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## **Governance and Innovative Capabilities in Global Value Chains: A Conceptual Framework**

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### Abstract

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### Introduction

This paper sets out a conceptual framework for understanding whether different types of governance foster or inhibit innovative capabilities within Global Value Chains (GVC).

### State of the art

In an era of increasing globalisation the GVC approach has evolved as a paradigm for understanding the combined activities of firms in taking products from raw materials through to end use. Two key concepts have emerged within GVC which have been labelled as governance and upgrading. Governance relates to the authority and power relationships that determine how financial, material, and human resources are allocated and flow within a chain (Gereffi, 1994; Humphrey & Schmitz, 2000; Gereffi et al, 2005). This approach has typically focused upon the links between a powerful lead firm and their suppliers. Upgrading refers to a firm's response to market competition in terms of producing better products, making existing products more efficient or moving into higher skilled activities (Porter, 1990; Kaplinsky, 1998).

### Research Gap

The starting point for this doctoral research has been the limited and unsatisfactory treatment of innovation in the GVC literature. The concept of upgrading and the notion of 'climbing up the chain' are central to chain approaches. Equally, knowledge transfer between firms is a central concern of GVC research. However, the consequences of the governance of GVCs for innovation within those chains at the inter-firm level have rarely been a central focus of this research (Morrison, Pietrobelli, & Rabellotti, 2008). It is also argued that upgrading does not address the process of innovation

directly (Pietrobelli, 2007). As a result there is a lack of empirical work relating the character of innovation in GVCs to their different modes of governance. . The purpose of this paper is to begin to address this gap by setting out a conceptual framework for understanding whether different types of governance foster or inhibit innovative capabilities within a GVC.

#### Theoretical Arguments

The present paper aims to conceptualise the link between governance type and innovative capability. Gereffi, Humphrey & Sturgeon's (2005) framework states that governance types are characterised through three variables which are: i) the complexity of transactions, ii) the ability to codify transactions and iii) the capabilities that exist within the supply base. The present paper advances this model by proposing that each of these governance characteristics in turn can be linked with innovative capability. It is postulated that the different governance types, which consist of different levels of complexity, codifiability and capabilities, differ in their potential for fostering innovative capability. These propositions are combined into a framework that conceptualises a relationship between governance type and innovative capability.

#### References

- Gereffi, G. (1994). The organization of buyer-driven global commodity chains: How US retailers shape overseas production networks. *Commodity chains and global capitalism*, Praeger Publishers: 95-123.
- Gereffi, G., J. Humphrey and T. Sturgeon (2005). "The governance of global value chains." *Review of international political economy* 12(1): 78-104.
- Humphrey, J. and H. Schmitz (2000). *Governance and upgrading: linking industrial cluster and global value chain research*, Institute of Development Studies Brighton.
- Kaplinsky, R. (1998). *Globalisation, industrialisation and sustainable growth: the pursuit of the nth rent*.
- Morrison, A., C. Pietrobelli and R. Rabellotti (2008). "Global value chains and technological capabilities: a framework to study learning and innovation in developing countries." *Oxford Development Studies* 36(1): 39-58.
- Pietrobelli, C. (2007). "Global value chains and clusters in LDCs: What prospects for upgrading and technological capabilities." *Background Paper*(1).
- Porter, M. E. (1993). *The competitive advantage of nations*, Harvard Business School Management Programs.

# **Governance and Innovative Capabilities in Global Value Chains: A Conceptual Framework**

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## **Summary**

In an era of increasing globalisation, the Global Value Chain (GVC) approach has evolved as a paradigm for understanding the combined activities of firms in taking products from raw materials through to end use. The GVC approach focuses upon the links between powerful lead-firms and their suppliers at a global level, and considers how the governance of those relationships can lead to opportunities for upgrading (Gereffi, Humphrey & Sturgeon, 2005; Humphrey & Schmitz, 2000). The starting point for this doctoral research has been the limited treatment of innovation within the GVC literature. The concept of upgrading and the notion of “climbing up the chain” are central to chain approaches. Equally, knowledge transfer between firms is a central concern of GVC research. However, the consequences of the governance of GVCs for innovation within those chains at the firm level have rarely been a central focus of this research (Morrison, Pietrobelli, & Rabellotti, 2008). As a result there is a lack of understanding of how different governance types between lead-firms and suppliers relate to innovation in GVCs. The purpose of this paper is to begin to address this gap by setting out a conceptual framework for understanding whether different types of governance foster or inhibit innovative capabilities within a GVC.

## **Introduction**

### **A brief history of the chain approaches**

The use of the value chain concept as a lens for understanding production at a global level has evolved through a number of different paradigms (see Table 1). The notion of a commodity chain, (Hopkins & Wallerstein, 1977) was first used to describe the process of transforming raw constituent materials to a final product, enabling a deeper understanding of production in

the world economy and examining the trans-national interdependence of productive activities (Hopkins & Wallerstein, 1986). The commodity chain approach contributed to the understanding of the division of labour in the production of a commodity, the level of interconnectedness between different operations involved in production and the geographical dispersion of those activities. An early commodity chain study adopting the world systems view and looking at the production of ships and trade of wheat flour (Hopkins & Wallerstein, 1986) highlighted the world economic forces organising production in the seventeenth and eighteenth century, specifically in relation to the control of the sources of technology, mechanisation, labour and the location of operations within the chain.

**Table 1 – Evolution of commodity chain constructs<sup>1</sup>**

<b>Theoretical Approach</b>	<b>Overview</b>	<b>Theoretical Basis</b>
Commodity Chains <i>(Hopkins &amp; Wallerstein, 1977; Hopkins &amp; Wallerstein, 1986)</i>	Macro-level - Long range historical analysis of commodity chains	World systems view
Global Commodity Chains <i>(herein referred to as GCC) (Gereffi, 1994; 1995)</i>	Focus on governance structure of supply chains and lead-firms in production	Organisational Sociology & comparative development studies
Global Value Chains <i>(herein referred to as GVC) (Humphrey &amp; Schmitz, 2000, 2002; Gereffi et al, 2005)</i>	Focus on the relative value of activities along the chain	Firm capability, learning organisation, transaction cost economics, production networks

Source – Authors review of the literature

The commodity chain perspective was furthered by Gereffi (1994) with the introduction of the Global Commodity Chain (GCC) approach which presented the concept of power and lead-firms’ which “drive” the entire chain in a specific direction in terms of both trade and production. Gereffi presented GCC as having three main components (Gereffi 1994, p.7):

<sup>1</sup> In addition to these constructs, a number of complementary, if not theoretically distinct, paradigms have been proposed by others including the filière approach developed in the 1960s by researchers in France to understand the commodity chains and production/distribution sectors stemming from colonial countries (Lenz, 1997), value-chain analysis (Porter, 1985) to understand value-adding activities internally at the firm level, International Production Networks (Borras et al, 2000) and Global Production Networks (Coe et al, 2004). Many of these concepts are antecedent to the various approaches shown in the table but are not dealt with directly in this review.

- An input-output structure: As with commodity chains this represents a set of products and services linked together in a sequence of value-adding economic activities
- A territoriality (spatial dispersion or concentration of enterprises in production and distribution networks)
- A governance structure (authority and power relationships)

In a later re-incarnation of the GCC framework, Gereffi (1995) made an addition to the three dimensions of input-output structure, territoriality and governance to include institutions, defining the fourth component as “how local, national, and international conditions and policies shape the globalisation process “(Gereffi, 1995, p.113).

### Chain Governance

One of the central concerns of the GCC framework is that of governance, defined as the “authority and power relationships that determine how financial, material, and human resources are allocated and flow within a chain” (Gereffi, 1994, p.97). The concept of governance is exemplified by considering the influence of large global brand names and retailers such as Marks & Spencer, Tesco and Nike on the chains within which they co-ordinate (Humphrey & Schmitz, 2001; Gereffi, 1994). Such powerful lead-firms are seen to have a considerable degree of influence, in terms of co-ordination of production, on their suppliers which extends deep within their supply chains. In so-called “buyer-driven chains” (Gereffi, 1994), producers are dependent on larger buyers for market information, product design, marketing and brand recognition. For example, a sports shoe manufacturer based in Asia is likely to be entirely reliant on firms such as Adidas or Nike with regards to the aforementioned activities and without those larger buyers, many smaller firms would be completely isolated from the market. In contrast, the term “producer-driven chains” has been used to describe lead-firms’ which utilise smaller suppliers to assist with production whilst performing the more capital-intensive and technology-intensive production internally. Clearly, such a dichotomy is simplistic, but it provides an insight into the distribution of power that exists within the global economy.

### The Global Value Chain (GVC) approach

The GVC approach was born out of a recognition that “1) there was a clear shift away from the vertically integrated, producer-driven variant in a range of industries, and 2) the buyer-driven/producer-driven types could not characterize all of the network types being observed in the field” (Sturgeon, 2009, p.117). Research adopting the GVC approach has commonly

focused on how value chain governance affects the generation, transfer and diffusion of knowledge and how individual producers and countries can increase and sustain their share of these gains. GVCs have provided insight for firms and policy makers into entry points into a value chain, and how firms within the chain may sustain competitiveness and how they may “upgrade” their capabilities. The use of the term “upgrading” has gained acceptance within the GVC literature and is generally used to imply the process of firms moving from lower value-added activities to higher value-added activities within a value chain, Research has repeatedly shown that large firms play a pivotal role in learning within supplier firms and provide a route to upgrading (Bair & Gereffi, 2003; Gereffi, 1999, Schmitz, 2004, Tokatli, 2004).

The governance of GVCs was introduced in a paper whose objective was to further the understanding of the structure of a chain of production, more specifically the governance structures that can be found at the inter-firm boundary linking suppliers to “lead-firms”, in terms of varying knowledge characteristics (Gereffi et al, 2005). Building on the theoretical foundation of transaction cost economics (Williamson, 1975), production networks (Sturgeon, 2002) and firm-level learning (Penrose, 1959), Gereffi et al. (2005) propose that governance within global value chains, between supplier and lead-firm, are a net result of the complexity of transactions involved, the ability to codify those transactions (the extent to which this information and knowledge can be codified), and the capabilities that exist within the supply base. According to the authors these three variables alone can describe the type of governance that is dominant in a lead-firm and supplier relationship. Five types of governance pattern are identified; hierarchy, captive, relational, modular and market, having high to low levels of explicit coordination and power asymmetry (see Table 2), a descriptive account of each is provided below:

**Table 2 - The key determinants of global value chain governance**

Governance Type	Complexity of transactions	Ability to codify transactions	Capabilities in the supply base
Market	Low	High	High
Modular	High	High	High
Relational	High	Low	High
Captive	High	High	Low
Hierarchy	High	Low	Low

Market – Such governance types relate to arm's length or short-term contractual relationships where the buyer and supplier do not develop close relationships and transactions are generally governed by price alone. The complexity of product requirements is low and easily communicated requiring less co-ordination from lead-firms and less overall risk to the buyer. The linkage activities between the lead-firm and supplier are low as the requirements of the transaction for information exchange and knowledge sharing is low. The organisation of the chain presents low barriers to upgrading strategies of suppliers, however the pathway to upgrading may not be easy without the support that lead-firms provide such as technical knowledge exchange, financial support, market information, market access etc.

Modular - In transactions between a buyer and supplier where the product is more complex, but sufficiently modular in design that technical standards and information regarding the product can be specified and communicated to a third-party, then outsourcing whilst setting clear product and quality guidelines is one option for a lead-firm. In such governance arrangements smaller firms produce independently, take full responsibility for production and may further outsource production.

Relational – Relational governance types involve complex interactions between the lead-firm and supplier. Tacit information is often exchanged and the buyer and supplier develop intertwined relationships over extended periods of time. Examples of these linkages are found in high-tech industries such as biotech (Porter, Whittington, & Powell, 2005), motor sport (Pinch & Henry, 2000), electronics (Saxenian, 1996) along with many others where the complexity of the interactions between lead-firm and supplier is high and the capabilities of suppliers are also high. Such relationships typically involve co-location to support tacit knowledge exchange and knowledge spill-overs, although examples can be found in spatially dispersed networks where the level of trust and reputation of firms is high (Zeller, 2001). Firms within a closely defined geographical area are commonly referred to as industrial clusters (Porter, 1990) and such agglomerations promote specialisation, local rivalry, supplier network development and knowledge exchange and there is generally a positive association between innovative activity and clustering (Baptista, 1998; Krugman, 1991; Maskell, 2001, Owen-Smith & Powell, 2005). Such relationships are more common when lead-firm and supplier have complementary competences and can both contribute to the innovative process (Humphrey & Schmitz, 2000).

Captive – This type of governance pattern arises when the capabilities of suppliers are low and therefore require detailed instructions and standards from which to conduct work to deliver the level of quality required by the lead-firm. Captive governance is characterised by a high degree of monitoring and control by the lead-firm, with small firms dependent on those larger buyers for trade. The barriers opposing suppliers switching to different buyers are often prohibitively high as small firms can find themselves “locked-in” due to their reliance on a single lead-firm. However, lead-firms are generally choosing to utilise the supplier as they have complementary competencies which are outside of the lead-firms capabilities, hence, lead-firms can assist suppliers in upgrading without any associated conflict of interest. If competent suppliers cannot be found by lead-firms then captive modes of governance will be the more dominant form. Ethical leadership on the part of the lead-firm is necessary to ensure suppliers receive a fair share of the market price (Gereffi, 2011).

Hierarchy – In situations where the capabilities that exist within the supply base are too low to maintain a certain level of quality, and the complexity of products is high with little standardisation, then vertically integrated organisations with development and production activities being performed in-house is the likely form of governance. Intra-firm activities facilitate the transfer of intellectual property and knowledge which may be commercially sensitive.

## The relationship between innovation and upgrading

The concept of upgrading has roots in international trade theory (Porter, 1990) and has been adopted within the GVC paradigm (Gereffi, 1999; Humphrey & Schmitz, 2000) providing new insights into the opportunities for firm’s particularly within developing nations. Humphrey and Schmitz (2002) have proposed a typology to describe the different types of upgrading opportunities that exist for firms participating within value chains which is shown in Table 3.

In contrast to upgrading, innovation can be defined as the implementation of a new or significantly improved product or process, a new marketing method, or a new organisational method (Schumpeter, 1934; OECD, 2005). The similarities between upgrading and innovation types are apparent in Table 3, and the term innovation is often used within descriptions of firm-level upgrading strategies and as a means through which suppliers may improve their positions within a value chain.

**Table 3 – Comparison of upgrading and innovation definitions**

Upgrading types (Humphrey & Schmitz, 2000)		Innovation types (Francis & Bessant, 2005)	
Product upgrading	firms moving into more sophisticated product lines	Product Innovation	innovation to introduce or improve products;
Process upgrading	upgrading by transforming inputs into outputs more efficiently, through technology or production systems	Process Innovation	innovation to introduce or improve processes
Functional upgrading	Firms can acquire new functions in the chain, i.e. moving from production to design or marketing, firms can move forward or backwards in the supply chain	Position Innovation	innovation to define or re-define the positioning of the firm or products
Inter-sectoral upgrading	obtaining a speciality and utilising it in another industry	Paradigm Innovation	innovation to define or re-define the dominant <i>paradigm</i> of the firm

However, it is questioned whether the upgrading concept deals with innovation at the firm level in terms of technological capability development (Morrison et al, 2008). Additionally, it is suggested that the concept of upgrading “appears too fuzzy and suffers from some logical contradictions: is it a synonym for innovation, or is it rather the outcome of an innovation process” (Piertobelli, 2007, p.4). Although the concepts of upgrading and innovation frequently overlap the value chain literature has a tendency to centre on the opportunities which firms have to “move up the ladder” to higher value activities, whilst rarely focusing on the innovative activities that are occurring at the firm-level (Piertobelli, 2007), and more specifically how different governance types impact on the levels of innovative capability within the chain.

Subramaniam & Youndt (2005) define and make the distinction between radical incremental innovative capability and incremental innovative capability. The former being “major transformation of existing products, services or technologies” and the latter being “the capability to generate innovation that refines and reinforce existing products and services”

The modelling of value chain governance introduced earlier (Gereffi et al., 2005) provides a knowledge-based approach to understanding the mode of governance between lead-firms and their suppliers within the value chain. The theoretical framework was originally based on elements of firm-level learning to identify three variables that play a large role in determining how global value chains are governed. It is proposed that different types of governance between lead-firm and supplier will have an impact on the innovative capabilities of firms within the value chain. More specifically, innovative capability within the supplier or lead-firm in relation to different modes of governance.

Firm level innovative activity has been shown to have a positive correlation with the utilisation of knowledge generated internally within firms, for example through R&D or capturing internal knowledge through practices and routines (OECD, 2005). Innovation has also been found to be promoted through the acquisition of new knowledge acquired through linkages to external channels such as customers, suppliers, competitors, and other external organisations.

In their earlier work Humphrey & Schmitz (2000) provide a hypothetical description of how various modes of governance may impact upon the upgrading opportunities for firms within a value chain in developing countries:

- Within chains where one firm exercises a high degree of control over other firms and the knowledge required to deliver a product is codified, specified and enforced (e.g. Captive Governance) the opportunities for process and product upgrading are high but hinders functional upgrading.
- Within chains characterised by market-based relationships (Market Governance), product and process upgrading tend to be slower as they are not fostered by larger firms, but the opportunities for functional upgrading may be higher.
- Network style chains (Relational Governance) offer ideal upgrading conditions.

Although providing a useful insight into how firms may improve their position within a chain these descriptors did not directly address the impact on firm-level innovative capability within different value chain relationships. The Gereffi et al. (2005) approach recognises that the complexity of knowledge, the codifiability of knowledge, and the existence of knowledge within a value chain gives rise to various forms of governance. Yet, it appears that there is a lack of empirical work quantifying the relative impact that the 5 different types of governance;

market, modular, relational, captive and hierarchical, have on the level of firm innovative capabilities within the value chain.

#### A relationship between governance and innovative capability

If we take the input variables to the governance framework and understand their relationship with innovative capability it is possible to postulate how these may foster or inhibit the innovative capabilities of firms within the value chain:

- i) The capabilities of actual and potential suppliers – Grant (1996) proposes that if the strategically most important resource of the firm is knowledge, then the capability of a firm is the sum of its knowledge. Adopting a knowledge-based view of the firm it is argued that organisations cannot rely entirely on internal sourcing of knowledge, but also require knowledge from beyond their boundaries (Rigby & Zook, 2002). In his seminal work, von Hippel (1988) showed the key role that networks and alliances of suppliers, manufacturers, competitors and other participants play in the innovative process. Despite the risks associated with leakage of information, loss of control of knowledge ownership and potential of conflicts of interest, collaborating with capable external suppliers is recognised as providing sources of new knowledge, both tacit and explicit, can reduce R&D costs and risk, and promote shared learning. More generally, Dewar & Dutton (1986) have suggested that the greater the technical knowledge resources available, the more easily new technical ideas can be understood and procedures for their development be attained. Learning results in technological capabilities, knowledge and skills needed for firms to “choose, install, operate, maintain, adapt, improve and develop technologies” and knowledge exchange with customers and suppliers is thought to be particularly beneficial (Romijn & Allbaladejo, 2002).

Proposition 1. It is proposed that capabilities in the supply base are related to firm-level innovative capability (1a). It is expected that high-level capabilities in the supply base lead to higher innovative capabilities within firms, whereas low-level capabilities in the supply base are associated with lower innovative capability (1b).

- ii) The extent to which information and knowledge can be codified and, therefore, transmitted efficiently and without transaction-specific investment between the parties to the transaction - Types of knowledge, knowledge transfer and its impact

on innovation have been given significant attention within the literature and tacit knowledge has been identified as a key element of the innovative process (Dosi, 1988, Pavitt 1987). Polanyi (1966) originally made the distinction between explicit and tacit forms of knowledge. Explicit, or codified knowledge, involves know-how which can be transmitted in a formalised language and for which the user does not require direct experience of the knowledge being transferred. Conversely, tacit knowledge cannot generally be codified, it is difficult to articulate, formalise and communicate, and requires the direct experience of the end user. The capability approach to the firm argues that much of the detailed knowledge within a firm is tacit in nature and it has been proposed that new product development is favoured by co-operation among firms with partially overlapping tacit technical knowledge (Lawson & Lorenz, 1999). Nonaka and Takeuchi (1995) present the idea that product innovation can be understood as a cycle between exchanges of tacit and explicit knowledge, the first stage of which is the sharing of tacit knowledge between participants in a knowledge exchange group. Cavusgil, Calantone & Zhao (2003) suggest that firms with high innovative capabilities employ a learning-by-doing approach which inherently has a large tacit component to R&D activities and ultimately makes it difficult for other firms to imitate or purchase that knowledge from the market. Empirical research generally supports the theoretical suggestion that tacit knowledge transfer promotes innovation capability (Cavusgil et al., 2003), although it is also recognised that both codifiable and non-codifiable knowledge contributes to the innovative processes. This would suggest that the codification of knowledge would not have a positive relationship with firm innovation capability. From an alternative perspective, standards can often be a barrier to innovative activities. Farrell & Saloner (1985) propose that the codification of knowledge may in fact have a dampening effect on innovative activities within an industry: “intuitively, it is plausible that an industry, once firmly bound together by the benefits of compatibility or standardisation, will be inclined to move extremely reluctantly to a new and better standard because of the coordination problems involved” Farrell & Saloner (1985). The term “excess inertia” is used to describe the reluctance to change from a known technology to a newer technology and can occur as the result of standardisation practices. Assink (2006) concurs that “standards, such as dominant design, are often barriers to innovation because many companies prefer stable, efficient environment to fulfil market requirements, the

status quo is reinforced”. Based on the above argument, the following proposition is made:

Proposition 2. It is proposed that the codifiability of knowledge is linked to firm-level innovation capability (2a). It is expected that when knowledge can be codified (i.e. high codifiability of knowledge), this leads to lower innovative capability, whereas low codifiability of knowledge is associated with higher levels of innovative capability (2b).

- iii) The complexity of information and knowledge transfer required to sustain a particular transaction, particularly with respect to product and process specifications - In general, complexity models suggest that greater complexity leads to a greater variety and diversity of information within the environment and therefore new opportunities for innovation (Damanpour, 1996). McKenna (1999) proposes that “the problem with greater complexity...is that it becomes more difficult to get things done” and as a response to increases in complexity firm’s must learn to deal with that complexity. Research on the exploration/exploitation trade off (March, 1991) focuses on the importance of the diversity of knowledge for learning. The diversity of knowledge sustains an organisations capacity for exploration and avoiding “competency traps” associated with concentrating on the exploitation of existing knowledge. In order to capitalise on increasing diversity of knowledge firm’s need to develop innovative capabilities. Teece (1994) proposes that information sharing plays a key role in the organisation of economic systems and that “the frequency with which transfer will be required, and the complexity of information exchanged, are likely to increase with the rate and complexity of technological innovation”. To deal with the pressure of complexity and knowledge transfer associated with product innovation organisations need to develop the capabilities, through appropriate learning behaviours, to meet the requirements of those increasingly complex innovation (Chapman & Hyland, 2004). Johnson (2002) suggests that “know-how”, is typically developed internally within an organisation and as the complexity of the knowledge base increases, co-operation between firms is generally seen to increase to capitalise on this knowledge by combining elements of know-how”. Based on the above observations, the following proposition is made:

Proposition 3. It is proposed that complexity of information and knowledge-transfer is related to firm innovative capability (3a). It is specified that higher levels of complexity are associated with higher levels of innovative capability, whereas when complexity of innovation and knowledge-transfer is low this leads to lower levels of innovative capability (3b).

Table 4 shows the construction of GVC governance types based on the three variables of complexity of transactions, ability to codify transactions and the capabilities within the supply base, as set out by Gereffi et al. (2005). The table has been extended by including a column for each respective variable that represents the positive (+) or negative (-) proposed effect on innovative capability. As outlined above, it is proposed that each of the three governance characteristics (i.e. (1) Complexity of Transactions, (2) Ability to Codify Transactions, (2) Capabilities in the Supply Base), is linked with firm-level innovative capability. Combining the expected effect of these three governance characteristics for the respective governance types, suggests that these five types of governance differ in their potential for fostering firm-level innovative capability.

Using the example of 'relational' governance types, and considering each of the governance characteristics separately we can postulate the net effect that these characteristics will have on innovative capability as follows: Where the complexity of transactions is high, a positive relationship with innovative capability is expected. Where the ability to codify transactions is low we expect a positive relationship with innovative capability. Where the capabilities within the supply base is high we also expect a positive relationship with innovative capability. The net result of these combined relationships leads to a high potential for innovative capability within relational governance types.

As shown in the table 1, it is proposed that the net effect of the variables impact on innovative capability will result in 'relational' governance types being associated with highest levels of capability, 'modular' and 'hierarchy' governance being associated with moderate levels of innovative capability and 'captive' and "market" governance types are associated with lower levels of innovative capability.

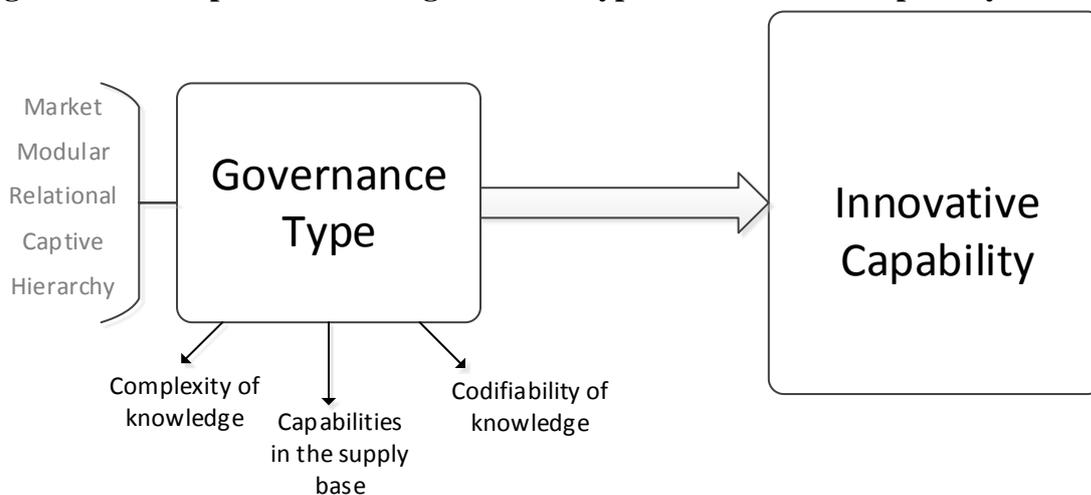
**Table 4 - The key determinants of global value chain governance with the expected effect on innovative capability**

Governance Type	Complexity of Transactions	Effect on Innovative Capability	Ability to codify transactions	Effect on Innovative Capability	Capabilities in the supply base	Effect on Innovative Capability
Market	Low	(-)	High	(-)	High	(+)
Modular	High	(+)	High	(-)	High	(+)
Relational	High	(+)	Low	(+)	High	(+)
Captive	High	(+)	High	(-)	Low	(-)
Hierarchy	High	(+)	Low	(+)	Low	(-)

### Proposed Framework

The present paper aimed to conceptualise a framework on the link between governance type and innovative capability. Gereffi et al.’s (2005) framework states that governance types are characterised through three variables which are: i) the complexity of transactions, ii) the ability to codify transactions and iii) the capabilities that exist within the supply base. The present paper advances this model by proposing that each of these governance characteristics in turn can be linked with innovative capability. Subsequently, it was postulated that the different governance types, which consist of different levels of complexity, codifiability and capabilities, differ in their potential for innovative capability. These propositions can be combined into a framework that conceptualises a relationship between governance type and innovative capability. The model is displayed in figure 1 and will be empirically tested as part of a current doctoral research project.

**Figure 1 – Conceptual model on governance type and innovative capability**



## References

- Assink, M. (2006). Inhibitors of disruptive innovation capability: a conceptual model. *European Journal of Innovation Management*, 9(2), 215-233.
- Bair, J., & Gereffi, G. (2003). Upgrading, uneven development, and jobs in the North American apparel industry. *Global Networks*, 3(2), 143-169.
- Baptista, R. (1998). Clusters, innovation and growth: a survey of the literature. *The dynamics of industrial clusters: international comparisons in computing and biotechnology*, 13-51.
- Cavusgil, S. T., Calantone, R. J., & Zhao, Y. (2003). Tacit knowledge transfer and firm innovation capability. *Journal of business & industrial marketing*, 18(1), 6-21.
- Chapman, R., & Hyland, P. (2004). Complexity and learning behaviors in product innovation. *Technovation*, 24(7), 553-561.
- Damanpour, F. (1996). Organizational Complexity and Innovation: Developing and Testing Multiple Contingency Models. *Management science*, 42(5), 693-716. doi: 10.2307/2634460
- Dewar, R. D., & Dutton, J. E. (1986). The adoption of radical and incremental innovations: an empirical analysis. *Management science*, 32(11), 1422-1433.
- Dosi, G. (1988). *Technical change and economic theory*. London: Pinter, 1990.
- Farrell, J., & Saloner, G. (1985). Standardization, Compatibility, and Innovation. *The RAND Journal of Economics*, 16(1), 70-83. doi: 10.2307/2555589
- Francis, D., & Bessant, J. (2005). Targeting innovation and implications for capability development. *Technovation*, 25(3), 171-183. doi: <http://dx.doi.org/10.1016/j.technovation.2004.03.004>
- Gereffi, G. (1995). Global production systems and third world development. In B. Stallings (Ed.), *Global change, regional response: The new international context of development*: Cambridge University Press.
- Gereffi, G. (1999). International trade and industrial upgrading in the apparel commodity chain. *Journal of international economics*, 48(1), 37-70.
- Gereffi, G. (2011). Global value chains and international competition. *Antitrust Bull.*, 56, 37.
- Gereffi, G., Humphrey, J., & Sturgeon, T. (2005). The governance of global value chains. *Review of international political economy*, 12(1), 78-104.
- Gereffi, G., & Korzeniewicz, M. (1994). *Commodity chains and global capitalism*: Praeger Publishers.
- Grant, R. (1996). Toward a Knowledge-Based Theory of the Firm. *Strategic management journal*, 17, 109-122. doi: citeulike-article-id:2295210

- Hippel, E. v. (1988). *The sources of innovation*. New York: Oxford University Press.
- Hopkins, T. K., & Wallerstein, I. (1977). Patterns of development of the modern world-system. *Review (Fernand Braudel Center)*, 111-145.
- Hopkins, T. K., & Wallerstein, I. (1986). Commodity Chains in the World-Economy Prior to 1800. *Review (Fernand Braudel Center)*, 10(1), 157-170. doi: 10.2307/40241052
- Humphrey, J. (2001). Governance in global value chains. *IDS bulletin*, 32(3), 19-29.
- Humphrey, J., & Schmitz, H. (2000). *Governance and upgrading: linking industrial cluster and global value chain research (Vol. 120)*: Institute of Development Studies Brighton.
- Johnson, B., Lorenz, E., & Lundvall, B. Å. (2002). Why all this fuss about codified and tacit knowledge? *Industrial and Corporate Change*, 11(2), 245-262.
- Krugman, P. R. (1991). *Geography and trade*: MIT press.
- Lawson, C., & Lorenz, E. (1999). Collective Learning, Tacit Knowledge and Regional Innovative Capacity. *Regional Studies*, 33(4), 305-317. doi: 10.1080/713693555
- March, J. G. (1991). Exploration and Exploitation in Organizational Learning. *Organization Science*, 2(1), 71-87.
- Maskell, P. (2001). Towards a knowledge-based theory of the geographical cluster. *Industrial and Corporate Change*, 10(4), 921-943.
- McKenna, S. (1999). Learning through complexity. *Management Learning*, 30(3), 301-320.
- Morrison, A., Pietrobelli, C., & Rabellotti, R. (2008). Global Value Chains and Technological Capabilities: A Framework to Study Learning and Innovation in Developing Countries. *Oxford Development Studies*, 36(1), 39-58. doi: 10.1080/13600810701848144
- Nonaka, I., & Takeuchi, H. (1995). *The knowledge-creating company : how Japanese companies create the dynamics of innovation*. New York ; Oxford: Oxford University Press.
- Oecd. (2005). *Oslo manual guidelines for collecting and interpreting innovation data*.
- Owen-Smith, J., & Powell, W. W. (2004). Knowledge networks as channels and conduits: The effects of spillovers in the Boston biotechnology community. *Organization science*, 15(1), 5-21.
- Pavitt, K. (1984). Sectoral patterns of technical change: Towards a taxonomy and a theory. *Research Policy*, 13(6), 343-373. doi: 10.1016/0048-7333(84)90018-0
- Penrose, E. (1959). *The growth of the firm*. White Plains, New York: ME Sharpe.
- Pietrobelli, C. (2007). Global value chains and clusters in LDCs: What prospects for upgrading and technological capabilities. *Background Paper(1)*.
- Pinch, S., & Henry, N. (1999). Paul Krugman's geographical economics, industrial clustering and the British motor sport industry. *Regional Studies*, 33(9), 815-827.

- Polanyi, M. (1966). The Logic of Tacit Inference. *Philosophy*, 41(155), 1-18. doi: 10.2307/3749034
- Porter, K., Whittington, K. B., & Powell, W. W. (2005). The institutional embeddedness of high-tech regions: relational foundations of the Boston biotechnology community. *Clusters, networks, and innovation*, 261, 296.
- Porter, M. E. (1990). *The competitive advantage of nations*: Free Press.
- Rigby, D., & Zook, C. (2002). Open-market innovation. *Harvard business review*, 80(10), 80-93.
- Romijn, H., & Albaladejo, M. (2002). Determinants of innovation capability in small electronics and software firms in southeast England. *Research Policy*, 31(7), 1053-1067. doi: [http://dx.doi.org/10.1016/S0048-7333\(01\)00176-7](http://dx.doi.org/10.1016/S0048-7333(01)00176-7)
- Saxenian, A. (1996). *Regional advantage: Culture and competition in Silicon Valley and Route 128*: Harvard University Press.
- Schmitz, H. (2004). *Local enterprises in the global economy: Issues of governance and upgrading*: Edward Elgar Publishing.
- Schumpeter, J. A. (1934). *The theory of economic development : an inquiry into profits, capital, credit, interest, and the business cycle*. Cambridge, Mass.: Harvard U.P.
- Sturgeon, T. J. (2002). Modular production networks: a new American model of industrial organization. *Industrial and Corporate Change*, 11(3), 451-496.
- Sturgeon, T. J. (2009). From Commodity Chains to Value Chains. In J. Bair (Ed.), *Frontiers of commodity chain research*.
- Subramaniam, M., & Youndt, M. A. (2005). The Influence of Intellectual Capital on the Types of Innovative Capabilities. *The Academy of Management Journal*, 48(3), 450-463. doi: 10.2307/20159670
- Teece, D. J. (1994). INFORMATION SHARING, INNOVATION, AND ANTITRUST. *Antitrust Law Journal*, 62(2), 465-481. doi: 10.2307/40844123
- Tokatli, N. (2004). Upgrading in the Global Clothing Industry: Mavi Jeans and the Transformation of a Turkish Firm from Full-Package to Brand-Name Manufacturing and Retailing. *Economic Geography*, 80(3), 221-240.
- Williamson, O. E. (1975). *Markets and hierarchies*. New York, 26-30.
- Zeller, C. (2001). Clustering biotech: A recipe for success? Spatial patterns of growth of biotechnology in Munich, Rhineland and Hamburg. *Small Business Economics*, 17(1-2), 123-141.