study and the inter-variable correlations are shown in Tables 5.27 and 5.28 respectively. As shown in Table 5.27, the skewness and kurtosis results indicate that all variables are fairly normally distributed, given that their skewness and kurtosis values were within the thresholds of "≤|3.00|" and "≤ |8.00|" respectively (Kline, 2011), and thus satisfy the assumption of univariate normality.

Results from the descriptive analysis on the focal variables (see Table 5.27) show that an average firm scores slightly above the mean level of the variables' scales given the

minimum mean score of 4.29 (standard deviation = 1.094) and the maximum mean score of 5.18 (standard deviation= .979), indicating that the variables being studied largely prevail in the study context. Also, as shown in Table 5.27, the assumption of multicollinearity was not violated in the study given that the variance inflation factor (VIF) values for all predictors were below 5.00 (Hair *et al*., 2014).

Table 5.27: Descriptive Statistics and Collinearity Diagnostics

	Variables	Min	Max	Mean	SD	Skewness	Kurtosis	VIF[1]
1	Operational Performance	2.00	7.00	5.06	.864	-.825	1.448	—
2	Formal Control	1.00	7.00	5.02	.977	-1.112	2.628	1.491
3	Social Control	1.00	7.00	4.88	.957	-1.508	2.765	1.396
4	Regulatory Institution	1.00	7.00	4.37	1.224	-.631	-.421	1.124
5	Structural Network Complexity	1.00	7.00	5.10	1.093	-1.253	3.062	1.139
6	Normative Institution	1.00	7.00	5.05	.910	-1.132	3.125	1.069
7	Cultural-cognitive Institution	2.00	7.00	5.18	.979	-.801	.697	1.150
8	Incentive Alignment	1.00	7.00	4.29	1.094	-.834	-.092	1.057
9	Relationship Specific Investment	2.00	7.00	5.11	.784	-.533	1.253	1.251
10	Firm Size (log)	1.95	6.91	3.33	1.061	.908	-.286	1.263
11	Firm Age (log)	1.61	4.38	2.40	.549	.864	.734	1.237
12	Firm Industry (service = 1)	.00	1.00	0.84	.370	-1.832	1.363	1.112
13	Financial Performance	2.00	7.00	4.77	.838	-.386	.347	—

Note: VIF were computed with Operational Performance as the Dependent Variable

Source: Field Study (2019)

As shown Table 5.28, there were significant correlations between most of the variables in the hypothesised paths. As expected, regulatory environment correlated positively and significantly with both formal control (r = .235, p <0.01) and social control (r = 0.124, p <0.05) but not operational performance (r = .091, p > 0.05). Again, operational

performance correlated positively and significantly with financial performance, given $r = .304$, $p < 0.01$. Regarding the mediation variables, both formal control ($r = .323$, $p < 0.01$) and social control ($r = .279$, $p < 0.01$) correlated positively and significantly with operational performance. Concerning the moderator variable, SNC correlated positively and significantly with operational performance, given $r = .152$, $p < 0.01$.

With respect to the control variables, both normative and cultural-cognitive correlated positively and significantly with operational performance, given $r = .225$, $p < 0.01$; and $r = .205$, $p < 0.01$ respectively. Also, normative correlated positively and significantly with both formal control ($r = .195$, $p < 0.01$) and social control ($r = .144$, $p < 0.01$) while cultural-cognitive correlated positively and significantly with social control ($r = .261$, $p < 0.01$) but not formal control ($r = .091$, $p < 0.05$). Incentive alignment ($r = .148$, $p < 0.01$) and relationship specific investment ($r = .302$, $p < 0.01$) correlated positively and significantly with operational performance. Similarly, as expected, incentive alignment and relationship specific investment correlated positively and significantly with both formal control and social control. None of the three firm-level variables (i.e. firm size, firm age, and firm industry) correlated with social control and operational performance. Firm size was, however, found to correlate positively and significantly with formal control.

Table 5.28: Correlation Results

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1 Operational Performance	1												
2 Formal control	.323**	1											
3 Social control	.279**	.428**	1										
4 Regulation	.091	.235**	.124*	1									
5 Structural network complexity	.152**	.030	.170**	.023	1								
6 Normative	.225**	.195**	.144**	.102	.034	1							
7 Cultural-cognitive	.205**	.091	.261**	.053	-.099	.033	1						
8 Incentive alignment	.148**	.177**	.162**	.049	-.007	.057	.018	1					
9 Relationship specific investment	.302**	.316**	.221**	.000	.244**	.127*	.127*	.097	1				
10 Firm size (log)	.097	.230**	.074	-.104	.010	.070	-.084	.058	.183**	1			
11 Firm age (log)	.071	.050	.089	-.148**	.092	.125*	-.063	.003	.123*	.353**	1		
12 Firm industry (service = 1)	-.025	-.014	.025	.123*	.026	-.024	-.076	.089	-.095	-.188**	-.231**	1	
13 Financial performance	.304**	.296**	.312**	.073	.207**	.147**	.083	.094	.263**	.108*	.076	-.112*	1

Note: *p < .05 (2-tailed tailed test), **p < .01 (2-tailed tailed test)

Source: Field Study (2019)

5.5.2 Model Estimation Procedure and Results

A nested model testing approach in SEM was followed in estimating the study's model. Three hierarchical models: control effects (Model 1), main effects (Model 2), and interaction effects (Model 3); were estimated. Results from Model 2 ware used to evaluate H1, H2, and H3 while results from Model 3 were used to evaluate H4 and H5. The mathematical specification of Model 1, Model 2, and Model 3 (using LISRELSIMPLIS language) are presented as follows:

Model 1: Control Effects Model

FC = NI + CC + RSI + IA + FS + FA + FI+ 0*RE ---------- *equation 1*
SC = NI + CC + RSI + IA + FS + FA + FI+ 0*RE ---------- *equation 2*
OP = NI + CC + RSI + IA + FS + FA + FI+ 0*RE + 0*FC + 0*SC + 0*SNC + 0*FC×SNC+ 0*SC×SNC ----------*equation 3*

Model 2: Main Effects Model

FC = NI + CC + RSI + IA + FS + FA + FI+ RE ---------- *equation 1*
SC = NI + CC + RSI + IA + FS + FA + FI+ RE ---------- *equation 2*
OP = NI + CC + RSI + IA + FS + FA + FI+ RE + FC + SC + SNC + 0*(FC×SNC) + 0*(SC×SNC)
---------- *equation 3*

Model 3: Interaction Effects Model

FC = NI + CC + RSI + IA + FS + FA + FI+ RE ---------- *equation 1*
SC = NI + CC + RSI + IA + FS + FA + FI+ RE ---------- *equation 2*
OP = NI + CC + RSI + IA + FS + FA + FI+ RE + FC + SC + SNC + FC×SNC+ SC×SNC---------- *equation 3*

Where OP = operational performance, NI = normative institution, CC = cultural-cognitive, RSI = relationship specific investment, IA = incentive alignment, FS = firm size; FA = firm age; FI = firm industry (service =1), RE = regulation environment, FC = formal control, SC = social control, SNC = structural network complexity, FC×SNC = interaction between formal control and structural network complexity, SC×SNC = interaction between social control and structural network complexity.

In creating the interaction terms, multiplicative approach was used since both the mediator variables (i.e. formal control and social control) and the moderator variable (i.e. SNC) are continuous. This is a necessary as it helps preserve the integrity of the sample, and allows the researcher to control for the main effect of the moderator variables (Sharma *et al*., 1981). To address multicollinearity issues resulting from the

use of multiplicative terms, the variables involved in the creation of the interaction terms were orthogonalised using residual centring method (Crandall *et al*., 2012).

5.5.2.1 Model 1: Control Effects

Model 1 estimated the effects of the control variables, while constraining the main effect and the interaction effect paths to zero. Model 1 satisfactorily fitted the data (given χ^2/DF = 1.162, RMSEA = .022, NNFI = .969, CFI = .973, SRMR = .056), and explained 23.4%, 19.1%, and 22.9% variance in formal control, social control, and operational performance respectively. The results relating to the effects of the control variables are shown Table 5.29. The results show that normative institution, relationship specific investment, and incentive alignment are all positively and significantly related to formal control, social control, and operational performance. Cultural-cognitive was found to relate positively and significantly with social control and operational performance. Its relationship with formal control was statistically not different from zero. Also, firm size related positively and significantly with only formal control. Neither firm age nor firm industry related to either formal control or social control or operational performance. Overall, these results suggest that the variables included in the study as controls were important.

5.5.2.2 Model 2: Main and Indirect Effects and Evaluation of H1, H2 and H3

In Model 2, the main effect paths (regulation environment, formal control, social control, and SNC) in addition to the control effect paths in Model 1 were freely estimated. Compared to Model 1, Model 2 provided good fit to data (given χ^2/DF = 1.106, RMSEA = .018, NNFI = .975, CFI = .979, SRMR = .048), given $\Delta\chi^2$ (DF) = 48.41(6), $p < .01$. Model 2 explained additional 4.00%, .30%, and 5.10% variance in formal control, social control, and operational performance respectively. The results in

Table 5.29 (Model 2) show that regulatory environment does not have significant direct association with operational performance. Thus, H1, which stated that regulatory environment positively relates to operational performance, was not supported.

Further results show that regulatory environment positively and significantly relates to both formal control and social control. It is also found that formal control positively and significantly relates to operational performance. However, the social controloperational performance link, although positive, was not statistically significant. Thus, these results suggest that unlike social control, formal control positively mediates the link between regulatory environment and operational performance, lending support for H2 (which argued that regulatory environment has positive, indirect relationship, via formal control, with operational performance) but not H3 (which argued that regulatory environment has positive, indirect relationship, via social control, with operational performance).

To confirm this finding, the study conducted an additional analysis, which involved testing a series of nested SEM-models against the proposed mediating model relating to H2 and H3 via sequential chi-square test of differences. In doing this, the study followed the procedures implemented in Lu *et al.*'s (2010) to analyse four competing models. The study first estimated a baseline model (Model A) which represents a full mediation model. This model did not include the direct effect path from regulatory environment to operational performance. Model A provided good fit to the data, given χ^2 =747.12, df = 681, χ^2/df = 1.097, RMSEA = 0.017, NNFI = 0.978, CFI = 0.981, SRMR = 0.048. Next, the proposed indirect effect path from regulatory environment to operational performance via formal control was constrained to zero (i.e. Model B), and

alternately, the proposed indirect effect path from regulatory environment to operational performance via social control was constrained to zero (i.e. Model C). Compared to Model A, Model B (χ^2 =770.86, df = 683, χ^2/df = 1.129, RMSEA = .020, NNFI = .974, CFI =.977, SRMR = .055) as well as Model C (χ^2 =753.96, df = 683, χ^2/df = 1.104, RMSEA = .018, NNFI = .978, CFI = .981, SRMR = .051) provided significantly worse fit data, given that the changes in χ^2 were statistically significant. These results indicate that the proposed indirect effect of regulatory environment on operational performance, via both formal control and social control are statistically relevant.

Lastly, the baseline model (Model A) was compared with a partial mediation model (Model D), in which the direct path from regulatory environment to operational performance was added to Model A. Compared to Model A, Model D did not provide better fit to the data, given χ^2 = 747.03, df = 680, χ^2/df = 1.099, RMSEA = 0.017, NNFI = 0.978, CFI = 0. .981, SRMR = 0.048. The change in the chi-square was not statistically significant given, $\Delta\chi^2$ (Δdf) = .09, p > .05. These results suggest that adding the direct path from regulatory environment to operational performance does not improve the baseline model, thus, making the full mediation model superior to the partial mediation model.

Nonetheless, examination of the path coefficients reveals that unlike H2, insufficient support was found for H3. Specifically, the results show that regulatory environment has significant positive effect on formal control (b = .24, t = 4.09), with formal control in turn having significant positive effect on operational performance (b = .23, t = 3.07), lending support for H2. On the other hand, while the results indicate that regulatory environment has significant positive effect on social control (b = .12, t = 1.92), social

control does not have significant positive effect on operational performance (b = .09, t = 1.39), providing insufficient support for H3.

5.5.2.3 Model 3: Moderating Effects and Evaluation of H4 and H5

Model 3, a fully unrestricted model, estimated the effects of the interaction terms (formal control × SNC; social control × SNC). Model 3 fitted the data well (given χ^2/DF = 1.076, RMSEA = .015, NNFI = .979, CFI = .982, SRMR = .047), and significantly accounted for additional variance in operational performance by 33.7%. The results show that SNC significantly moderates the formal control-operational link negatively and the social control-operational performance link positively (see Figures 5.6 and 5.7 respectively). These results provide support for H4 and H5, which argue that the indirect effect of regulatory environment on operational performance via GMs (as reported in Section 5.5.2.2) is moderated negatively and positively by SNC respectively. The results indicate that at high levels of SNC, increase in formal control is associated with decrease in operational performance, such that the positive indirect effect of regulatory environment on operational performance via formal control is negative. On the other hand, at high levels of SNC, increase in social control is associated with increase in operational performance, such that the positive indirect effect of regulatory environment on operational performance via social control is strengthened.

Table 5.29. Main Structural Model (SEM) Results

	Standardized parameters (t-values)								
	Model 1			Model 2			Model 3		
Independent variables	Formal control	Social control	Operational performance	Formal control	Social control	Operational performance	Formal control	Social control	Operational performance
Covariates									
Normative	.19(3.08)	.14(2.17)	.23(3.61)	.15(2.40)	.11(1.75)	.18(2.77)	.14(2.40)	.11(1.75)	.15(2.39)
Cultural-cognitive	.08(1.34)	.27(4.29)	.20(3.32)	.07(1.22)	.26(4.23)	.18(2.85)	.07(1.220	.26(4.23)	.19(3.05)
Rel. specific investment	.27(4.29)	.19(3.08)	.26(3.97)	.24(3.88)	.17(2.79)	.12(1.70)	.24(3.88)	.17(2.79)	.09(1.39)
Incentive alignment	.19(3.05)	.16(2.58)	.15(2.37)	.17(2.83)	.15(2.41)	.09(1.41)	.17(2.83)	.15(2.41)	.05(.80)
Firm size	.23(3.85)	.05(.08)	.07(1.15)	.25(4.21)	.06(.94)	.02(.28)	.25(4.21)	.06(.96)	.02(.29)
Firm age	-.07(-1.20)	.07(1.07)	.00(.03)	-.03(-.59)	.08(1.36)	-.00(-.04)	-.03(-.58)	.08(1.36)	.02(.41)
Firm industry (service =1)	.04(.70)	.09(1.57)	.03(.47)	.02(.30)	.08(1.37)	.00(.04)	.02(.30)	.08(1.37)	.03(.55)
Main effects									
Regulatory environment (RE)				.24(4.09)	.12(1.92)	-.02(-.25)	.24(4.09)	.12(1.92)	-.01(-.14)
Formal control (FC)						.23(3.07)			.21(2.94)
Social control (SC)						.09(1.39)			.11(1.65)
S. network complexity (SNC)						.14(2.08)			.14(2.18)
Interaction effects									
FC × SNC									-.13(-2.23)
SC × SNC									.27(4.58)
Goodness of fit indices:									
χ^2/DF	869.03/748 = 1.162			820.62/742 = 1.106			795.96/740 = 1.076		
$\Delta\chi^2$(DF), p				|Model 1– Model 2| = 48.41(6), p < .01			|Model 2 – Model 3| = 24.66 (2), p < .01		
RMSEA	.022			.018			.015		

NNFI	.969			.975			.979		
CFI	.973			.979			.982		
SRMR	.056			.048			.047		
P	.001			.023			.075		
R^2	23.4%	19.1%	22.9%	27.4%	19.4%	28.0%	27.4%	19.4%	33.7%
ΔR^2	—	—	—	4.00%	.30%	5.10%	—	—	5.70%

Notes:

1. Critical values for hypothesized paths = 1.645 (5%, one tailed tests—all hypothesized paths are one-directional 2.
Non-hypothesized paths are evaluated at 1.96 (5%, two-tailed tests).
3. All dependent variables (formal control, social control, and operational performance) are simultaneously modelled and estimated as endogenous variables. $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$.

Source: Field Study (2019).

Table 5.30: Competing Model Analysis: Test of Indirect Effects

Model	χ^2	Df	*P*	χ^2/df	$\Delta\chi^2$ (df), p	RMSEA	NNFI	CFI	SRMR
Model A	747.12	681	.040	1.097		.017	.978	.981	.048
Model B	770.86	683	.011	1.129	$\lvert M_b - M_1 \rvert = 23.74$, $p < .01$	.020	.974	.977	.055
Model C	753.96	683	.030	1.104	$\lvert M_b - M_2 \rvert = 6.84$, $p < .05$	.018	.978	.981	.051
Model D	747.03	680	.040	1.099	$\lvert M_b - M_3 \rvert = .09$, $p > .05$	.017	.978	.981	.048

Notes.

- Model A = full mediation model (no direct link from predictor [i.e. regulation] to outcome [i.e. operational performance])
- Model B = path of hypothesis 2 (link from regulatory environment to operational performance through formal control) was constrained to zero
- Model C = path of hypothesis 3 (link from regulatory environment to operational performance through social control) was constrained to zero
- Model D = Model A plus direct link from predictor (regulatory environment) to outcome
- Covariates in models mediators = normative, cultural cognitive, relationship specific investment, incentive alignment, firm size, firm age, firm industry
- Covariates in model outcome = normative, cultural cognitive, relationship specific investment, incentive alignment, firm size, firm age, firm industry, structural network complexity

Source: Field Study (2019)

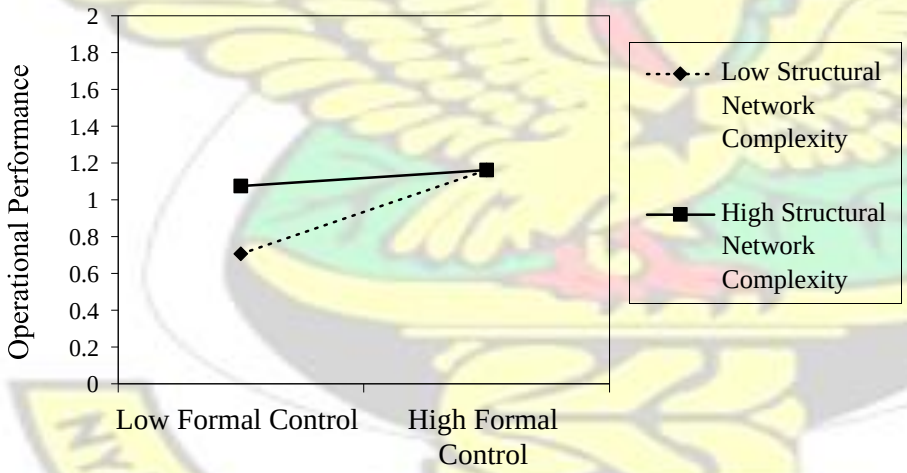


Figure 5.6: The moderating effect of structural network complexity on the formal control-operational performance link.

Source: Field Study (2019)

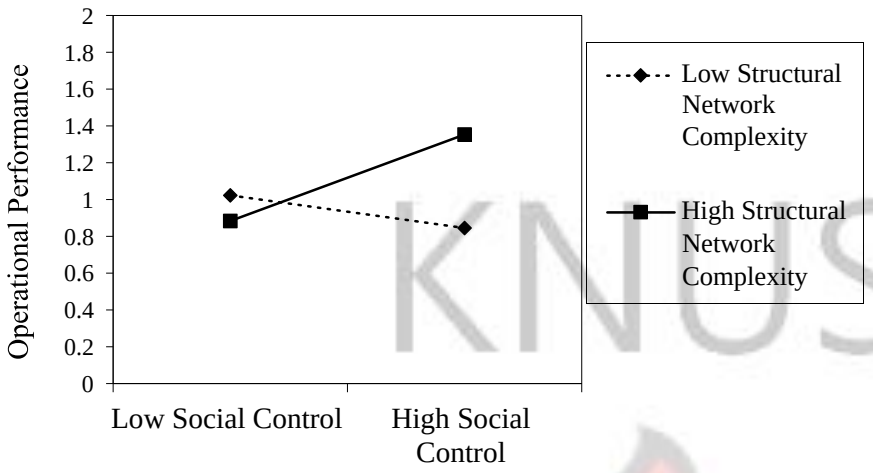
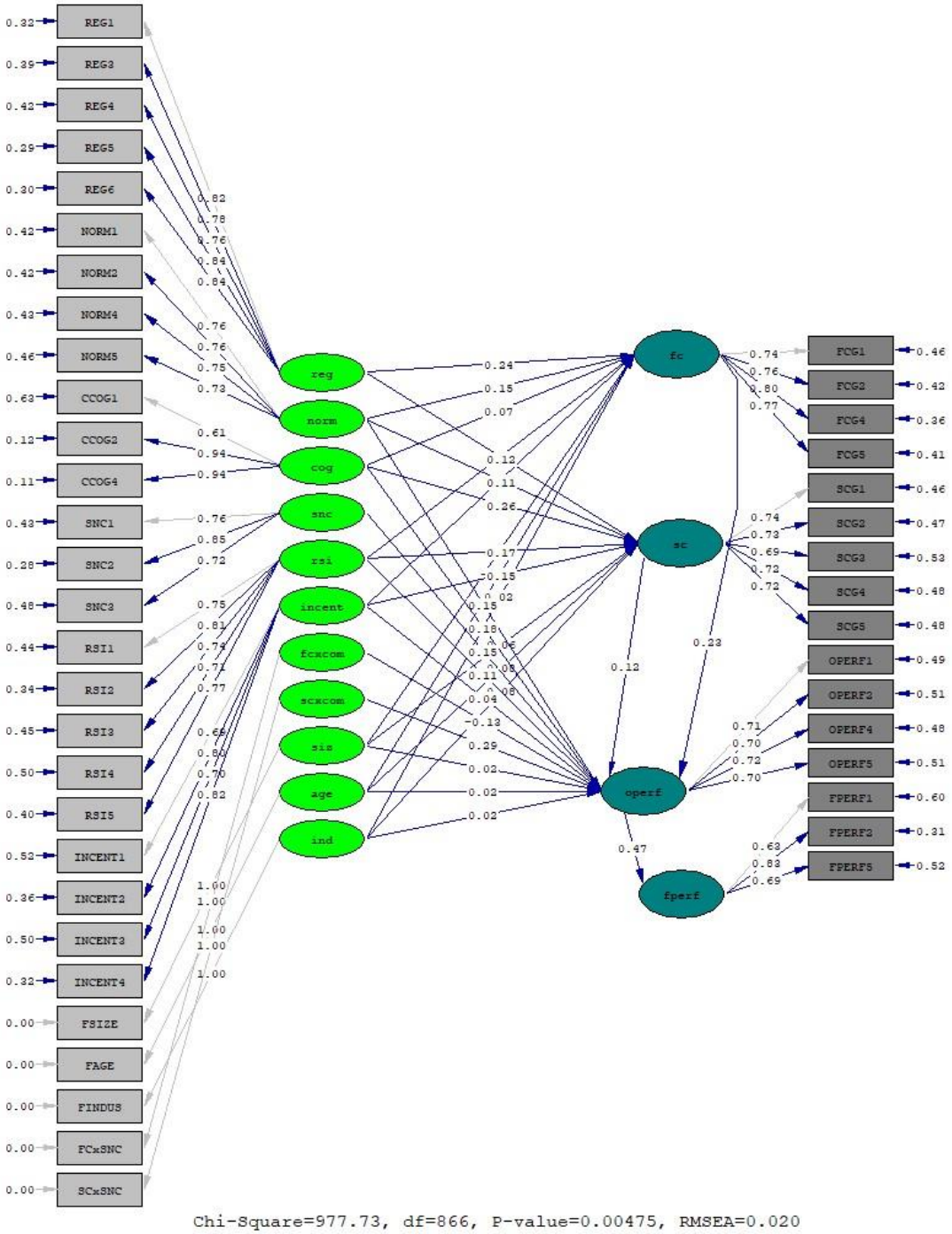


Figure 5.7: The moderating effect of structural network complexity on the social control-operational performance link.

Source: Field Study (2019)

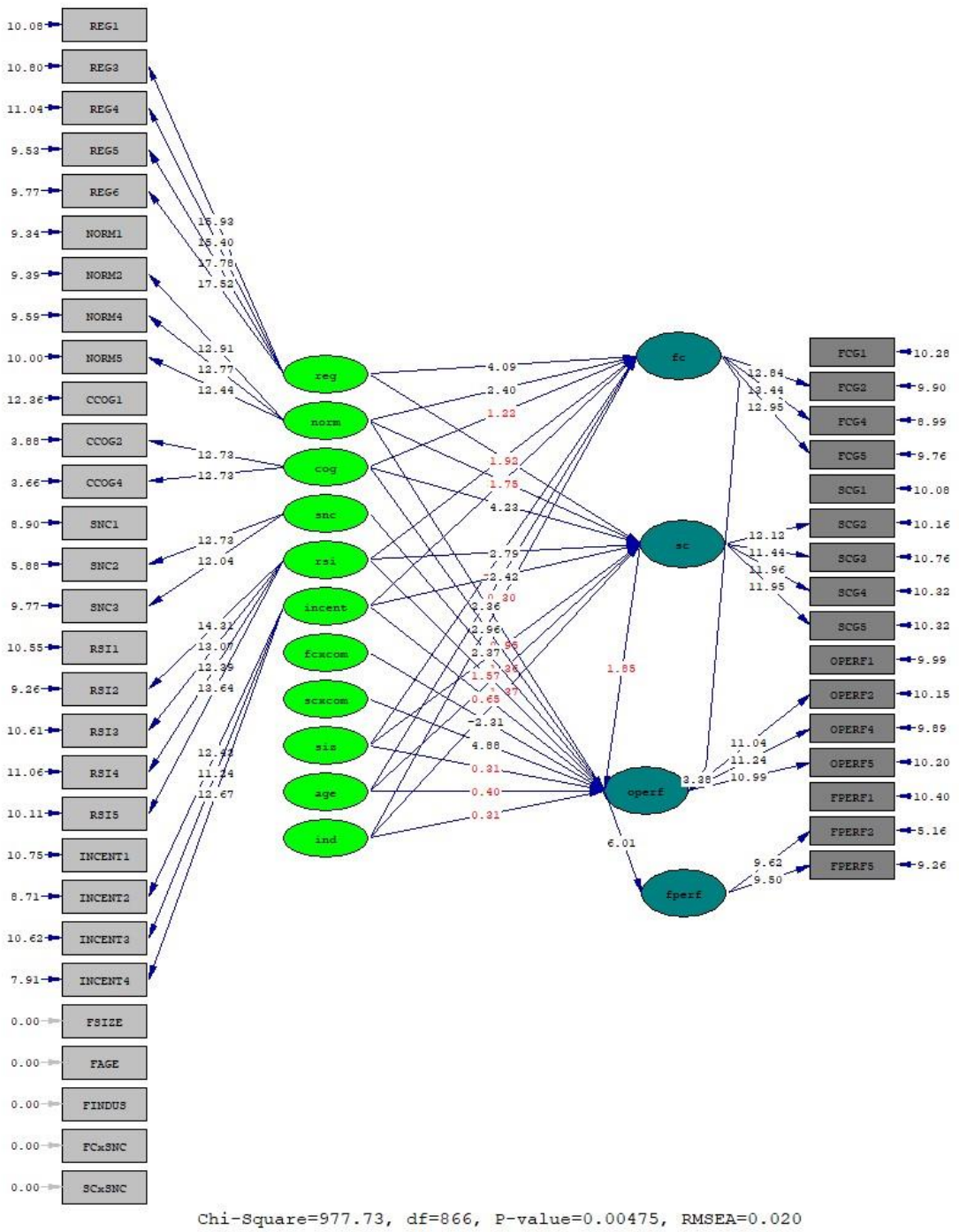
5.6 FURTHER ANALYSIS

Using SEM, the study explored whether by leveraging regulatory environment through GMs at differing levels of SNC to impact operational performance has any implication on the financial performance of firms. As shown in Figures 5.8a and 5.8b, the results obtained indicate that the inclusion of financial performance as an outcome operational performance fitted the data well, given given χ^2= 977.73, DF = 866, χ^2/DF = 1.129, RMSEA = .020. Specifically, the results show that operational performance positively and significantly relates to financial performance.



Note: operf = operational performance, fc = formal control, sc = social, reg = regulation, norm = normative, cog = cultural cognitive, snc = structural network complexity, rsi = relationship specific investment, incent = incentive alignment, fcxcom = interaction between fc and snc, scxcom = interaction between sc and snc, siz = firm size, age = firm age, ind = firm industry, fperf=financial performance

Figure 5.8a. Final model (full moderated-mediation model) (b-values) linked to financial performance. Source: Field Study (2019).



Note: operf = operational performance, fc = formal control, sc = social, reg = regulation, norm = normative, cog = cultural cognitive, snc = structural network complexity, rsi = relationship specific investment, incent = incentive alignment, fcxcom = interaction between fc and snc, scxcom = interaction between sc and snc, siz = firm size, age = firm age, ind = firm industry, fperf=financial performance

Figure 5.7b: Final model (full moderated-mediation model) (t-values) linked to financial performance. Source: Field Study (2019).

Tables 5.31 to 5.32 present summary of the study's findings on the control, main effect and interaction variables estimated in Table 5.29.

Table 5.31: Findings on control effect variables (based on Model 1 in Table 5.29)

Control Path			*Effect*	*Finding*
Normative	→	Formal control	+	Significant
Normative	→	Social control	+	Significant
Normative	→	Operational performance	+	Significant
Cultural-cognitive	→	Formal control	+	Not significant
Cultural-cognitive	→	Social control	+	Significant
Cultural-cognitive	→	Operational performance	+	Significant
Rel. Specific Investment →		Formal control	+	Significant
Rel. Specific Investment →		Social control	+	Significant
Rel. Specific Investment →		Operational performance	+	Significant
Incentive Alignment	→	Formal control	+	Significant
Incentive Alignment	→	Social control	+	Significant
Incentive Alignment	→	Operational performance	+	Significant
Firm Size	→	Formal control	+	Significant
Firm Size	→	Social control	+	Not significant
Firm Size	→	Operational performance	+	Not significant
Firm Age	→	Formal control	-	Not significant
Firm Age	→	Social control	+	Not significant
Firm Age	→	Operational performance	+	Not significant
Firm Industry	→	Formal control	+	Not significant
Firm Industry	→	Social control	+	Not significant
Firm Industry	→	Operational performance	+	Not significant

Source: Field study (2019)

Table 5.32: Summary of the study's findings (based on Model 2 and 3 in Table 5.29)

Path		*Expected effect*	*Effect obtained*	*Finding*	*Conclusion*
Main Effect			-		
H1: Regulatory Env. →	Operational performance	+		Not Significant	Not supported
Indirect Effect					
H2: Regulatory Env. →	Operational performance, via FC	+	+	Significant	Supported

H3: Regulatory Env.	→	Operational performance, via SC	+	+	Not significant	Not supported
Interaction Effect			+	+	Significant	
H4: FC x SNC	→	Operational performance	-	-	Significant	Supported
H5: SC x SNC	→	Operational performance	+	+	Significant	Supported

Regulatory Env = Regulatory environment; FC= Formal control; SC = Social control; SNC = Structural Network Complexity

Source: Field study (2019)

5.7 CHAPTER SUMMARY

The chapter presented the study's results and the methods utilised to generate them. Response analyses (i.e., response rate, non-response bias, profile of the respondents as well as the firms involved in the study) were presented first. Next, the chapter presented results relating to the validity and reliability of the study's measures. Subsequent to that, results relating to the study's structural model and evaluation of the hypotheses were presented. The results obtained largely support the study's arguments that GMs, combined with SNC, constitute important conditional-processes through which regulatory environment affects operational performance. The subsequent chapter discusses the results.

CHAPTER SIX

DISCUSSIONS AND CONCLUSION

6.1 INTRODUCTION

This chapter concludes the entire research by discussing major findings from the study, draws implications for theory development, and reflects on lessons for managers. Specifically, the chapter is organised as follows. First, it discusses key findings from the study in line with the research objectives, contributions and implications for theory. Second, findings from the results of further analyses and the implications drawn are

presented. In the third sub-section, managerial lessons and implications drawn from the study are also discussed. The fourth sub-section presents limitations of the study and avenue for future research. Finally, a conclusion is drawn from the study.

6.2 Discussions and Theoretical Implications

The purpose of the study is to examine whether GMs (formal control and social control), combined with SNC, intervene in the relationship between regulatory environment and operational performance. By examining how and when the regulatory environment drives operational performance of firms, the study provides a finer assessment of the regulatory environment-operational performance link and identifies important intervening and moderating factors explaining the relationships to shed new insights. The ensuing sections discuss the theoretical and the managerial implications of the findings.

6.2.1 The Regulatory Environment-Operational Performance Link

Institutional theory (Roxas and Chadee, 2013; North, 1991) ascribe an important role for regulatory institutions in industrial development and growth. Drawing on institutional theory, the study argued for direct positive relationship between the regulatory environment and operational performance (H1). The study's result did not provide support for direct positive relationship between regulatory environment and operational performance. This finding, although, inconsistent with prior outcomes (Adomako and Danso 2014; Zhu and Sarkis, 2007; Batjargal *et al*., 2013; Sheng *et al*. 2011; Zhang *et al.* 2017) it is consistent with Chung et al.'s (2016) in institutional literature. This outcome indicates that the link between regulatory environment and performance outcomes is more complex; suggesting that without capturing potential processes connecting these variables, the relationship between them may not be well

understood. Thus, the finding raises the question of whether regulatory environment alone is sufficient in driving operational performance in all cases.

This study speculates that while regulatory environment is crucial for effective business operations (Adomako and Danso, 2014; Martinez and William, 2012; Scott, 1995; North, 1990), the mechanism through which (how) firms respond and capitalise on it matters. Organisational responses (e.g. strategies) to the prevailing regulatory environment are key to translating the benefits to firm level performance. Similarly, differences in circumstances characterising organisational responses to the prevailing regulatory environment may be relevant in determining how effective such responses may be in driving operational performance. Thus, it will be fruitful if research on the link between regulatory environment and operational performance incorporate firmlevel intervention and contingency factors underlying the relationship between these variables.

6.2.2 The Mediating Role of Governance Mechanisms

As institutional theory argues, the regulatory environment shapes organisational behaviour and affects performance outcomes (Roxas and Chadee, 2013;

Martinez and William, 2012; Yaibuathet *et al*., 2008; Scott, 1995; DiMaggio and Powell, 1983; Meyer and Roman, 1977). Yet, empirical evidences largely remain inconsistent (i.e., Zhang *et al*., 2017; Adomako and Danso 2014; Chen *et al*., 2014; Zhu and Sarkis, 2007). This inconsistency may be due to the fact that: 1) certain mechanisms, such as GMs, and 2) relevant boundary conditions such as SNC have rarely been accounted for in the direct regulatory environment-performance outcome research. Accordingly, the study integrates institutional theory, TCE and RET to

examine the mechanisms through which the regulatory environment may affect operational performance (H2 and H3).

A major contribution of this study is its ability to elucidate the processes that account for the relationship between the regulatory environment and operational performance. The findings of this study extend the institutional literature by providing evidence to show that the regulatory environment-operational performance relationship is mediated by GMs. More specifically, the study argued that formal control plays a mediation role in the association between the regulatory environment and operational performance. Consistent with this logic, the results show an indirect relationship between the regulatory environment and operational performance, via formal control. This finding is consistent with prior research (see Roxas and Chadee, 2013) which reported that entrepreneurial orientation mediates the effects of the institutional environment on firm performance. It also bears similarities with prior evidence that innovation capacity and eco-design mediate regulatory environment and performance outcomes respectively (Chadee and Roxas 2013; Zailani *et al.*, 2012).

In line with Zhou and Poppo's (2010) evidence, this study's finding suggests that the regulatory environment is important for effective functioning of formal control as it directly influences the enforcement of contracts and in turn, drives operational performance. Thus, firms that effectively utilise formal control in managing inter-firm exchanges across their supply chains are more likely to experience superior operational performance. This is because formal control mechanism enables firms to respond to regulatory demands and leverage the opportunity of the regulatory provisions within the industrial space (i.e., property protection rights, contract enforceability). In addition, the capacity of formal control helps exchange partners to address opportunism to

facilitate collaborative efforts, streamline business processes (e.g. timely delivery of inputs and reduction in lead time) and stimulate business transactions, thereby optimising operational performance (Huang *et al.*, 2014).

The study further argued that social control mediates the relationship between regulatory environment and operational performance. However, contrary to the study's expectation, the results did not provide support for social control as a mediation mechanism linking regulatory environment-operational performance relationship. This finding suggests that the decision and use of social control in inter-firm exchanges may be influenced by the regulatory conditions of firms' operating environment but not sufficient in itself (social control) to influence operational performance. Plausible explanation lies in the notion that perceived efficient regulatory environment provides relatively stable and favourable conditions for the use of formal control than social control, which thrives largely in uncertain environments (cannon *et al*., 2000; Noordewier *et al.*, 1990). Therefore, compared to formal control, the use of social control in response to the perceived efficient regulatory environment is likely to be less efficacious and beneficial for enhancing operational performance since such regulatory conditions favour and stimulate the effectiveness of formal control as the results of this study indicate.

Additionally, and as Weitz and Jap (1995) assert, the fact that social control is based on general expectations rather than specific rules and obligations can create role ambiguity and ineffective coordination. Thus, since with social control, exchange norms are not formally codified, ambiguous expectations and misunderstandings can arise and thus undermine operational performance (Cannon *et al.*, 2000; Weitz and Jap 1995). Further, the self-enforcing nature and the seemingly lack of explicit punitive measures

characterising social control make it prone to taken-for-granted and familiarity tendencies, which can erode its instrumental governing efficacy and undermine exchange coordination. As such, when the regulatory environment is perceived to be efficient, social control may play less significant mediation role in the regulatory environment-operation performance relationship.

The study also advances literature on the antecedents of GMs. Prior studies have focused on firm and inter-firm relationship level variables such as exchange hazards (Cao *et al*., 2018), type of asset invested in exchanges (Hoetker and Mellewigt, 2009), supply market uncertainty and behavioural uncertainty (Poppo *et al*., 2016) in explaining factors that influence the use and configuration of GMs. Nevertheless, as the study shows, beyond these firm and inter-firm relationship level variables, macro level factors such as regulatory institutions, as well as normative and cultural-cognitive institutions have significant implications on the use and configurations of GMs. For example, the study finds that, in a perceived efficient regulatory environment, the use of formal control tends to be more instrumental for driving performance outcomes than social control. On the other hand, the study again indicates that normative and culturalcognitive institutions also better predict the use of social control.

6.2.3 The Moderating Role of Structural Network Complexity

The study further makes another relevant contribution by exploring the contingencies charactering the intervening role of GMs in the link between regulatory environment and operational performance. Specifically, the study draws on TCE and RET to theorise that the intervening role of GMs in the regulatory environment-operational performance relationship may be dependent upon levels of SNC (H4 and H5).

Consistent with the study's prediction, the findings indicate that the indirect positive effects of regulatory environment on operational performance, via GMs, is influenced by varying degree of SNC, which manifests in two ways. First, the findings show that the indirect positive effect of regulatory environment on operational performance, via formal control, is negative at higher levels of SNC. This indicates that under conditions of high SNC, the incremental benefits of formal control for driving operational performance is likely to attenuate, such that the indirect positive regulatory environment-operational performance relationship, through formal control, becomes negative. In other words, the positive effect of regulatory environment on operational performance, via formal control, is stronger at lower level of SNC. Second, on the contrary, the results further show that the significance of social control in intervening the regulatory environment-operational performance nexus is realised and more salient when SNC is high. Specifically, at high levels of SNC, the indirect positive effects of regulatory environment on operational performance, via social control strengthens. The logic is that under such conditions, social control allows exchange partners to leverage greater flexibility in adapting to the uncertainty associated with high SNC to exploit coordination opportunities (Poppo *et al*., 2016).

These findings suggest that the SNC characterising inter-firm exchanges is key in determining the potency of both formal control and social control in intervening the link between regulatory environment and operational performance. Theoretically, the study provides a more nuanced picture regarding the regulatory environmentoperational performance relationship by showing that the indirect positive effect of the regulatory environment on operational performance, via GMs, may not be straight forward. As the study finds, the intervening roles of both aspects of GMs in the regulatory environment-

operational performance link are contingent upon differing levels of SNC. In this regard, the study extends IE-performance research and contributes to knowledge by clarifying the conditional processes linking regulatory environment and operational performance.

Relatedly, further contribution is made to governance literature on the relationship between GMs (formal control and social control) and performance outcomes. Prior studies on the relationship between these variables have yielded inconsistent results (e.g. Huang *et al.*, 2014; Hoetker and Mellewigt, 2009), indicating that the relationship between these variables is not clear. Accordingly, some research (Poppo *et al*., 2016; Rhee *et al*., 2014) have focused on introducing moderating variables in explaining the conditions underlying the relationships GMs and performance outcomes.

Extending this line of enquiry, this study makes relevant contributions by analysing the moderating role of SNC. This study's results indicate that different levels of SNC contribute differently to the relationship between different aspects of GMs and operational performance. Specifically the study finds out that when SNC is high, social control better enhances operational performance. On the other hand, the finding further indicates that at low levels of SNC, formal control contributes to operational performance better. This outcome is consistent with Poppo *et al.*'s (2016) findings that the positive associations of both calculative trust and relational trust with performance is more effective at lower and higher levels of market uncertainty respectively.

6.2.4 Further Findings and Implications

In this section, findings from further analysis run, and implications drawn are presented. These include controls in the models of GMs, controls in the model of operational performance and the operational performance association with financial Performance.

6.2.4.1 Controls in the Models of Governance Mechanisms

To obtain consistent estimates for evaluating the hypothesised paths (Antonakis *et al*., 2012), and in line with prior research (Poppo *et al*., 2016; Cao and Zhang, 2011; Wu, 2008), the study controlled for several variables. The control variables were categorised into external factors (normative and cultural-cognitive institutions), inter-firm relationship related factors (relationship specific investments and incentive alignment), and firm characteristics (firm size, age and industry type—service or manufacturing). In line with extant literature (Yaibuathet *et al.*, 2008; Bello *et al*., 2004; Grewal and Dharwadker, 2002; Scott, 1995; DiMaggio and Powell's 1983), the study argues that both normative and cultural-cognitive institutional environments may be antecedents to GMs.

The findings indicate that normative institutional environment positively drives both formal control and social control mechanisms. Similarly, cultural-cognitive institutional environment positively drives social control but not formal control. Plausible explanation may be that the conditions provided by cultural institutional environment suits social control much better than formal control. This may be due to the fact that social bond, values, trust and fellow feeling, which characterise social control are embedded more in the socio-cultural context of the environment. In sum, these findings suggest that institutional environments (regulatory, normative and cultural-cognitive institutions) largely play important role regarding the decision and use of GMs.

Further, GMs and inter-firm collaboration action may be affected by relationship specific investments and incentive alignment (Cao and Zhang, 2011; Hoetker and Mellewigt 2009). As expected, and in consistence with prior research (Cao and Zhang 2011; Hoetker and Mellewigt, 2009), the results show that both relationship specific

investments and incentive alignment are significant predictors of formal control and social control and thus drive choice and use of GMs. Finally, the study controlled firm size, age and industry type giving that these characteristic affect firms behaviour and strategies (Boso *et al*., 2017; Boso *et al.*, 2013a; Kuivalainen *et al.*, 2007; Peng, 2003; Shergill and Sarkaria, 1999) and may influence decision and the use of GMs. Contrary to the study's expectation, none of the firm characteristics influences the decision and use of GMs. The results show that compared to these firm-level factors, the macro level and the relationship specific factors appear more relevant in predicting GMs.

6.2.4.2 Controls in the Model of Operational Performance

The control factors discussed above were also included in the model of operational performance. With respect to external related factors, the results indicate that both normative (professional norms, and industry standard) and cultural-cognitive institutions affect operational performance. This is consistent with the notion in institutional literature that IE shapes firms' behaviour and performances (Yaibuathet *et al*., 2008; Bello *et al.*, 2004; Grewal and Dharwadker, 2002; Scott, 1995; DiMaggio and Powell's 1983). In the same vein, relationship specific investments and incentive alignment were found to affect operational performance, corroborating existing evidence in governance literature (Cao and Zhang, 2011;
Hoetker and Mellewigt, 2009). Thus, both relationship specific investments and incentive alignment are important factors that drive operational performance.

Finally, as literature indicates (Boso *et al*., 2017; Liu, 1995; Gligor, 2014; Boso *et al*., 2013a; Shergill and Sarkaria, 1999), firm size, age and industry type may also affect performance outcomes. In following prior studies, the current study controlled for these firm characteristics. The findings indicate that these characteristics have insignificant

positive relationships with operational performance. This suggests that firm size, age and industry type may be relevant factors affecting firms' operations, however, relative to other relevant factors used in the study (e.g. formal control, relationship specific investments and incentive alignment), they do not account for significant difference in operational performance. This is in consistence with prior research (Boso *et al*., 2017).

6.2.4.3 Operational Performance and Financial Performance

For post-hoc purposes, the study explored whether the operational performance conditional-process consequences of regulatory environment in turn drives financial performance. The study's results (see Figure 5.8 in the preceding chapter) show significant positive relationship between operational performance and financial performance. The findings thus suggest that when firms respond to regulatory institutional forces to become isomorphic and configure GMs to match with the appropriate levels of SNC, superior operational benefits accrue, which in turn, drive financial performance. This is consistent with prior evidence that when a firm undertakes its operations successfully, it translates into enhanced financial benefits (Huo, 2012).

6.3 Managerial Implications

Managerially, the study shows that although institutional literature underscores that securing institutional legitimacy is crucial for organisational survival as it grants society's endorsement and access to resources (Scott, 1995), managers should recognise that achieving superior operational performance goes beyond mere conformance to isomorphic pressures. In particular, while it is important for managers to appreciate the

regulatory system within the industrial space of their operating environment to inform decisions and strategies, it is not in itself enough to translate into operational benefits. To benefit operationally from the regulatory institutions in this context may mean that managers should devise and implement operation-specific strategies and actions that match with the regulatory conditions in the environment within which they operate. In this regard, and as the study's findings indicate, GMs of inter-firm relationship typically represent important operational level interventions that managers may deploy to respond to the regulatory demands and leverage the conditions and opportunities they (regulatory institutions) create to optimise operational performance. Thus, in short, the study informs managers (at least in Ghana) that the operational performance consequences of (perceived efficient) regulatory environment may be most salient when they balance the need for institutional legitimacy with operational effectiveness by paying maximum attention to GMs in managing inter-firm exchanges across their supply chains.

Secondly, the findings inform practitioners that the intervening roles of firm responses (GMs) in the regulatory environment-operational performance nexus is dependent on the circumstances they face. In the context of inter-firm exchange relationships, SNC is relevant circumstance that needs to be considered in the use and configuration of GMs to optimize collaborative efforts and drive operational performance.

Thirdly, managers should be aware that their firms are part of a broader network of organisations that focus on delivering value for customers (i.e. supply chain). While complexity is an inherent part of supply chains, each firm may experience different levels of it. This implies that appropriate strategies should be adopted to deal with different levels of complexities and its associated uncertainties. The study's examination of the contingency effect of SNC suggests that managers should match the

use of GMs as response to the prevailing regulatory environment with appropriate organisational circumstances. As the results show, management's failure to appreciate the level of SNC that characterises the firm's operations while utilising a particular GM can undermine operational performance.

Per the study's results, utilising social control as a response to regulatory conditions when the level of SNC is high, and formal control when the degree of SNC is low, is more beneficial in optimising operational performance. This is because using formal control to manage inter-firm exchange hazards under high levels of complexity requires rather detailed and complex contractual arrangements that may 1) be prohibitively costly and 2) rigidify and merely "ritualise" the inter-firm exchange governance process. The resultant high transaction cost characterising formal control under such conditions renders it counterproductive and thus undercuts its efficiency and performance enhancing qualities. On the other hand, social control with its flexible nature allows for swift adaptation to uncertainties associated with high levels of network complexity, making it more effective in driving operational performance.

Finally, while it is important for state governments to develop and implement regulatory institutional reforms to improve socio-economic development, firms ability to respond aptly to such macro level interventions in their operating environment is equally crucial to make such reforms work. Therefore, policy decisions on regulation should as well focus on equipping firms operating in such environments (particularly the SMEs, which usually lacks capacity) through training and sensitisation programmes to have appropriate capacity to respond to new regulations in the quest to improving socioeconomic development.

6.4 Limitations and Avenue for Future Research

Notwithstanding the contributions this study offers, and upon which future research inquiry can be based, as with any research, the study's findings should be evaluated in light of some limitations. First, the study relied on cross-sectional data to estimate the research model. Cross-sectional data are sufficient for explanatory research and are regularly used in both IE research (Jia *et al*., 2018; Adomako and Danso, 2014; Abdi and Aulakh, 2012) and governance research (Poppo *at al*., 2016; Huang *et al*., 2014). While the study's model include mediators and a moderator (Rindfleisch *et al*., 2008) as well as enough controls (Antonakis *et al.*, 2012; Rindfleisch *et al.*, 2008), reliance on longitudinal data to estimate the model would have yielded results from which strong causal inferences could be made. This is because organisational response (e.g. GMs) to regulatory environment, and accordingly its effect on operational performance, may take time to manifest. In view of this, it is encouraged that future research endeavour to measure the predictor and the outcome variables in the study's model at different periods of time.

Second, consistent with prior research (e.g. Poppo *et al*., 2016; Boso *et al.*, 2013a; Boso *et al.*, 2013b; Cao and Zhang, 2011), this study relied on single key informants (i.e. senior managers) to collect data. Though relevant procedural measures were implemented to minimise the presence of common method bias, it may be difficult to rule it out (common method bias) from data obtained from a single source (Podsakoff *et al*. 2012). Accordingly, future studies, particularly, those focusing solely on large organisations, should rely on multiple informants to obtain data. For example, data on regulatory environment can be obtained from top executives (e.g. CEOs,

managing directors) while data on operational performance can be obtained from operations managers.

Third, for parsimony sake, study analysed two mediator variables and only one moderating variable in the link between regulatory environment and operational performance. Future research should thus attempt to extend the present model by theorising other potential firm level intervening and contingency variables. For example, innovation (Chadee and Roxas, 2013), supply chain integration and organisational culture can be tested as mediating variables while conditioning variables such as organisational decoupling, property based asset and knowledge based asset (Hoetker and Mellewigt, 2009) can be examined to offer comprehensive account of regulatory-performance relationship outcomes.

Fourth, organisational performance is multifaceted. Yet, this study focused principally on examining whether the regulatory environment influences operational performance through GMs at differing levels SNC. Although further analysis revealed that this conditional indirect effect of regulatory environment on operational performance in turn drives financial performance, it may well be that the mechanisms and conditions underlying the influences of regulatory environment on other performance outcomes may differ. As such, it will be fruitful if future research explores this.

Fifth, the research was undertaken in Ghana, a developing country in Sub-Saharan Africa. Ghana shares many characteristics (including underdeveloped institutional structures and socio-economic inequality (Adomako and Danso, 2014;
Boso *et al.,* 2013) with other developing African countries and, therefore, offers a rich context to test the study's model and provides the basis for the generalisability of the results to other emerging economies. While the Ghanaian context is suitable for testing

the proposed model, the model may as well apply to other contexts as there could be institutional differences among countries, and that developing economies may possess unique and varied contextual elements that warrant additional insight and theory development (Boso *et al*., 2013). As such, it will be interesting if future research attention focuses on exploring the performance consequences of the regulatory environment by comparing data across a range of developing and developed economies for new insights.

6.5 Conclusion

The institutional literature highlights the importance of regulatory environment for firm survival and growth. Yet, not only have prior studies investigating the relationship between regulatory environment and firm performance outcomes produced mixed and inclusive findings, but also, little consideration has been given to explicating and analysing the mechanisms and the conditions that underline the regulatory environment-firm performance outcomes links. In response to this research problem, this study proposed that GMs, combined with SNC, intervene the relationship between regulatory environment and operational performance.

The findings from the study show that regulatory environment positively affects operational performance through formal control, particularly, when SNC is low. On the other hand, the study finds that social control, combined with high level of SNC, positively mediates the relationship between regulatory environment and operational performance. Not only do these findings contribute to unmasking the black box that characterises the regulatory environment-performance nexus, but also show that the reliance on GMs as a response strategy to regulatory conditions should be matched with the right levels of SNC in order to optimise operational performance.

The significance of the findings is that they provide a possible explanation for the divergent and inconsistent results obtained on the direct regulatory environmentperformance relationship. Theoretical implication is that different dimensions of GMs channel the impact of macro level regulatory conditions to firm level operational performance at different levels of SNC. The findings also offer practical implications for managers who make strategic and operational decisions about inter-organizational business networks, such as how, and under what conditions of SNC formal control and social control dimensions of GMs should be leveraged to optimise firm operational performance. While the study has limitations, it is hoped that its theoretical perspective and the emerged findings will function as a catalyst for additional investigations into firm level processes and conditions through which firms' interpretations of the prevailing regulatory environment drives operational performance.

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APPENDIX A

KNUST School of Business **Kwame Nkrumah University of Science and Technology**

This research explores organisational behaviour in relation to business environment. We have identified knowledgeable and experienced professionals like yourself because your views are of paramount importance to this study. The questionnaire will take less than 15 minutes to complete and as a thank you, we are giving you the option to receive a report of the findings.

You are kindly reminded that there are no right or wrong answers and the questionnaire is not a review of individual employee performance. **All responses will be treated anonymously**. Any email address and name of organisation given by participants will be kept separate from other responses, and findings will not be reported in a way that makes the participants identifiable. **Hence, please answer honestly**. Thank you in

advanced for participating; your co-operation is greatly appreciated. By continuing, you are consenting to participate.

SECTION 1: ABOUT YOUR ORGANISATION'S OPERATING ENVIRONMENT

Organisations operate within the constraints of regulations, industry norms and cultural beliefs of the environment. **>> Considering the environment and the industry in which your organisation operates, indicate the extent of your agreement or disagreement with the following statements. Please circle the number that best represents your opinion.** ***(1) = Strongly Disagree, (7) = Strongly Agree***							
The legal system in this country protects our interests.	1	2	3	4	5	6	7
The legal system in this country prevents us from being cheated.	1	2	3	4	5	6	7
Government provides enabling environment for businesses in Ghana.	1	2	3	4	5	6	7
Government implements laws that help businesses develop.	1	2	3	4	5	6	7
The legal system in this country is efficient.	1	2	3	4	5	6	7
Overall, we have confidence in the legal system.	1	2	3	4	5	6	7

>> Indicate the extent of your agreement or disagreement with the following statements. Please circle the number that best represents your opinion. ***(1) = Strongly Disagree, (7) = Strongly Agree***							
My organisation belongs to industry groups that encourage good business practices.	1	2	3	4	5	6	7
My organisation actively participates in industry groups that encourage ethical business practices.	1	2	3	4	5	6	7
This profession expects all of its members to comply with ethical standard.	1	2	3	4	5	6	7
Adherence to professional ethics and industry norms are admired in this country.	1	2	3	4	5	6	7
Following due process is important in my industry.	1	2	3	4	5	6	7

>> Indicate the extent of your agreement or disagreement with the following statements. **Please circle the number that best represents your opinion.** ***(1) = Strongly Disagree, (7) = Strongly Agree***							
In this country, businesses depend on good connections.	1	2	3	4	5	6	7
In this country, one's personal connection is very important.	1	2	3	4	5	6	7
In this country, good personal connections is a requirement for business success.	1	2	3	4	5	6	7
Business partners are viewed as friends who care about each other wholeheartedly.	1	2	3	4	5	6	7

SECTION 2: ABOUT YOUR ORGANISATION'S RELATIONSHIPS WITH

OTHER ORGANISATIONS

>> **Indicate the extent to which these occur in your organisation**. **Please circle the number that best represents your opinion.** ***1 = Not at all , 7 = To an extreme extent***	
My organisation ensures specific, well-designed agreements with its business partners.	1 2 3 4 5 6 7
My organisation ensures formal agreements that detail the obligations of all parties.	1 2 3 4 5 6 7
My organisation ensures formally agreed set of rules to monitor our partner's actions.	1 2 3 4 5 6 7
My organisation ensures compliance with contractual terms and conditions.	1 2 3 4 5 6 7
My organisation makes reference to contracts to settle differences of opinion.	1 2 3 4 5 6 7

>>**Indicate the extent to which these activities occur in your organisation**. **Please circle the number that best represents your opinion.** ***1 = Not at all , 7 = To an extreme extent***	
My organisation ensures trust building with its business partners.	1 2 3 4 5 6 7
My organisation ensures team building with its business partners.	1 2 3 4 5 6 7
My organisation engages in joint planning with its business partners.	1 2 3 4 5 6 7
My organisation engages in joint workshop /meetings with its business partners.	1 2 3 4 5 6 7
My organisation arranges social events with its business partners.	1 2 3 4 5 6 7

>> Indicate the extent to which the relationship(s) between your organisation and its business partners involve/use the following assets. **Please circle the number that best represents your opinion.** ***(1) = extremely low, (7) = extremely High***	
Knowledge about marketing and sales know-how.	1 2 3 4 5 6 7
Knowledge about business planning and development networks.	1 2 3 4 5 6 7
Knowledge about business operations.	1 2 3 4 5 6 7
Knowledge about information and Technology development.	1 2 3 4 5 6 7
Knowledge about Customer care.	1 2 3 4 5 6 7

Indicate the extent to which you agree or disagree to each statement as applicable to your organisation's relationship goals. Please circle the number that best represents your opinion. ***(1) = Strongly Disagree, (7) = Strongly Agree***

My organisation and its business partners evaluate each other's performance.	1 2 3 4 5 6 7
My organisation and its business partners share costs together	1 2 3 4 5 6 7
My organisation and its business partners share benefits together	1 2 3 4 5 6 7
My organisation and its business partners share risks that occur together	1 2 3 4 5 6 7
The incentive for my organisation commensurate with our investment and risks	1 2 3 4 5 6 7

SECTION 3: ABOUT INTER-ORGANISATIONAL AND SCOPE OF OPERATIONAL ISSUES

>> **Rate the following in relation to the external linkages of your organisation with others. Please circle the number that best represents your opinion.** ***(1) = extremely low, (7) = extremely High***	
The number of customers your organisation serves.	1 2 3 4 5 6 7
The number of suppliers does this firm deal with.	1 2 3 4 5 6 7
The number of product/service models produced outside your firm.	1 2 3 4 5 6 7

SECTION 4 ABOUT THE OPERATIONS OF YOUR ORGANISATION

>> **Compared to your organisation's strategic objectives, how satisfied are you over the past three years in terms of the following? Please circle the number that best represents your opinion. 1= Very Dissatisfied, 7= very Satisfied**							
Responsiveness to customer needs.	1	2	3	4	5	6	7
Reduction in lead time.	1	2	3	4	5	6	7
Reduction in time-to-market.	1	2	3	4	5	6	7
Process improvement.	1	2	3	4	5	6	7
On-time deliveries.	1	2	3	4	5	6	7
>> **Compared to your organisation's strategic objectives, rate the extent to which your organisation has met or not met the following objectives over the past 3 years. Please circle the number that best represents your opinion. 1= Objective Not Met at all , 7= Objective Absolutely Met**							
Increase in sales.	1	2	3	4	5	6	7
Increase in profit.	1	2	3	4	5	6	7
Increase in return on investment.	1	2	3	4	5	6	7
Increase in return on sales.	1	2	3	4	5	6	7
Increase its market share.	1	2	3	4	5	6	7

SECTION 5: REGARDING YOUR ORGANISATION'S PROFILE

>>In what city is your organization located?		
>> Which organisation do you work for? (This information is necessary for administrative purposes; names of organisations will be kept separate from other answers, and findings will never be reported without anonymising the organization)		
>> How many full-time employees are there in your organisation? (Please give an approximate number if you are not sure)		
>> In which industry does your organisation operate? (please circle one)	Manufacturing	Services
>> In which sector does your organisation operate? (please circle one)	For profit	Not for profit
>> How many years old is your organisation? (Please give an approximate number if you are not sure)		

	Yes	No
Have you been part of the organisation for the last 3 years? (Please tick one)		
Does your organisation have premises in more than one location? (Please tick one)		

What is your gender? ☐ Male ☐ Female

What is your age group? (years) ☐ 20 to 29 ☐ 30 to 40 ☐ 40 to 49 ☐ 50 or more

What is your highest level of education? ☐ Junior high school ☐ Senior high school ☐ Diploma ☐ 1st Degree ☐ 2nd Degree ☐ PhD

What is your position in your organisation? ☐ Managing Director ☐ General Manager

☐ Operations Manager ☐ Accountant ☐ Supervisor

other specify _____

How many years of management experience do you have? _____Years

Please indicate. **Please circle the number that best represents your opinion** (1) Strongly disagree, (7) Strongly agree							
I have adequate knowledge on the issues I provided responses on	1	2	3	4	5	6	7
I am confident in the responses I provided	1	2	3	4	5	6	7

I am sure that the responses I provided represent the realities in my firm	1 2 3 4 5 6 7
I understood the questions/statements I respondent to	1 2 3 4 5 6 7
Please check that you have answered all questions. Thank you for your time and valuable contributions to the study. To receive a report of the findings, please give your email:	

APPENDIX B

KNUST School of Business
Office of the Dean
COLLEGE OF HUMANITIES AND SOCIAL SCIENCES
KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY, KUMASI
University Post Office, Kumasi-Ghana
West Africa

Telephone: +233 3220 60962 **Email**: dean.ksb@knust.edu.gh **Website**: www.business.knust.edu

14th March, 2018

Dear respondent,

Welcome to the Business Environment Survey

We are a team of researchers at Kwame Nkrumah University of Science and Technology Business School working on a research project on the business environment in Ghana. We are conducting this survey among organisational managers in various industries in Ghana. Therefore, it will be highly appreciated if you could kindly complete this survey for us and share your expertise with us to enable us incorporate your views in our conclusions. Your participation in the survey is vitally important as it helps advance knowledge on the business environment in Ghana.

The questionnaire has been designed such that it is straightforward to complete and its completion should only take 15 minutes. Please make each question a separate and independent judgement. It is your first impression and immediate feelings about the questions that matter to us. Please do take care to answer the questions as fully and accurately as you can and remember that there is no right or wrong answer to the questions asked, as different organisations have different ways of doing things. Please indicate how things really are rather than how you wish they were in your organisation.

Your answers are completely confidential and there is no known risk to you and your organisation as the study has been approved by the faculty research ethics committee. **Mr Emmanuel Kwabena Anin** (**Mobile: 0242687976),** a member of the research team has been appointed and trained to professionally administer the survey to you. We can assure you that he will uphold the ethical standards that guide this research project.

As a token of appreciation for participating in this study, you will receive a summary of report containing the key findings of the study as well as the managerial implications of the findings.

The items in the questionnaire are grouped under key sections. Kindly follow the instruction in each section to respond to the questions. Thank you very much for taking part in this study.

Yours faithfully,

Prof Nathaniel Boso
Mobile Number: 0260684465