Determinants of Inter-Organizational Relationship Governance Structure in the Mobile Network Industry

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ABSTRACT

This paper investigates boundary decisions that determine governance structures in the telecommunication industry. Particularly, the inter-organizational relationship between mobile network operators and the other players in telecommunication industry in Ghana. The firms that do business with the mobile network operators in the telecommunication industry were classed into six namely, content providers, technology providers, service managed partners, distributors or dealers of airtime and accessories, financial institutions and mobile money merchants. A sample size of 430 respondents participated in the survey. Structural Regression modelling using Amos 23.0 is applied to test the conceptual model. The results support the predictions of the TCT logic and as well consistent with the studies of other scholars in the field of strategic management. Findings reveal that firms with greater investment or higher asset specificity pursue greater level of vertical integration. It also revealed that firms with higher transaction uncertainty pursue greater level of vertical integration. The results further reveal that positive influence of transaction uncertainty on vertical integration becomes stronger when asset specificity increases.

Keywords: Determinants, Inter-Organizational Relationship, Governance, Transaction

INTRODUCTION

Mobile network operators cannot expect to appropriately serve their wide range of customers alone if they are to provide the kind of services that customers will increasingly demand. They will be forced to enter into business relationships with a range of organizations. This therefore, requires that the network operators embrace the inter-organizational relationship governance concept and its implications. The key to the objective of maximizing firm performance is the appropriate choice of corporate governance mechanisms for inter-organizational relationships. The way a relationship is governed affects the functioning of the organisations involved. Proper governance can increase the health and prosperity (performance) of the organisations. Appropriate decision making is an important part of the inter-organisational relationship governance. In light of this, firms need to reassess boundary decisions that determine governance structures. Research suggests that the divergent resource requirements necessitate different governance structures, however, optimal boundary choices have not been empirically investigated(Grosvenor, Gothard, McWilliam, Supriono, & Gray, 1995; Tsang, 2000). In response to this gap, this study examines how firm resources and exchange attributes impact inter-organizational relationship governance structures. First a discussion of the literature related to the transaction cost economic theory and governance structures is provided, followed by hypotheses regarding the effects of various exchange attributes as well as the interactive effects of the exchange attributes on...
governance structures. Next, the methods used to test the hypotheses are presented. The presentation of results and discussions are followed. Lastly, conclusion, limitation and implications for future research are offered.

2.0 LITERATURE REVIEW AND HYPOTHESES

2.1: The Transaction Theory and the Governance Structures

Transaction cost economics (TCE) theory can be viewed as a first endeavour in analysing economic exchanges, or transactions, rather than the goods or services, deviant from the neoclassical perspective of the firm. The transaction cost economics principle has been introduced by Coase (1937) but has become widely known by Oliver E Williamson (1979) by defining the cost of transactions in making or buying a product. Theory suggests that firms and markets are the alternative governance structures with contrasting exchange cost. As per TCE theory, the level of vertical integration is determined by the relative costs of using markets or employing resources within the firm. For instance, if the costs of producing in-house are higher than the market, a buy decision is made and if producing in-house is cheaper than the market a make decision is made. The market or hierarchy structures of production are the two essential dimensions of TCE. Market governance structures are used when the activities are organized external to the firm and hierarchy governance structures are used when the activities are organized internal to the firm (Oliver E Williamson, 1979, 1981; Oliver E. Williamson, 2002). Legal contracts and prices are the coordinating mechanisms in market governance structures, whereas employment contracts and authority are the coordinating mechanisms in hierarchy governance structures (De Reuver, 2009; de Reuver & Bouwman, 2012).

Research suggests governance decisions depend on the interaction between two main assumptions of human behaviour (bounded rationality and opportunism) and transaction exchange attributes (asset specificity, uncertainty and frequency)(Oliver E Williamson, 1985, 1999; Oliver E. Williamson, 2002). The bounded rationality assumption presents human beings as restricted in their decision making capacity. It can be thought of as purposefully rational behaviour that is limited on the grounds that decision makers recognize just a predetermined number of alternatives and know about just a couple of outcomes of these alternatives(Tsang, 2000). In whole, bounded rationality makes it difficult to indicate all possibilities in contractual agreements, driving exchange partners to write incomplete contracts that could lead to subsequent adaptability problems. Opportunism comes about when management behaviour is not in the greatest advantage of the firm. According to O. Williamson (2005) safeguarding and motivating forces are not always effective, leading him to propose that markets and hybrids are ill equipped to manage transactions requiring coordinated adaptation to complex problems. At the point when there are few exchange risks and transaction costs are low, market contracts will be ideally effective (Oliver E Williamson, 1979, 1999). However, when transaction costs are perceived as high, hierarchical governance is more efficient as it allows the firm to adjust to changing conditions with lower transaction costs, thereby improving its adaptation ability (Oliver E Williamson, 1999).

Accordingly, the way firms govern transactions should account for exchange hazards, transaction costs, and adaptation capabilities of each governance mode (O. Williamson, 2005; Oliver E Williamson, 1991; Oliver E. Williamson, 2002). However, it is the transaction’s attributes, some of which are more subject to bounded rationality constraints and opportunism than others, that provide the starting point for decisions regarding how a transaction will be governed.

Transaction cost economics has been a popular framework for examining the effectiveness of inter-organizational boundary decisions(Poppo & Zenger, 2002; Tadelis & Williamson, 2012; Tsang, 2000).The model presumes that performance is improved when there is congruence between a firm’s governance structure and transactional attributes in a way that minimizes costs(O. Williamson, 2005; Oliver E. Williamson, 2002). Empirical research supports the theory that firms seek to minimize costs through vertical integration and quasi-integration governance structures for the purpose of safeguarding transaction specific investments and adapting to environmental uncertainty of transactions(Heide & John, 1988; John, 1990; Rindfleisch & Heide, 1997; Watthe & Heide, 2000). In other words, transaction costs create adaptation problems when transactions are not matched to the appropriate governance mode(Oliver E Williamson, 1999). Thus O. Williamson (2005) contends that transactions, which differ in the attributes (e.g., uncertainty or asset specificity), must be matched to the most efficient governance structure, which differ in their costs and capabilities in protecting firms from exchange hazards. Accordingly, because transaction
costs impact a firm’s adaptation capability, they will shape the decision to use market, hierarchical, or hybrid governance.

2.2. Exchange Conditions of Resources

Exchange conditions of transactions raise transaction costs and can create market failure (Geyskens, Steenkamp, & Kumar, 2006). Leading to the decision to produce internal to the firm or integrate vertically. These conditions are; ‘asset specificity’, ‘uncertainty’, and ‘transaction frequency’ (O. Williamson, 2005; Oliver E. Williamson, 2002). They are the conditions surrounding the transaction in the dimensions of governance structure (markets and hierarchies) and are the discernible measures as recognized by (O. Williamson, 2005; Oliver E Williamson, 1979; Oliver E. Williamson, 2002). He predicts a positive relationship between these transaction attributes and more integrated governance structure. In the following paragraphs, the different common conditions are described.

2.2.1 Asset Specificity
At the heart of TCE theory is the assumption that efficient production necessitates investments in physical and human assets that are transaction specific (Poppo & Zenger, 2002; O. Williamson, 2005; Oliver E. Williamson, 2002). Although transaction cost rationale assumes that firm specific assets reduce costs, these assets are also hypothesized to damage the performance of simple market governance because of costly contractual safeguards to protect from opportunistic behaviour (Oliver E Williamson, 1999; Oliver E. Williamson, 2002). Asset specificity refers to the level of unique investment required to support a transaction. It permits reliance between partners (Jones, Hesterly, & Borgatti, 1997). Exchanges can range from non-specific to highly specific, and the level of asset specificity influences governance structure (Oliver E. Williamson, 2005; Oliver E. Williamson, 2002). A high level of asset specificity of a transaction entails customized exchanges or assets to the transaction. Transaction exchanges supported by non-specific assets do not pose significant exchange hazards because the assets can easily be redeployed without greater loss of significant worth. Such assets can be more easily redeployed than highly specific assets since alternate partners interested in the transaction of the asset can be identified and along these lines lessening the risk of opportunism (Mahoney & Pandian, 1992). As indicated by TCT, when the threat of opportunism is low, there is little need for formal controls or dispute resolution mechanisms and therefore, markets and relational (Trust) governance structures are preferred to the hierarchical governance structure (Tadelis & Williamson, 2012; O. Williamson, 2005). However, when a high level of unique investments is made it cannot be easily be redeployed to different uses, and if transactors’ endeavour or try to redeploy the assets they incur increased transaction cost. With this, there is a safeguarding problem as market competition will exploit the assets opportunistically, thereby increasing the transaction costs. The authority relationships and hierarchical control procedures through vertical integration are assumed to have greater safeguarding capabilities and are viewed as the solution to the problem (Geyskens et al., 2006; Van de Vrande, Lemmens, & Vanhaverbeke, 2006; Van de Vrande, Vanhaverbeke, & Duysters, 2009). In sum, support has been found for the key explanation of boundary choice: that increasing asset specificity leads to diminishing effectiveness of market governance because markets lack effective mechanisms for resolving coordination problems and opportunism in specialized exchanges (Poppo & Zenger, 2002). Base on the evidences from literature, we hypothesise that:

Hypothesis 1: Firms with greater investment or higher asset specificity will pursue greater level of vertical integration.

2.2.2 Uncertainty
A second determinant is that of transaction uncertainty which refers to any kind of unknown variables in a transaction or variables that are extremely unpredictable in order to be catered for in the terms of transaction or contract. It also arises when the performance cannot be verified afterwards (Geyskens et al., 2006). It can be broken up into environmental uncertainty and behavioural uncertainty. Environmental uncertainty refers to unpredictability outside the firm’s boundaries (O. Williamson, 2005; Oliver E. Williamson, 2002). When environmental uncertainty is low, there are few unanticipated disturbances. Transaction costs are low since firms can anticipate and specify ex ante appropriate adaptations to disturbances in market and hybrid contracts (Oliver E Williamson, 1985). When environmental uncertainty is high, however, boundedly rational economic actors cannot anticipate environmental disturbances and specify all appropriate contractual adaptations. The environmental changes that require adaptations to an agreement raise transaction costs and can be solved by hierarchical mechanisms of a contract or authority. Thus, the higher the environmental uncertainty, the greater the likelihood that contracts will be
incomplete. When contracts are incomplete, the threat of opportunism and transaction costs increase because adaptations are needed in response to environmental disturbances (Tadelis & Williamson, 2012; O. Williamson, 2005; Oliver E Williamson, 1999; Oliver E. Williamson, 2002). Increased environmental uncertainty confuses managers’ abilities to predict contingencies, which makes contracts more incomplete. When contracts are more incomplete, however, higher transaction costs result because bargaining and renegotiations are needed to resolve disputes arising from unforeseen contingencies. Behavioural uncertainty refers to performance measurement difficulties (Tadelis & Williamson, 2012). Performance measurement difficulties are low when outputs are easy to monitor and evaluate. When outputs are easily observed and evaluated, the value of a transaction can be assessed and rewards can be linked to productivity (Alchian & Demsetz, 1972). In contrast, performance measurement difficulties are high when outputs cannot be easily monitored and evaluated. The threat of opportunism is increased on the grounds that transactors can intentionally bring down output or lessen quality in ways that might not be detected by others. Base on the support from literature, we hypothesise that:

H2: The degree of vertical integration will be higher for firms with higher transaction uncertainty.

2.2.3 Frequency of Transaction
A third condition is frequency of transaction. It is an exchange attribute that also affects governance structure (Noordewier, John, & Nevin, 1990; Tadelis & Williamson, 2012). It involves the extent to which the transaction reoccurs between the organizations. Agreeing to Tadelis and Williamson (2012), transaction frequency can be categorized as one-time, occasional, or recurring. When frequency is one-time or intermittent, transaction costs and adaptation problems are often low since these transactions pose fewer threats of opportunism. So, contracts can be more easily written when transactions are one-time or intermittent. If a transaction is to transpire for a brief period, transactors could more easily anticipate and specify contractual contingencies. In like manner, firms’ adaptation capabilities are not heavily influenced. Accordingly, non-recurring or repeating transactions have less threats of opportunism, and lesserly affect transaction costs or adaptability. Since markets preserve more powerful incentives than hierarchy and such transactions have little impact on firms, they are therefore taken off by market (Atalay, Hortaçsu, & Syverson, 2014; Brodrechtova, 2015; Globerman & Schwindt, 1986; Hashimoto, 2017; Vinholis, Filho, Carrer, & Chaddad, 2014). When transactions recur or repeat, however, hierarchy can bring down transaction costs (O. Williamson, 2005). Masters and Miles (2002), for example, found that on accounts of costs resulting from negotiating and renegotiating contracts for recurring needs, market contracting increases transaction costs. Firms favoured hierarchy rather, since contracts do not need to be negotiated or renegotiated on progressive premise, accordingly decreasing transaction costs. In this way, hierarchies bring down transaction costs by enhancing ongoing negotiating and renegotiating costs with other transactors. Furthermore, an increased frequency of transaction will reduce the information asymmetry between the organizations making hierarchical mechanisms more appropriate (Van de Vrande et al., 2006; Van de Vrande et al., 2009). Therefore, we hypothesized that:

H3: The degree of vertical integration will be higher for firms with greater transaction frequency.

2.3. Interplay of transaction exchange condition attributes
The interactive relationships of transaction exchange conditions might have impact on the relationship between transaction exchange conditions and the choice of governance structure (degree of integration). For example, the type of asset specificity or uncertainty may affect the relationships between these transaction attributes and the degree of integration. TCT predicts asset specificity as a key determinant of inter-organizational governance structures. Because of this, when asset specific investments are joined with other transaction attributes, for example uncertainty or frequency, the relationships between those transaction attributes and the degree of governance structures (degree of integration) should become more positive. O. Williamson (2005) asserts that there is an interactive relationship between uncertainty (environmental or behavioural), asset specificity, and the degree of integration. He additionally asserts that there is an interactive relationship between frequency, asset specificity, and the degree of integration. The interplay relationships are discussed below:

2.3.1. Uncertainty and Asset Specificity
The interactive relationship between uncertainty and hierarchical governance is common in the literature (Boerner, 2002; David & Han, 2004). Oliver E Williamson (1985), Tadelis and Williamson (2012) contend that there is an interactive relationship
between asset specificity, uncertainty, and hierarchical governance. More specifically, he asserts that uncertainty enables greater opportunism in markets and hybrids only when asset specific investments are present (Tadelis & Williamson, 2012; O. Williamson, 2005). His contention is that “uncertainty matters little without the need for asset specific investments.” When buyers procure standardized inputs that do not require asset specific investments, uncertainty is less problematic on the grounds that non-specific investments are involved, which can be redepolyed without significant costs. Given this, transactions surrounded by uncertainty and supported by non-specific investments can be governed by market contracts because there is no loss if disturbances occur. However, when asset specificity and environmental or behavioural uncertainty are joined, exchange hazards can surface due to incomplete contracts, and because assets are involved, the transactions are at greater risk. In particular, exchange hazards might increase as one transactor is positioned to take advantage of the other. Hierarchical governance can use formal controls and dispute resolution mechanisms to attenuate these hazards more efficiently than markets or hybrids (Klein, Crawford, & Alchian, 1978). Along these lines, as asset specificity increases, exchange hazards caused by uncertainty increase. Support has been found regarding (Oliver E Williamson, 1985) contentions on the interactive relationship between uncertainty, asset specificity, and hierarchical governance (Anderson, 1996; Coles & Hesterly, 1998; Walker & Weber, 1987). We therefore hypothesise that:

H4: The positive influence of transaction uncertainty on vertical integration becomes stronger when asset specificity increases.

2.3.2 Frequency and Asset Specificity

Since one-time and occasional transactions have a smaller impact on firms, TCT is mainly concerned with recurring or repeating transactions. As transactions become more frequent, firms can reduce costs in two ways. First, transaction costs can be reduced by ameliorating ongoing negotiating and renegotiating expenses for recurring needs (Masters & Miles, 2002). Second, production costs can be reduced by investing in asset specific investments (Oliver E. Williamson, 2002). When such investments are made, transaction costs rise because firms seek to reduce potential exchange hazards and resulting adaptation problems, and when recurring transactions are supported by asset specific investments, exchange hazards and the resulting adaptation problems increase (O. Williamson, 2005). Hierarchies reduce exchange hazards, transaction costs, and the resulting adaptation problems through the use of formal controls and executive fiat. Drawing on this logic, Widener and Selto (1999) showed that firms tend to use internal staff when frequent transactions are joined with asset specific investments. Specifically, they found that the combined presence of frequency and asset specific investments explained 53% of the variance in degree of integration decisions. In addition, Masters and Miles (2002) found that when recurring tasks require some level of expertise (i.e., human asset specificity), most firms preferred hierarchies to other modes of governance.

In sum, support has been found for the explanation of boundary choice, that when transactions become more frequent, there is incentive for firms to invest in specialized investments to reduce costs. However, these investments increase exchange hazards and transaction costs, and cause adaptation problems in markets and hybrids. Hierarchies, in contrast, reduce exchange hazards and the resulting transaction costs and adaptability problems when asset specific investments are present. Thus, when frequency and asset specificity are joined, firms favour increased integration to reduce transaction costs and the resulting adaptability problems. Therefore, we hypothesise that:

H5: The positive influence of transaction frequency on vertical integration becomes stronger when asset specificity increases.

3.0: RESEARCH METHODOLOGY

The data for the study was collected through a survey questionnaire between February and June, 2017. The respondents were classed into seven groups, namely: mobile network operators being the principal firms that do businesses with the other participants in the study, content providers, technology providers, financial institutions (Banks), service managed partners, mobile merchants and distributors/dealers. The respondents were the managers and staff at executive positions who take part in transaction partnerships decisions. The mobile network operators constitute 8.3% of the total respondents, the distributor or dealers of scratch cards and dealers in mobile devices and accessories also constitute 12.6%. The service manage partners form 3.5% while financial institutions (banks) constitute 10.7% of the total participants. The other participants such as technology providers form 7% of the total respondents. The technology providers are large firms that provide special services to the mobile network operators. The content providers are small
firms that develop programmes to enrich the contents of the mobile network operators. They are usually many and therefore constitute 23.3%, and are the second largest participants of the total respondents. The last category is the mobile money merchants. These are small firms that operate mobile money business. They are scattered or spread all over the country and constitute the largest participants 34.9% of the total participants. Efforts were made to ensure that the right respondents were engaged. The respondents were all found in Ghana. Finding respondents for this type of survey was a difficulty, since no database exists for all relevant partners engaged in transaction partnership in the telecommunication industry from any national database. However, we managed to get a list of transaction partners in the telecommunication industry from the database of the mobile network operators. These lists aggregated and constitute the total population of transaction partners in the telecommunication industry. Transaction actors that transacted with more than one mobile network operator were recognised as one actor in the population. This was to avoid duplication of transaction partners.

Research assistants were engaged to help in the data collection. They were adequately trained for that purpose. To explain the questionnaire and its context, the participants were offered a detailed background of the study either through an introductory letter or meeting. Relevant areas or topics that needed to be responded were covered. The broad topics included, transaction governance, modes of transaction exchanges in transaction partnerships and how these transaction exchanges influence their choice of governance modes. Participants were given adequate time to prepare themselves as well as to express interest in taking part of the exercise. Follow ups were made to identify participants who were willing to take part in the exercise. In the administration of the survey questionnaires, the research assistants ensured that participants submitted questionnaires that were completely answered and did not allow room for incomplete questionnaires. A total of 430 of completed questionnaires with valid responses for the survey were received. The completed questionnaires were thoroughly checked for response bias. In the analysis of data, SEM techniques were employed. Structural Regression modelling using Amos 23.0 is applied to test the conceptual model in Fig. 1.

<table>
<thead>
<tr>
<th>Table 1a : Distribution of respondents</th>
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<tbody>
<tr>
<td><strong>Samples</strong></td>
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<tr>
<td>Mobile merchants</td>
</tr>
<tr>
<td>Content providers</td>
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<tr>
<td>Technology providers</td>
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<tr>
<td>Financial institutions (Banks)</td>
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<tr>
<td>Service managed partners</td>
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<tr>
<td>Distributors/dealers</td>
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<tr>
<td>Mobile network operators</td>
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<tr>
<td><strong>TOTAL</strong></td>
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<tr>
<th>Table 1b : Measurement Scales</th>
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<tr>
<td><strong>Construct</strong></td>
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<tr>
<td>Contract</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Authority</td>
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<tr>
<td></td>
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<tr>
<td>Asset Specificity</td>
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<tr>
<td></td>
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<tr>
<td>Uncertainty</td>
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<tr>
<td></td>
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<tr>
<td>Frequency</td>
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4.0 RESULTS AND DISCUSSION

4.1 Exploratory Factor Analysis (EFA)

An EFA using Maximum Likelihood with Promax rotation was used to see if the observed variables loaded together as expected, were adequately correlated, and met criteria of reliability and validity. We address each of these below for the final six-
The factor model depicted in the pattern matrix in Table 2 below:

Table 2: Factor loadings

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<tbody>
<tr>
<td>0.848</td>
<td>0.668</td>
<td>0.797</td>
<td>0.748</td>
<td>0.619</td>
<td>0.607</td>
<td>0.673</td>
<td>0.631</td>
<td>0.619</td>
</tr>
</tbody>
</table>

The factors demonstrate sufficient convergent validity, as their loadings were all above the recommended minimum threshold of 0.350 for a samples size of 300 (Hair, Ringle, & Sarstedt, 2011). The factors also demonstrate sufficient discriminant validity, as the correlation matrix shows no correlations above 0.700, and there are no problematic cross-loadings.

This six-factor model had a total variance explained of 60%, with all extracted factors having eigenvalues above 1.0 except one, which was close at 0.989.

4.2 Confirmatory Factor Analysis (CFA)

Model Fit: We removed contract1, contract5, contract6, and contract8 due to poor loading. Modification indices were consulted to determine if there was opportunity to improve the model. Accordingly, we co-varied the error terms between contract3 and contract4, also contract10 and contract11. Table 4 indicates that the goodness of fit for our measurement model is sufficient.

Table 4: Goodness of fit indexes

<table>
<thead>
<tr>
<th>Measure</th>
<th>Estimate</th>
<th>Threshold</th>
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<tbody>
<tr>
<td>CMIN</td>
<td>466.19</td>
<td>--</td>
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<tr>
<td>CMIN/DF</td>
<td>1.509</td>
<td>Between 1 and 3</td>
</tr>
<tr>
<td>RMSEA</td>
<td>0.034</td>
<td>Excellent</td>
</tr>
<tr>
<td>RFI</td>
<td>0.972</td>
<td>&gt;0.95</td>
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<tr>
<td>SRMR</td>
<td>0.038</td>
<td>Excellent</td>
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<tr>
<td>PClose</td>
<td>0.875</td>
<td>&gt;0.50</td>
</tr>
<tr>
<td>CFI</td>
<td>0.900</td>
<td>&gt;0.95</td>
</tr>
<tr>
<td>SRMR</td>
<td>0.038</td>
<td>Excellent</td>
</tr>
<tr>
<td>RMSEA</td>
<td>0.034</td>
<td>&gt;0.08</td>
</tr>
<tr>
<td>PClose</td>
<td>0.875</td>
<td>&gt;0.80</td>
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Hu and Bentler (1999)’s Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria Versus New Alternatives

Table 5: Model Fit measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>CR</th>
<th>AVE</th>
<th>MSV</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
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<tbody>
<tr>
<td>1. Frequency</td>
<td>0.950</td>
<td>0.950</td>
<td>0.950</td>
<td>0.950</td>
<td>0.950</td>
<td>0.950</td>
<td>0.950</td>
<td>0.950</td>
<td>0.950</td>
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<tr>
<td>2. Contract</td>
<td>0.890</td>
<td>0.505</td>
<td>0.505</td>
<td>0.505</td>
<td>0.505</td>
<td>0.505</td>
<td>0.505</td>
<td>0.505</td>
<td>0.505</td>
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<tr>
<td>3. Authority</td>
<td>0.680</td>
<td>0.680</td>
<td>0.680</td>
<td>0.680</td>
<td>0.680</td>
<td>0.680</td>
<td>0.680</td>
<td>0.680</td>
<td>0.680</td>
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<tr>
<td>4. Uncertainty</td>
<td>0.700</td>
<td>0.700</td>
<td>0.700</td>
<td>0.700</td>
<td>0.700</td>
<td>0.700</td>
<td>0.700</td>
<td>0.700</td>
<td>0.700</td>
</tr>
<tr>
<td>5. Trust</td>
<td>0.758</td>
<td>0.758</td>
<td>0.758</td>
<td>0.758</td>
<td>0.758</td>
<td>0.758</td>
<td>0.758</td>
<td>0.758</td>
<td>0.758</td>
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Composite reliability of all concepts exceeds the .70 benchmark for all constructs. So, high levels of internal consistency reliability have been demonstrated among all six reflective latent variables. As a result, the lower indicator reliability of CR can be accepted.

Convergent validity is acceptable as almost all factor loadings exceed the 0.60 benchmark. For all factors, the AVE was above 0.50 except for authority, which was close at 0.485. However, as this factor is
minimally correlated with the other factors in the model, and because the reliability score (0.823) was greater than 0.700, we felt this was admissible (i.e., while it is not especially strong internally, it is, at least, a reliable and distinct construct within our model). Fornell and Larcker (1981) suggest that the square root of AVE in each latent variable can be used to establish discriminant validity, if this value is larger than other correlation values among the latent variables. The square roots of average variances extracted (AVEs) are shown on diagonal, in bold in the Table 5. The table indicates that discriminant validity is well established.

4.3 Moderating Model

The final model (Fig. 2) supports the hypotheses at 5% significant level. The prediction that Firms with greater investment or higher asset specificity will indeed pursue greater level of vertical integration (H1) was supported with (p = 0.012 < 0.05). Hypothesis 2 predicted that firms with higher transaction uncertainty pursue higher level of vertical integration was also supported with (p = 0.023 < 0.05). While H3 predicted that firms with greater transaction frequency pursue greater level of vertical integration was equally supported with (p = 0.033 < 0.05).

To test the interaction hypotheses we first standardized the endogeneous variables and then created product variables. Both interaction paths Asset_x_Uncert and Asset_x_Freq were found to be significant at 5% level as shown in table 6. The graphs of the interactions are depicted in figs 3 and 4 below. Thus the results of the interactive relationships also support the hypotheses. The prediction of H4 that, positive influence of transaction uncertainty on vertical integration becomes stronger when asset specificity increases was supported with (p = 0.021 < 0.05). The prediction of H5 that the positive influence of transaction frequency on vertical integration becomes stronger when asset specificity increases was also supported with (p = 0.024 < 0.05).
Fig.4: Interaction effect of asset specificity and transaction uncertainty on degree of integration

Asset Specificity strengthens the positive relationship between Uncertainty and Degree of integration.

Table 7: Standardized Regression Load

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<tbody>
<tr>
<td></td>
<td>Estimate 0.814</td>
<td>0.621</td>
<td>0.478</td>
<td>0.738</td>
<td>0.743</td>
<td>0.791</td>
<td>0.561</td>
<td>0.763</td>
<td>0.593</td>
<td>0.718</td>
<td>0.660</td>
<td>0.881</td>
<td>0.870</td>
<td>0.829</td>
<td>0.806</td>
<td>0.927</td>
<td>0.835</td>
<td>0.816</td>
<td>0.558</td>
<td></td>
</tr>
</tbody>
</table>

5.0: Conclusion, Limitation and Future Research

The study sheds light into how inter-firms relationships boundary choices are determined. Appropriate boundary choice appears to pose serious challenges to firms. The results of this paper suggest that firms with greater investment or higher asset specificity pursue greater level of vertical integration in the telecommunication industry. This results is consistent with the findings of Poppo and Zenger (2002). In their study, they found that increasing asset specificity leads to diminishing effectiveness of market governance because markets lack effective mechanisms for resolving coordination problems and opportunism in specialized exchanges. Also, the findings that authority relationships and hierarchical control procedures through vertical integration are assumed to have greater safeguarding capabilities and are viewed as the solution to the problem of transaction opportunisms(Geyskens et al., 2006; Van de Vrande et al., 2006; Van de Vrande et al., 2009). These findings support the predictions of TCT by(Oliver E Williamson, 1985).

Also, the results that firms with higher transaction uncertainty pursue higher level of vertical integration is consistent with Oliver E Williamson (1985) prediction that uncertainty of transactions positively influence degree of integration.

Hypothesis 3 predicted that firms with greater transaction frequency pursue greater level of vertical integration was equally supported with the findings that an increased frequency of transaction will reduce the information asymmetry between the organizations making hierarchical mechanisms more appropriate (Van de Vrande et al., 2006; Van de Vrande et al., 2009). This finding is consistent with the TCT prediction by(Oliver E Williamson, 1985).

The results of the interactive relationships also support the hypotheses. The prediction of H4 that, positive influence of transaction uncertainty on vertical integration becomes stronger when asset specificity increases, is consistent with the studies of (Anderson, 1996; Coles & Hesterly, 1998; Walker & Weber, 1987). These results support the assertion of Oliver E Williamson (1985)when he stated that there is an interactive relationship between uncertainty, asset specificity, and the degree of integration. Oliver E Williamson (1985) specifically asserts that uncertainty enables greater opportunism in markets and hybrids only when asset specific investments are present.

In the same manner, the prediction of H5 for a positive influence of transaction frequency on vertical integration becomes stronger when asset specificity increases was supported. This results is consistent with the studies of(Widener & Selto, 1999). In their study, they showed that firms tend to use internal staff when frequent transactions are joined with asset specific investments. Specifically, they found that the combined presence of frequency and asset specific investments explained 53% of the variance in degree of integration decisions. In addition, Masters and Miles (2002)found that when recurring tasks require some level of expertise (i.e., human asset specificity), most firms preferred hierarchies to other modes of governance. Thus, support has been found for the explanation of boundary choice that, when frequency and asset specificity are joined, firms favour increased integration to reduce transaction costs and the resulting adaptability problems.

The research in this paper has a few limitations, which provide opportunity for future research. A first limitation is that, the study focussed on a single theory to find the determinants of governance structure. The study used only transaction cost theory. We believe this theory will provide the fundamental dimensions necessary to fully achieve our objectives. The study might have been enriched if we had extended our theory with the resource base theory. The resource base theory sheds light into why some
asset specific investments are more possible to be governed by higher degree of integration than other types. The resource base theory suggests that assets that are scarce, very difficult to being replaced, difficult to copy and also of value can bring about sustained organizational leverage.

A second likely limitation is that, the research study treated uncertainty as mono dimensional construct and failed to differentiate between types of uncertainty. Uncertainty is now appreciated as a multi-dimensional construct. It is widely identified as, volume, environmental, behavioural and technological uncertainty. Each type of uncertainty could possibly impact governance mode, thus shaping governance choice.

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