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Supply Chain Governance Structures in the Base of the Pyramid

ABSTRACT

Much attention has been given to small and micro-enterprise development; however, little focus has been placed on the governance structures that connect small and micro-enterprises to the developed economy. In this research we explore the structure of dyadic value chain relationships in a base of the pyramid context. We conducted content analysis to classify 74 dyadic value chain relationships according to Gereffi et al.'s (2005) model of governance types. We find that when at least one member of a dyad resides in the base of the pyramid, only two of the five governance structures are predominant. We also found a predominant governance type not previously identified.

KEYWORDS: Supply Chain, Value Chain, Governance Structure, Base of the Pyramid, Power Asymmetry

INTRODUCTION

Poverty alleviation efforts among the global population sector that lives on less than \$2.50 per day, often referred to as the Base of the Pyramid (BoP) (Prahalad 2010), include interventions that aim to assist would-be small business owners in business start-up and operation. These social innovations that aspire to assist small business owners in building financially sustainable ventures indicate the strong connection between social and financial sustainability in lessening privation. Much attention has been given to the enhancement of microenterprise and small business development (Yunis 2008); however, little focus has been placed on the ability of supply chain relationships to enhance or detract from enterprise success in poverty environments.

In the formal economy, supply chains (aka value chains) have long been studied along a continuum from market-based relationships to a hierarchy, or vertically integrated firm (e.g., Coase 1937; Williamson 1985; Rindfleisch and Heide 1997; Grover and Malhotra 2003), with researchers identifying other forms of coordination between those extremes (e.g., Sturgeon 2002; Sturgeon and Lee 2001; Humphrey and Schmitz 2000, 2002). Gereffi et al. (2005) propose a more complete typology of value-chain governance structures based on three factors: complexity of information and knowledge transfer, the extent to which information and knowledge can be codified, and the capability of actual and potential value chain members. Their model also considers the power asymmetry in the relationship. While this model is widely referenced in value-chain research, only a handful of studies have applied the model in BoP contexts (e.g., Muradian and Pelupessy 2005; Pietrobelli and Pietrobelli 2011), and to our knowledge, this model has not been tested across multiple global value chains in a single study.

The purpose of this research is to identify the predominant governance structures in BoP value chains as a first step in understanding how supply chains may play a role in poverty alleviation efforts in these regions of the world. As such, this research extends the literature regarding the role of governance structures to a BoP context. We also apply the Gereffi (2005) typology to multiple value chain dyads in a single study. We begin with a brief overview of the nature of

small and micro-enterprise ownership in the BoP context, followed by a description of the governance structure types identified in prior research. We then present our methodology for data collection and analysis and our results. We conclude with a discussion of our findings.

LITERATURE REVIEW

Small Business Ownership within the BoP Context

As part of the focus on economic growth and poverty reduction, small and micro-business ownership is a concept that has received a great deal of attention (Midgley 2009). The term microenterprise is often defined in the world of social and economic development as “small businesses owned and operated by poor people or groups of poor people” (Jurik 2005). Thus, we will refer to these enterprises as small businesses, defined as “businesses with five or fewer employees and less than \$10,000 in assets” (Datar et al. 2009).

Small business ownership has been shown to be a “significant resource” that can be used to help alleviate poverty (Chang, 2003). At least some believe them to be “making a major contribution to global poverty reduction” (Midgley 2009). However, results of such efforts have been mixed (Snow and Buss 2001). While some describe successful small businesses as a poverty reduction tool, others describe these enterprises as “disguised unemployment” (Mandleman and Montes-Rojas 2009).

Small business failure has been attributed, at least in part, to the fact that the businesses are “small-scale, undercapitalized, and barely profitable (Ehlers and Main 1998, p. 424).” Those who run these businesses usually have no business training (Roy and Wheeler 2006); indeed, many have minimal basic literacy and numeracy skills. They lack the skills and opportunities needed to grow a business (Prasad and Tata 2009) and lack resources when faced with problems (Samujh 2011). The small business literature highlights at least four major threats to the financial sustainability of BoP small businesses: 1) inadequate capital, 2) small business owners’ lack of business acumen, 3) small business paucity of supply chain power, and 4) difficulty experienced by small BoP businesses in achieving profitability.

Supply chain relationships have been shown to be effective in improving performance for enterprises in developed economies (e.g., Allred et al. 2011) through investments in one supply chain partner by another in the form of capital, training, and access to markets. Thus, the structure of that governance relationship has the potential to influence the profitability and resulting viability of small businesses in the BoP context. To preface the exploration of the supply chain structure and potential impact of supply chain relationships in BoP environments, the next section provides a brief examination of this literature.

Governance of Global Value Chains

Global value chains were originally defined as border-crossing value adding networks of labor and production processes whose end result is the use of a finished commodity (Gereffi and Korzeniewicz 1994). Types of global value chains are identified by examining four different key determinants: complexity of the transaction, ability to codify the transaction, capabilities in the supply chain partner, and power asymmetry.

Key Determinants of Global Value Chain Governance

Complexity of transaction

Complexity refers to “the complexity of information and knowledge transfer required to sustain a particular transaction, particularly with respect to product and process specifications” (Gereffi et al 2005, p. 85). One can also find complexity within the number of variables, processes, and standards involved in the specifications of the product (Muradian & Pelupessy 2005). Muradian and Pelupessy (2005) further expand the definition of complexity to include specificity, or the extent to which information about product specifications is unique to the interaction between two firms. As specificity for products between two firms increases, the uniqueness of the variables and processes also increases, thus increasing the complexity of the transaction.

Though complexity can be found in specific transactions, it can also be introduced through economic variables. For example, in countries with weak institutions, weak contract enforcement, pervasive corruption, cumbersome bureaucratic procedures, multiple barriers to trade and poor infrastructures, it is difficult to capitalize on the benefits of inter-firm specialization (Altenburg 2006; Pietrobelli & Pietrobelli, 2011). The weaker the institutional framework, the costlier and riskier it is to do business (Pietrobelli and Pietrobelli 2011). If doing business in general is complicated by economic variables, then we can further assume that each transaction is made more complex as well.

Codification

Codification is referred to as “the extent which information and knowledge can be codified, and, therefore, transmitted efficiently without transaction-specific investment between the parties in the transaction” (Gereffi et al 2005, p. 85). It is important to note that codification is not the extent which knowledge and information *is* codified, but the extent to which it *can* be codified.

Researchers have further asserted that codes, certifications and labels are all tools for codifying the information and increasing consumer confidence. They reduce monitoring costs for buyers and suppliers (Muradian and Pelupessy 2005). Some even propose that the development of industry-wide standards and systems permit the codification of complex information (Bair, 2008). Along the same lines, researchers further propose that explicit (codified) knowledge travels easily, and the Internet, by allowing low-cost access to information, has helped enable this (Teece, 2014).

Capabilities of Supply Chain Partner

Capabilities of the supply chain partner can be described as the capabilities of actual and potential supply chain partners in relation to the requirements of the transaction (Gereffi et al 2005, p. 85). To build upon that, capability can also be considered to be the necessary skills to meet specifications (Muradian and Pelupessy 2005). The specifications provided by one supply chain partner could be more advanced than what the other member of the dyad is normally capable of.

Other researchers use the verbiage of competency instead of capability. The competencies of supply chain partners play a key role in the development of governance modes as they affect both the ability of local firms to contribute to technical change, and their bargaining power vis à

vis global supply chain partners (Saliola and Zanfei, 2009). Competency not only indicates a firm's capability in completing a transaction, but also implies the power relationship between the buyer and the supplier.

Power Asymmetry

Power asymmetry is associated with the direct control one supply chain partner might exert over another and is closely associated with the degree of explicit coordination between the buyer and the supplier (Gereffi et al., 2005). Power is exerted when lead firms in the chain are able to set and/or enforce the parameters under which others in the chain operate (Muradian & Pelupessy, 2005).

Gereffi et al., (2005) exerted that power and coordination are closely intertwined, but many researchers disagree with that exertion. Instead, they assert that the relationship between degree of coordination and power asymmetry is not straightforward. Power asymmetry not only depends on the coordination structure, but primarily on market concentration and the degree of "specificity" of the relationship (Muradian and Pelupessy, 2005). If two companies closely coordinate a transaction, this does not indicate high power asymmetry. Instead, asymmetry refers to the difference between the subcontractor and the customer in terms of size and power (Chang & Gotcher, 2007; Subramani & Vernkatraman, 2003). Power asymmetry can thus be defined as the ability of the lead firm to set and/or enforce transaction specific parameters without regards to coordination.

Modes of Governance

Gereffi et al., (2005) identified five of the most common and/or likely global value chain types: market, modular, relational, captive and hierarchy. See Table 1 for a summary of these governance types and their associated key determinants.

Market

In market governance structures, the complexity of the transaction is low due to relatively simple product specifications. Simple specifications tend to be easily codified and suppliers are able to make the products or provide the service with very little input from the buyers, reflecting a high level of capability. Because the complexity of information exchanged is relatively low, transactions can be governed with very little coordination and power asymmetry tends to be low.

Modular

When the ability to codify specifications extends to complex products, value chain modularity can arise. This can come about when product architecture is modular and technical standards can be codified to simplify interactions between the two firms. This governance structure emerges when this ability to codify is combined with suppliers who have the competence to supply full packages and modules. Because of the codification, complex information can be exchanged with little explicit coordination, and so, like simple market exchange, the cost of switching to new partners remains low, and therefore, power asymmetry is also low.

Relational

In relational transactions, the complexity of the transaction is high due to either specificity or information complexity. The codification, however, is low because tacit knowledge must be exchanged between buyers and sellers. The capability of the suppliers is still considered high because the buyers are not providing any additional inputs in order to receive the products. The power asymmetry can be high or low. It can be high if the tacit information exchange results in high coordination and the buyer exerting direct control over the supplier. It can be low if the tacit information exchange does not require extensive coordination and the buyer is not exerting any control over the supplier.

Captive

When the ability to codify in the form of detailed instructions and the complexity of product specifications are both high but a supply chain partner’s capabilities are low, then value chain governance will tend toward the captive type. This is because low competence in the face of complex products and specifications requires a great deal of intervention and control on the part of the lead firm, encouraging the build-up of transactional dependence as lead firms seek to lock-in supply chain partners in order to exclude others from reaping the benefits of their efforts. Therefore, the supply chain partner faces significant switching costs and is ‘captive’. Captive firms are frequently confined to a narrow range of tasks and are dependent on the lead firm for complementary activities such as design, logistics, component purchasing, and process technology upgrading. Captive inter-firm linkages control opportunism through the dominance of lead firms, while at the same time providing enough resources and market access to the subordinate firms to make exit an unattractive option.

Hierarchy

A hierarchal governance structure will emerge when the product or environment is complex, leading to high complexity in the transaction, the ability to codify is low due to high levels of tacit information, and when competent firms who can produce the products without additional inputs of the lead firm are not available. Due to the nature of tacit information exchange and low supplier capability, the buyer might choose to vertically integrate their operations through high levels of coordination and exerting direct control over suppliers, resulting in high power asymmetry.

Table 1: Governance Structures (adapted from Gereffi et al., 2005)

Governance Type	Complexity of Transactions	Ability to Codify	Capability	Power Asymmetry
Market	Low	High	High	Low
Modular	High	High	High	Low
Relational	High	Low	High	Low/High
Captive	High	High	Low	High
Hierarchy	High	Low	Low	High

METHODOLOGY

As an initial attempt at comprehensive research exploring global value chains operating in BoP markets, a series of qualitative research methods was needed (Miles et al. 2014). The stages we employed were: 1) creation of a population of small to micro-sized businesses established

and operating in multiple BoP regions; 2) generation of the data on each of the global value chains; 3) classification of each governance structure determinant as either high or low using a team-based qualitative approach (Marks, 2015), and 4) analysis of the resulting predominant governance structures.

Creation of Population

Our first step was to communicate with individuals and organizations currently conducting research on the subject of small business ownership. The small businesses that were identified varied in industry, supply chain operation, operation systems, size, and types of supply chain partnerships. In order to understand the forces influencing these small and micro-level businesses and their supply chains, we focused our efforts on the BoP markets of Sub-Saharan Africa, South East Asia, and Central and South America. The BoP markets in these regions fit into the lowest quartile of reported GDP Per Capita (GDPPC) in the world, which we used as a proxy for BoP context.

Data Collection

A comprehensive review of potential small BoP businesses was conducted using the following sources: 1) publically available web search engines (Google Chrome, Firefox, Explorer, etc.), 2) in-person and telephone interviews with individuals conducting business in the BoP markets of interest, 3) surveys conducted among employees of international organizations operating in the specified BoP markets, 4) case studies published by the William Davidson Institute, and 5) company websites (e.g., Mulago Foundation, Peery Foundation, Ashoka and Skoll Foundations, Grameen Bank).

Using the data collected from this wide variety of sources we created a database of small businesses and supply chain partners. The number of businesses identified for the population is large relative to previous efforts, but it would still be considered somewhat small compared to typical lists of businesses found in OECD country markets. Ultimately, our process identified 74 BoP small businesses with sufficient information available to examine a global value chain relationship.

Once the database of BoP global value chain dyads was compiled, two research assistants were each given access to the database (which included links to information about the company) and asked to independently identify who the closest supply chain partner company was, as well as if this partner was upstream or downstream in the supply chain from the small business. The research assistants were also asked to collect specific evidence of a relationship between the small business and the supply chain partner (from the website or article), which would then be used in the analysis process. The results from each research assistant's analyses were then compared and discrepancies were discussed among the research team until agreement was reached. The evidence collected from the websites and articles regarding the supply chain partner relationship were entered into NVivo 11 for analysis.

Measures

We applied the definitions of complexity, ability to codify, capability, and power asymmetry described in the literature review (Subramani & Vernkatraman, 2003; Gereffi et al 2005; Muradian & Pelupessy 2005; Altenburg 2006; Chang & Gotcher, 2007; Saliola & Zanfei, 2009;

Pietrobelli & Pietrobelli 2011; Teece, 2014) in our analysis of the data collected for each global value chain relationship. As noted above, researchers have suggested two approaches for measuring complexity in the supply chain relationship, either the complexity of the information and knowledge transfer between supply chain partners, or the complexity of the environment in which the transaction takes place. As such, we measured complexity using both approaches. Our first measure was a result of independently coding the data in NVivo based on the transaction-based definition (Gereffi et al., 2005; Muradian & Pelupessy 2005). Our second measure resulted from an aggregate scoring system using indices that reflect the complexity of conducting a transaction in a particular country. In cases where relationships occurred in multiple countries, only the primary country was used for the index scores. Scores were an aggregate of the following indices: Ease of Doing Business Index from the “Doing Business 2016” Report published by The World Bank, the Corruption Perceptions Index from Transparency International, and the World Justice Rank of the associated country from the World Justice Project Rule of Law Index 2016 Report. Since the indices each used a different scale, the scores could not be simply added together. Instead, the rankings were divided into thirds and countries were determined as being high (score of 3) if they were in the top third of the rankings, medium (score of 2) if they were in the middle third, and low (score of 1) if they were in the bottom third. The associated numbers, 1, 2, or 3 were then aggregated to determine a total score. For the two countries where world justice rankings and/or corruption perceptions rankings were unavailable, aggregate scores were calculated using available scores. If this total score was equal to, or greater than 2, complexity was determined to be high and if it was less than 2 it was determined to be low.

The remaining determinants were independently coded based on their definitions. Ability to codify was defined as the extent to which the information and knowledge of the relationship could be codified and transmitted efficiently and without transaction. Codification did not have to occur, but rather, just the extent to which codification was possible was determined. Capability was defined as the capability of the micro entrepreneur in relation to the requirements of the transaction, taking into consideration the relative competence and necessary skills required of the small business owner before entering into the relationship with the supply chain partner. Power asymmetry was defined in terms of whether one supply chain partner had more or less power than the other, with a note for the rare instances where the small business owner had more power.

Analysis of Data

Each determinant of a governance systems was coded as either being high or low according to the definitions above by two research assistants, under the direction of the primary researchers (Marks, 2015). The coding process consisted of three phases. For phase one and two, these research assistants worked independently. Weekly meetings were held with the primary researchers to clarify definitions and track progress. In phase one, the two research assistants were given a copy of a spreadsheet that listed a small business, their supply chain partner, whether the partner was classified as upstream or downstream, links to information about the global value chain relationship, and empty columns for the key determinants of a governance system. The research assistants were asked to review the evidence collected regarding the value chain dyad and determine if each key determinant was high or low in a given relationship based on the definitions described above (Subramani & Vernkatraman, 2003; Gereffi et al 2005; Muradian & Pelupessy 2005; Altenburg 2006; Chang & Gotcher, 2007; Saliola & Zanfei, 2009;

Pietrobelli & Pietrobelli 2011; Teece, 2014). The researchers then compared their responses and met with the research assistants to resolve any discrepancies.

Results

The results of our data analysis are presented in Table 2. In addition to Gereffi et al.'s (2005) proposed types of governance systems (see Table 1), we found evidence of eight additional structures. This is not particularly surprising since four key determinants that can each be coded as high or low, have the potential of resulting in 16 different governance structures. What is noteworthy, is that with all the other potential combinations, only one had a substantial number of dyads. This "Other 1" category consists of value chain dyads that experienced a high level of complexity, transactions that were codifiable, a small business owner had a high level of capability, and a high level of power asymmetry.

As noted above, complexity was measured using both approaches found in prior literature. We found that measuring complexity according to the complexity of the environment (which is then assumed to result in complexity in the transaction) resulted in the best fit with Gereffi et al.'s (2005) typology. Therefore our results reflect that definition of complexity.

Table 2: Results of Data Analysis

Governance Type	Complexity	Ability to Codify	Capability	Power Asymmetry	Number of Value Chain Dyads
Market	Low	High	High	Low	1
Modular	High	High	High	Low	14
Relational	High	Low	High	Low/High	1
Captive	High	High	Low	High	35
Hierarchy	High	Low	Low	High	2
Other 1	High	High	High	High	11
Other 2	Low	High	High	High	2
Other 3	Low	High	Low	High	1
Other 4	Low	Low	High	Low	1
Other 5	Low	Low	Low	High	1
Other 6*	Low	High	High	High	2
Other 7*	High	High	High	High	2
Other 8	High	High	Low	Low	1
Total					74

* Power asymmetry was in favor of the small business owner

DISCUSSION

Over 80% of our observations fit into three of the governance structures: Modular, Captive, and Other 1, which we have labelled as Coordinating. In examining these structures more closely several themes emerge.

Complexity and Codification

Almost all of the dyads in our database experience high levels of complexity based on where the transactions are taking place (66 of the 74 observations). The number was slightly lower when measuring complexity based on the type of transaction (52 of 74), yet still the vast majority of small business owners face high levels of complexity in their efforts to run a profitable enterprise. This indicates that many small business owners in BoP environments face both the complexity of the markets in which they operate, combined with a transaction that is also associated with a high level of complexity. Therefore, these very small businesses face greater risks than their formal economy counterparts (Samujh 2011).

Like the complexity determinant, codification did not vary much for our dyads. For 69 of our 74 dyads, the information that needed to be transmitted in order to successfully transact business was either codified or codifiable. As noted above, many who start businesses in developing economies lack business acumen and therefore do not have the luxury of trial-and-error practice. Rather, many of these businesses focus on subsistence, not opportunity pursuit. The dependency on a BoP small business for survival can make the error inherent in trial-and-error learning a threat to health and life. Consequently, in order for a small business to survive in a BoP context, information regarding the transaction must be able to be easily and efficiently transmitted.

Capability and Power Asymmetry

With the lack of variability in the complexity and codification determinants, it was the combination of capability and power asymmetry that determined the governance structure for most of our global value chain dyads.

Modular Governance Structure

In the case of global value chain dyads that fit in the Modular governance structure, the small business owner had a high level of capability, or competence, at the inception of the relationship (before any training took place). Given that the self-employed poor generally lack specialized skills (Banerjee and Duflo 2007), it is somewhat surprising that this governance structure is one of the more predominant. However, with the high level of codification found, perhaps the existence of so many small business owners with a high level of capability is due to the fact that many of the transactions taking place in BoP global value chains are of a simple nature (thus easily codified), and therefore the small business owners are already capable of completing the transaction without a great deal of training or other resources. When the level of capability is high and small business owners are not dependent on a supply chain partner for training or resources, as in the Modular governance structure, power asymmetry is therefore low.

Captive Governance Structure

When a small business owner is not capable of transacting without additional training and/or resources, this lack of expertise appears to create a dependency on the supply chain partner, as seen in the Captive governance structure. The fact that this is the most commonly found governance structure in our study is not surprising given prior research that raises the issues of dependence and lack of business skills for small business owners in a BoP environment (e.g., Banerjee and Duflo 2007).

Coordinating Governance Structure

The third most predominant governance structure to emerge from our study is one in which all four key determinants were high. As noted above, a high level of complexity and codification are not surprising in this context. What is surprising is that these small business owners, who have a high level of capability, are still finding themselves dependent on their supply chain partner. Gereffi et al. (2005) assumes that this is not a possibility because normally complexity and codifiability offset each other, and capability and power asymmetry also offset one another. However, in several instances in this BoP context, we find that because of the general complexity of doing business, the simplicity of the transactions, and the previous experience of the suppliers, the complexity, codifiability, and capability of the suppliers can all be classified as high. Additionally, without the coordinating efforts of the lead firm, the business transaction would not be possible. This leads to a high power asymmetry, for even though the suppliers are capable, they would not be connected with an end market without the coordinating efforts of the lead firm. These kinds of relationships are often found in co-ops or in areas where the suppliers did not know about the potential market for their goods. For example, Jaipur Rugs is a company that considers themselves coordinators instead of managers. By coordinating the efforts of hundreds of Indian rug weavers, Jaipur Rugs is able to not only increase personal profitability, but the profitability of the weavers as well.

In the Coordinating governance structure, the lead firm does not place any new demands upon the small business owner, nor does the lead firm train the small business owner to meet any new specifications or qualifications. Take for example, the guayusa growers in Ecuador. They are in an isolated community, and have been growing guayusa for hundreds of years. After living in Ecuador, the founders of Runa realized that consumers around the world would be interested in guayusa, and so they decided to connect these Ecuadorian farmers with an outside market. Because guayusa is a new commodity, there are very few regulations and no market for making it certified organic. Hence, the guayusa farmers are able to continue employing their original expertise without additional training from the lead firm. Though the suppliers are technically highly capable, they would be powerless to sell their goods without the coordinating efforts of the lead firm, Runa.

CONCLUSION

A major objective of qualitative, exploratory research is to discover new proposals for further investigation and to uncover potential hypotheses that can be tested to extend knowledge in new areas or previously unexplored contexts. In this research we have identified three predominant value chain governance structures that exist in BoP environments. Evidence of the consistent existence of these governance structures and the implications of each structure for poverty alleviation are compelling topics for future research.

The field of supply chain management can, indeed, impact the social sustainability of humanitarian efforts by enabling small business owners in BoP contexts to connect with the formal economy through global value chains. The exploratory nature of this research is just a first step in understanding the importance of these supply chain relationships in the BoP context of emerging and developing economies. We invite all interested supply chain management researchers to join in the needed research extensions that will further illuminate how supply chain relationships can continue to positively contribute to these poverty alleviation efforts.

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