

2. Literature Review

This chapter will review two sets of literature; the GVC literature and the business model (innovation) literature. The main arguments are discussed in light of the research question and used as a theoretical framework on which the empirical part is build. By reviewing the recent literature, this chapter situates this research in the context of those two streams of literature, in the hope of finding and generating synergies.

Firstly, the GVC literature is reviewed in order to present the existing typologies of governance and upgrading. Furthermore, the links between those typologies of governance and the empirical data is examined. Secondly, recent findings on the periphery of the GVC literature, dealing with innovative systems as technological capabilities, are reviewed, as they provide the link to the business model literature. Key contributions from the literature on GVC theory, functional upgrading and business model innovation are then discussed with reference to this study. Then Osterwalder's (2010) business model canvas as a concept of how to generate and discuss a business model is introduced, for it will serve as a tentative model for this research.

2.1 Global Value Chain Literature

The concept of a (global) value chain was developed by international business scholars, focussing on the buyer or lead firm and on the national level. One of the earliest descriptions of such a value added chain is: "The process by which technology is combined with material and labour inputs, and then processed inputs are assembled, marketed, and distributed. A single firm may consist of only one link in this process, or it may be extensively vertically integrated" (Kogut 1985; p.15). He builds on the idea of Porter (1985), who argues that value creation is performed at different, but connected, stages (the value chain). The critical issue dealt with in is which activities are kept within the firm and which can be outsourced to other firms (Gereffi et al. 2005). For Kaplinsky (2000), a value chain describes all those activities that deliver a product or service from development up to disposal after use. The value chain concept takes the focus from manufacturing as merely an activity performed by a single firm to all activities performed by several actors in order to supply a good or service to the market (Kaplinsky, 2000).

However, different sections in the value chain offer different opportunities to add value. Hence, Stan Shih, the founder of Acer, used the model of a curve to illustrate where value is added. The horizontal axis consists of component production (upstream), assembly (middle) and distribution (downstream). The vertical axis shows the value added (high, low and high) for the various stages. The curve bends like a smile, and was therefore labeled the "Smiling Curve" (Shih, 2005). This idea was further developed by Mudambi (2008), who argued that more value is added upstream through research and development (R&D) and design as well as

downstream by way of effective marketing, branding and (sales) services. Lower value adding activities are located in the middle part of the curve. Mudambi (2008) takes Shih’s model one step further. Whereas Shih places production or manufacturing in the middle (low value adding) part of the value chain, Mudambi adds standardized services as a low value added activity, which helps expand the model beyond its roots in the PC industry.

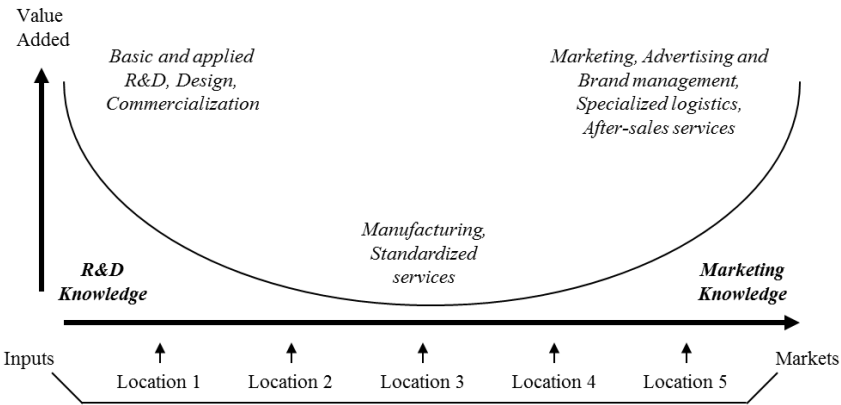


Figure 1: The smile curve, Source: Remodeling of Mudambi 2008

Mudambi (2008) develops the model further to illustrate the incentives of firms located in emerging markets to move up in the value chain. He concludes that “firms controlling activities in the middle of the value chain have strong incentives to acquire the resources and competencies that will enable them to control higher value added activities” (Mudambi, 2008; p. 708), therefore moving up the value chain or “catch-up”. This happens as they shift their activities from tangibles and manufacturing to intangibles.

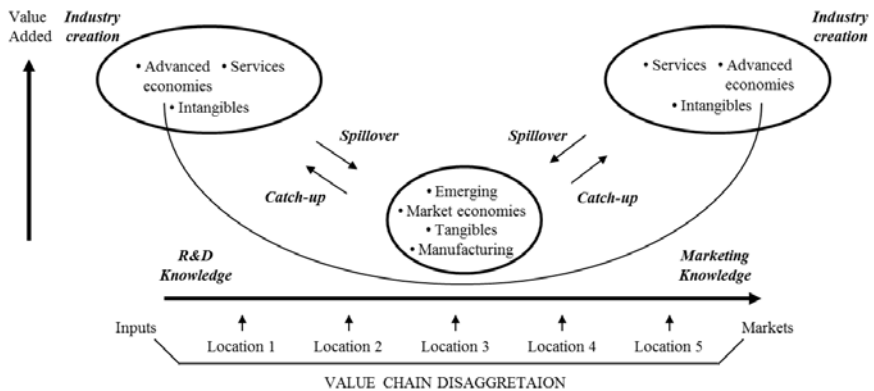


Figure 2: Dynamics within the smile curve, Source: Remodeling of Mudambi 2008

The smile curve is not static. At both ends “industry creation” takes place, in the form of Schumpeters model of creative destruction (Schumpeter, 1934) or in other words by way of innovation and R&D. Nevertheless, the model itself has its roots in the PC industry and is not applicable to all industries (the production of BMW cars is manufacturing, even though it is high in value added). Shih (2005) also acknowledges this problem and concludes that the shape of the curve and the location where the highest value is added changes over time and depends on the type of industry.

The global value chain (GVC) approach has been introduced by Gereffi (1994), who coined the term “global commodity chains”. He expanded the value chain concept to include a global perspective. The GVC concept quickly attracted attention and was developed further by several scholars. More recently, Gereffi (1999) and others (Gereffi and Kaplinsky 2001; Kaplinsky, 2001; Kaplinsky and Morris, 2001; Humphrey and Schmitz 2002a; Rabellotti, 2005) have built a conceptual framework, which combines the value (added) chain with the globalization of industries, while focusing on developing countries. Rabellotti (2008) emphasizes the importance of global buyers and producers as major drivers in the formation of the globally dispersed and fragmented value chain. For Kaplinsky and Morris (2001; p. 4), a value chain is “the full range of activities which are required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers, and final disposal after use.”

The concept of governance is central for the GVC approach. The nature of the relationships between all participants in the value chain and the implications for development (of firms or nations) is the focus of GVC research (Humphrey and Schmitz 2002b). Some degree of governance is required at each step of the chain; decisions have to be made regarding what

product or service is to be produced in which manner, defining also time, quantity and price (Rabellotti, 2008). Gereffi's early research (1999) highlights two types of governance: "Buyer-driven commodity chains" in which the coordination (governance) is conducted by global buyers, and "producer-driven commodity chains" in which producers are the decisive actors. Other scholars such as Humphrey and Schmitz (2000) have distinguished between three types of governance: a) network (firm cooperation), b) quasi-hierarchy (top down, but legally independent), c) hierarchy (direct ownership). Taken from there, Gereffi, Humphrey and Sturgeon (Gereffi et al. 2005), developed an extended model of governance in GVCs:

1. Markets: Market linkages do not have to be completely transitory, as is typical of spot markets; instead, they can persist over time, with repeating transactions (low switching cost).
2. Modular value chains: Typically, suppliers in modular value chains tailor products to a customer's specifications, sometimes in more detail (up to turn key products/services).
3. Relational value chains: In these networks, we see complex interactions between buyers and sellers, often creating mutual dependences and high levels of asset specificity (managed through reputation, relationships or family ties).
4. Captive value chains: In these networks, small suppliers are transactionally dependent on much larger buyers (high switching cost for suppliers, high degree of monitoring/control by the lead firms).
5. Hierarchy: This governance form is characterized by vertical integration (top down managerial control)

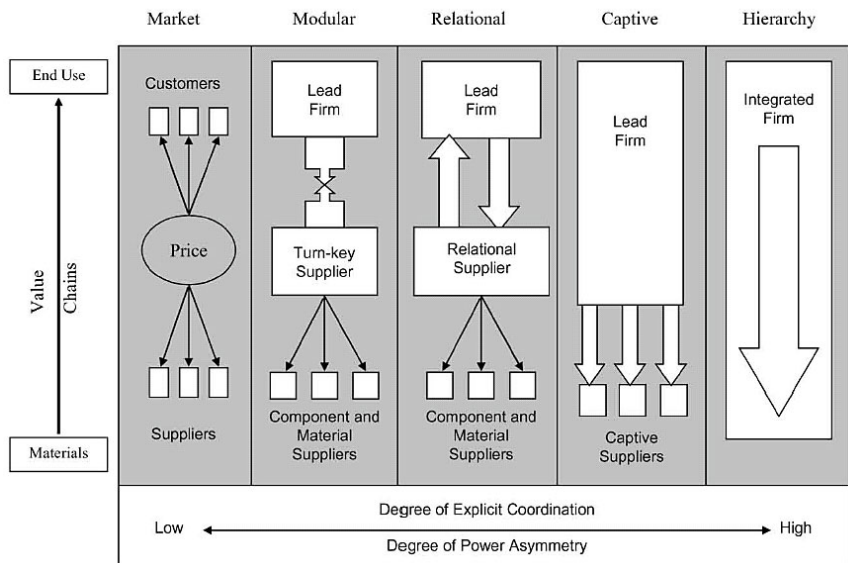


Figure 3: Governance structures in global value chains, Source: Gereffi et al. 2005

In the real world one usually finds a mixture of these different forms of governance. This typology offers a more dynamic view on governance structures. The form of governance can change as an industry matures; even within an industry, it can vary from one stage of the chain to another (Gereffi, 2011). Gereffi's et al. (2005) model of GVC governance is successful in demonstrating the dynamics of the different governance structures; notably concurring that they should not be viewed as static. In addition, Gereffi et al. (2005) discuss conditions under which different governance structures evolve and change over time. According to Gereffi et al. (2005), three factors influence the choice of governance by the lead firm: the complexity of information and knowledge required for transactions, the extent to which it is possible to codify the information, and the capabilities of potential suppliers in the value chain. Therefore, a supplier in a captive value chain could improve its capability and may move up to reach a better position in the value chain.

The choice of governance and its implications for the prospects of upgrading of firms from developing countries are an important part of the GVC research. The idea of upgrading or producing higher quality products or services, by improving efficiency in production or changing the scope to alternative and more skilled types of activities, can be found in studying the competitiveness of nations (Porter, 1990). GVC scholars view this kind of industrial upgrading from a holistic perspective. The focus is not only on one firm, rather a group of firms that are linked together in a value chain. Porter's three aspects – a better product (or

service), a more efficient process and the functional reframing of activities in the value chain – are linked to and influenced by the governance structure in place (Kaplinsky and Morris, 2001). Gualani et al. (2005) follow this approach and view upgrading as innovation, defining it as innovation to increase the value added. Innovation is not only defined as a breakthrough production innovation (product upgrading) such as a completely disruptive and new type of product. It can be a small step or incremental process, which is new to the firm (process upgrading), but may involve a shift to different activities (functional upgrading) (Gualani et al. 2005). Building on former research, Gualani, Pietrobelli and Rabellotti (2005) constructed a comprehensive model delineating four different types of upgrading:

- Process upgrading is the more efficient transformation of inputs into outputs through the reorganization of the production system or the introduction of superior technology.
- Product upgrading is moving into more sophisticated product lines in terms of increased unit values.
- Functional upgrading is acquiring new, superior functions in the chain, such as design or marketing, or abandoning existing low-value added functions in order to focus on higher value added activities.
- Intersectoral upgrading is applying the competences acquired in a particular function to move into a new sector.

The authors summarize that upgrading within a value chain implies improving ones position on the value ladder, which can be linked to Shih's (2005) smile curve or its later adaptation by Mudambi (2008). However, it has to be kept in mind that the aim of upgrading is to move away from activities with low value added and low barriers to entry. This does not entail a departure from production as indicated in the initial smile model. Some companies in developing countries are still focusing on production and capture a high value added by doing so.

Upgrading itself seems to be necessary, as an increasing number of producers is competing on the low end of the global market (Humphrey 2004). In an ever-changing environment, firms based in developing countries have to “change” or “upgrade” in order to maintain or retain their relative advantageous position. Without upgrading, a firm would lose its position in the market and be replaced by a competitor from a country where production costs are lower. This requires local firms to respond actively and timely to development on market and in the value chain. For Cattaneo, Gereffi, and Staritz (2010), the best response is to upgrade either by upgrading products or processes or by upgrading functionally. Kaplinsky (2000), Humphrey (2004) and Gualani et al. (2005) strongly support this view and the latter conclude that functional upgrading is the best way to reduce fragility and vulnerability. Gualani et al. (2005) note that functional upgrading could have the longest lasting effects on competitiveness, as it raises the entry barriers for competitors. Functional upgrading is

sometimes described as a sequence or hierarchy of steps. Humphrey (2004) and Gereffi (1999) consider the transformation of firms based in developing countries, moving from original equipment assembling (OEA) to original equipment-manufacturing (OEM), to own design manufacturer (ODM) and, finally, to own brand manufacturing (OBM). These stages should not, however, be viewed as being strictly consecutive. HTC, is an example of a large telecom operator that appears to have jumped from the OEA to the ODM stage (Hsu et al. 2008), indicating that a firm may grow in any number of ways, though it is important to note that the step, the higher the leap the larger the risks involved. Therefore, upgrading does not necessarily have to be consecutive or incremental.

Another aim of the GVC literature is to identify which type of chain offers local producers better prospect of upgrading (Humphrey and Schmitz, 2004). Based on empirical studies of other scholars, they further conclude that power asymmetries will determine whether or not a lead buyer (value chain leader) supports such an upgrading process. Humphrey and Schmitz (2000) indicate that lead buyers tend to hinder the upgrading process, as it would transform former suppliers into future competitors. Schmitz and Knorringa's empirical study (2000) highlights that a buyer is likely to block upgrading attempts, (in a captive buyer supplier relationship) because the lead firm will seek to protect its own core competences, such as its marketing and design capabilities. Bazan and Navas-Aleman's (2004) studies underpin this behavioral trend by showing that buyers have a tendency to defend their knowledge on higher value adding activities (design, branding, marketing...). Giuliani et al. (2005) confirmed this observation and state that there are incentives for buyers to not disclose their core competencies, which are high in adding value and keep their suppliers dependent in a more captive value chain. Quasi-hierarchical and captive chains seem to provide good upgrading opportunities, both in terms of the process as well as the product, but hamper functional upgrading (Humphrey and Schmitz, 2000). A lead firm has an interest in helping its supplier to produce cheaper and better products for them. Other scholars are emphasizing the interdependence between governance and upgrading opportunities (Gereffi, 1999; Schmitz, 2006). The Industrial Development Report (UNIDO, 2002) states that participation in a GVC has an intrinsic value, as it can foster upgrades to new technological standards and processes. Nevertheless, the focus of a lead firm in quasi-hierarchical chains and captive chains rests mainly on product and process upgrading at the local level. If a company joins a GVC, supplier buyer relationship may foster a learning process, which in turn might promote upgrading (Humphrey, 2004). Firms will not only do this for endogenous reasons (profit), but also for exogenous reasons (pressure from buyers) in order to stay in the value chain. Most of the exogenous reasons to upgrade focus on process and product upgrading, as a key buyer or value chain leader is not always interested in upgrading its supplier due to altruistic reasons. Upgrading pressure relates to quality (control) and certifications. In captive value chains, functional upgrading can be hampered by the buying power of the chain leader and the substantial investment for the local firm involved in functional upgrading (Schmitz, 2006). If

a local firm has only one major buyer and limited resources, is it difficult to upgrade functionally, because the sole source of income would be lost. He further concludes that in market based chains, firms tend to be neither supported nor hampered in their upgrading attempts. Morrison et al. (2008) concur that upgrading in a GVC depends on the relationships (governance and power asymmetries) between the various actors within the chain.

The finding from Schmitz (2006) opens up a new and interesting field of research on the approach to GVC. Why are some firms in a market-based value chains able to upgrade and others are not? Is there an explanation for inter-firm differences in the same value chain? Morrison, Pietrobelli and Rabellotti (2008) as Pietrobelli and Rabellotti (2011) try to add a new perspective on upgrading within the GVC literature with their terms “technological capabilities” and “innovation systems”. They hope to shift the focus to the level of the firm as a unit of analysis (Morrison et al. 2008) and look at functional upgrading through the lens of innovation. Coe et al. (2008; p. 277) strongly support this approach, as the local firm is “the central actor in all analyses”, yet continues to be treated as a “black box”. Furthermore, he criticises the simplistic dichotomy of lead firms and suppliers and the single focus of the research on those lead firms. By viewing the GVC literature from a critical perspective and with the local firm as the unit of analysis, a new approach to learning, innovation and upgrading in less developed countries can be developed.

For Morrison et al. (2008) learning and innovation are the two cardinal cornerstone for growth and development of firms and nations. In contrast to the normal research agenda of the GVC literature (the governance of value chains), the authors concentrate on firm specific characteristics and attitudes. The GVC approach has demonstrated, how global linkages can play an important role in learning, innovation and upgrading. On the other hand, Morrison et al. (2008) criticise the “fuzziness” of the concept of upgrading in the GVC literature and that it is only considered as something exogenous, that happens at the firm level as a result of external pressures (value chain governance). As Coe et al. (2008), they attempt to establish an increasingly firm level-based view, built around the concept of learning, innovation and upgrading and introduced the term “technical capabilities”, something that firms possess and that differ from firm to firm. In their categorisation of technical capabilities they follow Lall (1992), who defines technical capabilities as investment, production and linkage capabilities. Upgrading is seen as something, which is the result of purposeful activities in the local firm rather than being exogenous or automatic (Morrison et al. 2008; Coe et al. 2008). In terms of GVC governance, upgrading can be seen as a two way process, the upgrading attempts of the local firm are likely to influence the lead firm. Therefore, it can take place not only in a top down but also in a bottom up process. In contrast to the governance focused GVC literature (Gereffi and Kaplinsky with a macro and Humphrey and Schmitz with micro/cluster perspective), the focal point is the firm as a unit of analysis, which allows to formulate

explanations as to why nations and firms, which are embedded in similar GVCs develop and upgrade differently (Morrison et al. 2008; Coe et al. 2008).

This allows a new perspective on upgrading, as global buyers are not always fond of upgrading of local firms under their governance (Schmitz, 2004). From the firm level one can consider upgrading as an innovative and holistic progress, which is endogenous and more complex rather than being the result of a certain governance structure. The firm level analysis, learning and innovation in SMEs is seen as being as important, but are hence not further researched (Morrison et al. 2008; Coe et al. 2008).

Empirically, the majority of the GVC literature has not yet considered the local firm as a unit of analyses. Even though, empirical researchers such as Pietrobelli (1997; p. 4) have noted that “technological change is the result of purposeful, well-directed effort conducted inside the firm”. Schmitz (2004; p. 356) also underlines that upgrading “requires continuous investment by the local firms themselves in people, organisation and equipment”. This research gap in there literature is pointed out by Coe et al. (2008) and others (Tokatli and Kizilgun, 2004; Morrison et al. 2008)

The GVC research has not yet fully clarified in which way GVCs foster innovation and learning in developing nations and firms (Morrison et al 2008). The idea that joining a GVC is a direct automatic route to upgrading is not correct either. This view is slightly simplistic, as the mere participation in a GVC does not change a firm, rather energy and efforts have to be invested at the local firm level. Instead, research has focused on how governance structures influence upgrades. The firm as a unit of analysis has been neglected so far (Morrison et al. 2008; Coe et al. 2008). Nevertheless, it can enrich the GVC approach with the perspective of the local firm, such that it is not only considered from the perspective of the global buyer. By looking at the local firm, new insights can help to foster progress in developing countries (Coe et al. 2008). To take the firm as a unit of analysis is further supported by Pietrobelli and Rabellotti (2011). Although they mostly discuss the type of governance in a GVC and how it influences learning and innovation at the firm level, they admit that “it is the different capabilities of firms to make the required investments in design, product development, and marketing that may explain why some firms succeed and others do not” (Pietrobelli and Rabellotti 2011; p. 1263). Furthermore, the authors see the need for further research on the impact of value chains on local firms (as Coe et al. (2008), something also emphasized by Morrison et al. (2008) who postulate that “firm-level surveys and questionnaires should be employed to explore the impact of GVCs on local firms’ competitiveness and upgrading”.

The existing GVC literature does indeed provide a good insight into upgrading from the perspective of value chain governance and the role of a lead firm. However, the level of the firm has not been considered at any length. While being an attempt, the concept of “technological capabilities” by Morrison, Pietrobelli and Rabellotti (2008) and the later

concept of “innovative systems” by Pietrobelli and Rabellotti (2011) do not appear to suitable, as they fail to offer a conclusive answer as to how upgrading takes place in a local firm. Furthermore, only the concept of learning and innovation are used to describe (functional) upgrading with does not help to reduce the “fuzziness” (Morrison et al. 2008) of the concept of upgrading.

As described above, upgrading is widely defined “as innovating to increase value” (Gualani et al. 2005). The belief that innovation alone, or in Morrisons et al. (2008) words “technological capabilities” are the distinguishing factors for a firm to upgrade and prosper is indeed questionable. In a study “Who Profits from Innovation in Global Value Chains?” Dedrick et al. (2008) conclude that innovation and upgrading alone will not help, if the firm is unable to capture the value added.

Hence, it seems more suitable to introduce a new concept to capture the vague concept of (functional) upgrading and innovation. Gereffi (2012), also notes that future research has to develop a new concept and indicators for upgrading. The Business model literature offers such a concept.

2.2 The Business Model Literature

What actually defines a “business model”? This question is still debated in the business model literature (Morris et al. 2005), even though the newer literature is grittier to find a definition. According to Teece (2010) a business model can be defined as “how the enterprise creates and delivers value to customers, and then converts payments received to profits” (Teece, 2010; p.173). Another narrative was created by Osterwalder et al. (2010; p. 14) who defines it as “the rationale of how an organization creates, delivers, and captures value”. The aim of this research is not to descend into the depths of business model definitions; therefore the latter is used as it is combined with a powerful and easy to use concept which will be presented in this chapter.

The business model perspective offers various merits for the question of firm level upgrading in GVCs. Firstly, it is not limited to upgrading, innovation or technical advancement. Merely, innovation or upgrading does not help to build a sustainable competitive advantage (Teece, 2010). As indicated through the study mentioned above (Dedrick et al. 2008) if innovation or upgrading is not combined with a suitable business model to capture the value the merits will be earned by somebody else. There are numerous stories of innovators, who were not able to construct a suitable business model around their innovation, such as Andreas Pavel (the inventor of the Walkmann) and Sony. Innovation itself is not a guarantee for business success, a new product or services has to be embedded in a suitable business model to capture the value created. Technological innovation does not guarantee business success, new product development efforts should be coupled with a business model by defining “go to market” and

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