

Inclusive Business

**Constructing a model and an indicator for food and
agribusiness multinational enterprises for smallholder inclusion
in high value-adding supply chains**

August Raimy Sjauw-Koen-Fa

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Thesis

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Preface and Acknowledgements

I have undertaken this PhD research project at the end of my career at the Rabobank, a cooperative bank with an international Food & Agribusiness strategy. I was inspired by the responses to, and impact of, my series of studies on the issue: 'How to feed the world in 2050'. The first one, *Sustainability and security of the global food supply chains* (2010), exposed the challenges and perspectives for long term global food security. The overall conclusion was that the current global food system is on an unsustainable track, which poses a threat to long-term global food security. Business will continue to play a leading role in linking food supply and demand, while aiming to tackle the sustainability issues cropping up throughout the global food supply chain at the same time. The second study, *Framework for an Inclusive Food Strategy* (2012), proposed, from a business perspective, to increase the global food supply by investing in the under-used food production potential of small-scale agriculture in developing and emerging economies. This food supply strategy strives to reduce demand for new land and additional clean water and to spur sustainable rural economic development as a counterweight to urbanization and emigration. The present dissertation builds on these previous studies through focusing on how corporations – in particular food and agribusiness multinationals – can build inclusive supply chains in which economic, social, and environmental sustainability dimensions are integrated. The aim is to foster the global debates on sourcing behaviour transformation of corporations (often Food & Agribusiness Multinational Enterprises) for a sustainable and more equitable supply. Therefore, from a business perspective, an inclusive sourcing model with a list of critical success factors and an indicator have been constructed to impact the members located downstream and upstream of supply chains and to act as a trigger for the whole rural community. The applicability and the consistency of the developed inclusive smallholder sourcing model and indicator have been explored in best practise cases.

My personal motivation for doing this PhD is to make my professional experiences in the food and agribusiness world available to science from a sustainable business perspective. However, this dissertation would not have been possible without the support of many people who deserve special attention. At the end of this PhD journey, I have the opportunity to express my gratitude to the persons and the institutions that have made my PhD become a reality.

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CHAPTER 1

General Introduction

1.1 Introduction

In recent years, an increasing number of Food and Agribusiness Multinational Enterprises (F&A MNEs) have recognized the economic potential of including small-scale farmers (smallholders) in developing and emerging economies in a, for them, high value-adding supply chain to secure sustainable commodity supply from a business perspective. A value-adding food supply chain is defined as a network of food-related businesses through which products move from production to consumption, while gaining incremental value in the marketplace (Stevenson and Pirog 2013). For those smallholders to be included in a value adding supply chain of F&A MNEs, implies that they will subject to a structural upgrading of their production and supply practices. Smallholder inclusion is defined as a sourcing strategy in which small-scale farmers in developing and emerging economies produce commodities for high value-adding supply chains, such as cocoa, coffee, bananas, tea, and cotton. Sourcing refers to those decisions determining how components will be supplied for production and which production units will serve which particular markets effectively. Such a supply chain strategy allows focal firms (often F&A MNEs) to exploit their competitive advantage (Trent and Monczka 2002; Kotabe and Murray 2004). Focal companies (often F&A MNEs) are those that usually rule or govern the supply chain, provide the direct contact to the customer, and design the product or service offered (e.g. Seuring and Müller 2008).

The motivation for firms to care about improving smallholders' livelihoods in developing and emerging economies, stems from a debate that started in the 1960s (Guinipero et al. 2013; Lee 2008) on the role of business in society, i.e. the Corporate Social Responsibility CSR of firms (Carroll 1979). F&A MNEs were asked to consider the environmental and social problems throughout the entire supply chain and simultaneously ensure performance on the triple bottom line (economic, social and environmental - Elkington 1998). Inclusion of small scale farmers implies tapping into the underused agricultural production potentials of existing small-scale agriculture in developing and emerging economies which is a conceivable option to produce more food, mainly because currently yields per hectare can be improved substantially (e.g., Lobell et al. 2009; Fischer et al. 2009; Ittersum 2011). This would respond to the ever increasing global demand for food (FAO 2009) in an era characterized by resource constraints imposed by planetary resource boundaries, food insecurity, the negative impact of climate change, and geographical discrepancies between food supply and demand. The inclusion of small scale farmers would also respond to the alleviation of poverty.

The commitment of F&A MNEs to the improvement of smallholders' livelihoods is in line with the increasing call upon corporations to play a more proactive role in solving global issues, such as the ones posed by the UN Sustainable Development Goals 2015-2030, e.g. contributing to inclusive and sustainable economic growth; providing decent work; ensuring sustainable consumption and production patterns; ensuring good health and well-being; and taking action to tackle climate change and its impact. This call applies most notably to F&A MNEs, because of their dominant influence and activities in local, regional, and global food supply chains, both at home and in host countries (e.g., Reardon 2009; Rossignoli and Moruzzo 2014; Sjaauw-Koen-Fa 2010). Once governments have implemented Sustainable Development Goals in their country, they will look to corporations and F&A MNEs in particular to help them achieve these goals. In turn, F&A MNEs will need to assess, monitor, and report on their impact on society, like the impact of their sourcing practices on the standard of living of smallholders.

Combining/integrating business strategy and poverty alleviation is captured in the concept of Bottom/Base of the Pyramid (BOP), being the bottom tier of the world income pyramid (Phahalad and Hart 2002; Karnani 2006). BOP's baseline argument is that selling to the poor (as consumers), or integrating them (as producers) into regional and global supply chains can be simultaneous profitable and eradicate poverty. The BOP development strategy, implying inclusiveness of the poor in business, emerged in the 1990s in parallel with the discourse and practices of privatization, deregulation and liberalization of investment and international trade regimes in agrifood markets (Berdegué et al. 2008). Small-scale agriculture in developing economies that support the livelihoods of the majority of the rural poor was poorly prepared for these changes. Inclusive business was coined by The World Business Council for Sustainable Development in 2005 (Jenkins and Isikawa 2010; WBCSD 2016 p.1.) as seeking to contribute towards poverty alleviation by including lower-income communities within its value chain, while not losing sight of the ultimate goal of business, which is to generate profit. Thus, inclusive business aims to ensure that the poor are in a position to address their basic needs in economically, socially and environmentally sustainable ways. Business and the corporate social responsibility perspectives are meant to be integrated, rather than to be separated. Corporations (often F&A MNEs) can be attracted to inclusive business, because this can offer them new opportunities for innovation, growth and competitiveness, while providing an impact on society (Jenkins and Ishikawa 2010).

To engage smallholders in high value-adding supply chains at a large scale to secure a core supply, F&A MNEs need an inclusive sourcing strategy that ensures simultaneous performance of the entire supply chain that complies with the triple bottom line sustainability goals (Elkington 1998). Sustainable sourcing is defined as managing all aspects of the upstream entities of the supply chain to maximize triple bottom line performance.

A problem in practice is that traditionally F&A MNEs source commodities mainly through a network of selected large traders and exporters (intermediaries) on a transaction basis, making improvement of smallholders' livelihoods challenging. The challenge is that, in their effort to access high value-adding food markets, smallholders in developing and emerging economies face constraints in productivity, product quality, and transactions (e.g., Wiggins et al. 2010; Torero 2011; London et al. 2010; Rivera-Santos and Rufin 2010;). To overcome these constraints, smallholders need to become more advanced. However, they often need resources, capabilities and infrastructures in order to meet effective market demands and to capture value. Research on business for and with the poor of the world, contributes to a holistic view embracing the BOP as an integral part of productive processes and regional and global supply chains (e.g., London et al. 2010; Hahn 2009; Simanis et al. 2008), and upstream and downstream collaboration in partnership within the supply chain and includes non-traditional chain members (e.g., Dahan et al. 2010; Hahn and Gold 2013; Webb et al. 2010; Perez-Aleman and Sandilands 2008; Bitzer 2012). The basic assumption is that F&A MNEs can help improve smallholders agriculture by integrating smallholder livelihood improvement in their sourcing strategy, while retaining long term competitive advantage. Building (investing in) smallholder supply chains to secure a sustainable supply competitively has a long term view cf. Perez-Alleman and Sandiland 2008 (Starbuck case); and Alvarez et al. 2010 (Nestlé Nespresso case). Costs are focusing on long-run reduction, while benefits increase in time (e.g. Pagell et al. 2010). This sourcing strategy differs from widely applied sourcing practices by F&A MNEs as these are being based on short-term transactions reflected in 1) purchasing commodities from the spot market at the lowest costs; 2) purchasing commodities that are labelled sustainable by third-party certification schemes from selected intermediaries; 3) contracting intermediaries/producers organizations for growing commodities by smallholders that comply with their own

voluntary food standards. Another practical problem for the inclusion of farmers in supply chains is related to certification schemes.

Many F&A MNEs¹ have committed themselves to use close to 100 percent (certified) sustainable agricultural commodities in a way that improve smallholders' livelihoods in the years to come in the form of tripartite sustainable certification schemes and applied as collective international standards (e.g., Hatanaka et al. 2012; Henson and Humphrey 2010). As such, focal firms (F&A MNEs) can be held responsible for environmental and social sustainability performance of their suppliers, i.e. the entire supply chains. These standards predominantly focus on food safety and environmental aspects of production to meet consumers demand resulting mainly in the greening of supply chains (e.g., Srivastava 2007; Seuring and Müller 2008; Ahi and Searcy 2013).

Conceptually, the sustainable supply chain management (SCM) research stream has focused predominantly on environmental aspects (e.g., Seuring and Muller 2008; Pagell and Shevchenko 2014). As such, the social dimension has been underdeveloped in sustainable supply chain management approaches and should be, conceptually as well as empirically, addressed in that research stream in relation to the smallholder business model in order to address the social dimension of sustainability management (Seuring and Gold 2013). In addition, Pagell and Shevchenko (2014) concluded that, over the past two decades, sustainability was integrated into SCM mainstream research, but they stressed that current research needs to find answers to the question how to create truly sustainable supply chains that comply with the triple bottom line goals, rather than keep focussing on the greening (environmental sustainability) of supply chains (Srivastava 2007; Carter and Easten 2011). In other words, the social dimension of the triple bottom line concept has been under-exposed in sustainable SCM research (Kleindorfer et al. 2005; Pagell and Shevchenko 2014), and in sustainable business model research strands (Lüdeke-Freund, Gold and Bocken 2016; Schaltegger et al. 2016). Moreover, the interchangeable usage of the terms 'sustainability' and 'environment', both by researchers and practitioners (Carter and Easten 2011), has not contributed to the understanding of sustainability from the triple bottom line meaning. A truly sustainable supply chain is defined by Pagell and Wu (2009 p. 38) as '... a supply chain that would at worst do net harm to natural and social systems while still producing a profit over an extended period of time; a truly sustainable supply chain could, customers willing do business forever'. This implies that corporate sustainability is conceived as a viable business case (economic), a natural case (environmental), and a social case (social dimension) (e.g., Dyllick

¹ For example: Mars: in Sustainable report NCA Journal Vol. 2 summer 2012: pp.oi 18-20 (<http://prod.thestoryofchocolate.com/files/StoryofChocolate/Mars%20Invested%20in%20Cocoa%27s%20Future%20-%20NCA%20Journal%202012.pdf>); Unilever (https://www.unilever.com/Images/unileversustainablelivingplan_tcm13-387356_tcm244-409855_en.pdf); ECOM (a food trading and processing multinational specialized in cocoa, coffee and cotton, based in Switzerland) (file:///F:/ecom_sustainability_overview_2011_small.pdf); see for an overview of the cocoa sector Appendix 3.

and Hockerts 2002; Carroll and Shabana 2010). In the past decades, the CSR-strategy of firms shifted from expressing corporate philanthropy - and obtaining a 'social license to operate' (e.g., Gunningham et al. 2004; Howard-Grenville 2005; Kolk and Tulder 2010) - to a (sustainable) business case approach (Kurucz et al. 2008; Carroll and Shabana 2010; Schaltegger et al. 2012). In that line of reasoning, sustainable sourcing strategies and practices, traditionally studied via Transaction Cost Economics (TCE, Williamson 1979 and 1981), need a new angle of study. One that not just only focuses on the increase of monetary value by lowering supply costs for the focal firm, but an angle which focusses an increased ability to extract rents for performance of upstream chain partners, making sourcing models inclusive (e.g. Pagell et al. 2010). From a practical and theoretical perspective F&A MNEs need other sourcing strategies and models, i.e. to reconceptualise supply chain design into building sustainable supply chains in which economic, social, and environmental sustainability dimensions are integrated. This sustainability supply challenge could be addressed in joint efforts regarding stakeholder integration and the implementation of standards to supplier partners, and the development of appropriated measures (Seuring and Gold 2013).

However, best practices and processes for food and agribusiness enterprises concerning 'how' to source from smallholders in developing and emerging economies in ways that improve their livelihoods are growing, but remain scarce and often experimental (e.g., Jenkins and Ishikawa 2010; Graf et al. 2015). Related research on the scaling up of successful smallholder supply pilots, mentions barriers such as: local conditions might be far less suitable than of the pilot; producers organisations prove to be weak; existing organisations rely on public subsidies; the supply chain has become too complex; or smallholders do not have the cash at hand, i.e. a smallholder simply cannot afford to fail (e.g., Shepherd 2007; Graf et al. 2015). Case studies on 'direct' sourcing from smallholders by F&A MNEs, providing lessons for smallholder inclusion in high value-adding food supply chains are also scarce. More specifically, the conceptual and empirical linking of the smallholder business model and the supply chain management approach is scarce (e.g., Seuring and Gold 2013; Lüdeke-Freund, Gold and Bocken 2016). Surprisingly, the sustainable SCM as well as the sustainable BOP research streams lack a theoretical approach/framework that integrates the contrasting sustainable business model perspectives of the buyers and suppliers into an inclusive sourcing model for a sustainable and more equitable smallholder supply that retains a competitive advantage at the same time

This dissertation contributes to filling the need in the sustainable supply chain management and sustainable business model research by constructing an inclusive sourcing model in which the social dimension of the triple bottom line is integrated. The inclusive sourcing model is designed on the basis of so-called critical success factors (CSFs). CSFs for smallholder inclusion in high value-adding supply chains are defined as the limited number of areas of activities where 'things must go right' to allow this inclusion to flourish (adapted from Rockart, 1979). These are areas/activities in which adequate performance is necessary to ensure that smallholder inclusion will become a viable and sustainable business to secure and stabilize the supply of agricultural commodities, while improving smallholders' livelihoods.

The CSFs will act as the building blocks for the inclusive sourcing model. This inclusive sourcing model in turn can help F&A MNEs in designing and implementing sourcing strategies that impact the smallholder business model, while retaining competitive advantage. The challenge is how to organize smallholder inclusion in a way that complies with the triple bottom line. This will be explained in Section 1.3.

Besides the lack of research (conceptually and empirically) on the inclusion of farmers in supply chains, there is also a lack of research on supply chain inclusion of farmers and its impact on their livelihood. In empirical literature there is a large number of case studies available that assess the environmental and socioeconomic impacts of sustainable certification schemes on farmers' livelihoods. The largest part of these studies deal with coffee and cocoa in developing economies. These impact studies measured the improvement of smallholders' livelihoods using indicators like average farm income, household expenditures, access to knowledge, and access to finance before and after adopting certification schemes. Surprisingly, impact studies didn't assess the profitability of commodity production by applying the breakeven price and calculating the total costs of production in line with farm economics theory (Kay et al. 2016; FAO 2016). The basic consideration of using this indicator is that smallholders should turn a profit calculated in terms of the farm gate price in order to be able to improve their livelihoods.

This dissertation aims: 1) to construct an inclusive sourcing model for F&A MNEs to include smallholders in high value-adding supply chains, and to construct an inclusive sourcing indicator to leverage values impacting the smallholder business model in a way that improves their livelihood and 2) to measure the contribution of the small holder farmers' inclusion to their livelihoods.

1.2 Smallholders suitable for F&A MNEs to include in high value-adding supply chains

To be able to study how Food and Agribusiness Enterprises (F&A MNEs) can tap into small-scale agriculture in developing and emerging economies, a viable business case is needed for these enterprises in order to retain their competitive advantage. A business case is defined as an investment opportunity that promises to yield a suitable return to justify the expenditure over a period of time (Kurucz et al. 2008). Smallholders must be able to adapt to advanced agricultural practices and meet sustainable product quality standards and other requirements. However, not all smallholders operating as potential producers for high value-adding supply chains are suitable as a viable business case from the supply perspective of F&A MNEs (e.g., Vorley et al. 2009; Proctor and Digal 2008). Other opportunities for smallholders are: to produce for the local markets, to become a part-timer or subsistence farmer; or to urbanize.

Several criteria can be used to subdivide smallholders. The most obvious way to differentiate among small farms is by the size of the farm land in hectares or by the amount of livestock. Of the 570 million farmers of the world, 94 percent hold less than 5 hectares of land, most of them living in Asia and Africa (Lowder et al. 2016). The great majority of smallholdings are managed and operated by families and rely predominantly on family labour (a farm household consists of 5 persons, on average). Only 6 percent of the farms are larger than 5 hectares.

Farm size is highly region-specific however, and varies per crop and agro-ecological zone. Farm sizes also differ geographically and per crop. For example, an average cocoa smallholder farm in Indonesia is 1 hectare while in Ghana it is 2 hectares. Coffee smallholders in Nicaragua farm 3.5 hectares on average, compared to 5 hectares in Colombia. Cotton farmers in India farm 1.4 hectares on average, while paddy farmers in Java have to make do with an average of 0.3 hectares. Several factors that influence a farm's output and economic viability, such as agronomical conditions, applied farming systems, access to farm input, and availability of affordable financial services. Due to the disadvantage of subdividing smallholders on the basis of land size, Torero (2011) differentiated smallholders using market and institutional orientation as a criterion. He divided smallholders into: subsistence farmers that are marginalized even in their local economies (Rural world 3); farmers oriented towards local, provincial, and national markets (Rural world 2); and farmers targeting international markets (Rural world 1).

GIZ (2011) uses the degree of commercialization as a criterion for financing and subdivides smallholders in subsistence-oriented farmers and market-oriented farmers in a (bank) financing approach. In contrast to GIZ, IFC and GPFI (2011) take the net income generated by farming in that country or region as a criterion and subdivides smallholders into semi-commercial smallholders (< 2 hectares) and commercial smallholders (2-20 hectares).

Christen and Anderson (2013) used a more comprehensive set of criteria to subdivide small-scale farmers. In a financing approach, they looked at the total household income and also subdivided smallholders into low and middle income countries. However, the authors stressed that these subdivisions are not fixed, but rather categories based on common traits that can begin to illuminate the financial mechanisms of the smallholder business case. Based on the types of crops grown on the farm, the way smallholders are engaged with markets, and the way those markets are organized, Christen and Anderson (2013) have estimated that out of 500 million small-scale farmers in middle and low income countries, 60 percent are non-commercial or subsistence farmers (cf. Rural world 3), 33 percent are commercial smallholders in loose value chains (cf. Rural world 2), and 7 percent are commercial smallholders in tight value chains (cf. Rural world 1). These estimations are in line with those of Lowder et al. (2016).

Non-commercial or subsistence smallholders do not farm as a vocation or strategic business choice but to contribute to their own sustenance and survival and as such are not a target group for inclusion in high value-adding supply chains. Commercial smallholders in loose value chains usually focus on staple food crops but this group sometimes also cultivates high value crops. They usually sell their surplus on local markets and have limited access to inputs, financial services, and information. They rely upon unimproved seeds and traditional production methods and their land size is one to two hectares.

Commercial smallholders in tight value chains grow cash crops that are usually sold in regional or export markets, while a reliable surplus of staple crops could be sold through local markets as well. This category of smallholders has access to buyer-provided bundles of improved seeds, inputs, information, and finance and have the capacity to generate reliable

high-quality output on a contract farming basis (Christen and Anderson (2014). However, it was stressed that the subdivisions are not to be seen as fixed and iron-clad, but rather as categories based on common traits that can begin to illuminate the financial mechanisms that might best fit the given financial goals and cash flows. This is in line with the contribution of Torero (2011) that the strata of smallholders are not static but dynamic, i.e. smallholders can move from one category to another through, for example effective institutional and infrastructural provisions.

From the perspective of F&A MNEs, the business case for smallholder inclusion should be focused on commercial smallholders; commercial smallholders in tight value chains as well as commercial farmers in loose value chains. The critical success factor (CSF) for a viable business case of smallholder inclusion in a high value-adding supply chain is that the selected smallholders are commercially/market oriented and can adapt to upgrading interventions to meet an F&A MNE's supply needs in a dynamic local, regional and global market environment. As this research aims to construct an inclusive sustainable sourcing model enabling access of smallholders to F&A MNE's supply chains, the potential number of included smallholders would increase from 7% (the present percentage of commercial smallholders in tight value chains) to 33% (the present percentage of smallholders in loose value chains) to **40%**. This would effectuate a structural improvement of the livelihoods for **33%** more smallholders (or 165 million).

1.3 Food and Agribusiness MNE's organization to include smallholders in high value-adding supply chains

As the CSR strategy of firms shifted from expressing corporate philanthropy and obtaining a 'social license to operate' (e.g., Gunningham et al. 2004; Howard-Grenville 2005; Kolk and Tulder 2010) to a business case approach (Kurucz et al. 2008; Carroll and Shabana 2010), a business wise approach to inclusion of smallholders is relevant. Although developing and emerging economies are considered to provide potentially big opportunities for value creation as a multibillion consumer market (Prahalad and Hart 2002; Porter and Kramer 2005), as well as for suppliers for local, regional, and global supply chains (Karnani 2007; Simanis et al. 2008; Hahn 2009), the organization of F&A MNEs has to adapt to this situation. F&A MNEs' organizations need to facilitate both the tapping into the unexploited food production potential of small-scale farmers in developing economies as their suppliers and to retain a competitive advantage in the growing local, regional, and global food markets.

Consequences of the supply orientation within an F&A MNE's organisation is that the CSR strategy has to be integrated into the Supply Chain Management (SCM) strategy, with Procurement and Operations as core activities. Historically, SCM has focused almost exclusively on transaction economic value, aimed at reducing purchasing costs (Mentzer et al. 2001). This classical short term transaction performance orientation of SCM started to change around the year 2000, when scholars posited that there was value in considering environmental and social issues (e.g., Handfield and Walton 2002; Carter and Rogers 2008).

Along with the increasing foot print of MNEs in developing and emerging economies, the role that environmental factors play in their global operations were particularly receiving increased criticism.

F&A MNEs operating in developing and emerging economies have therefore started to emphasize CSR in their global business strategies and have become more sensitive and responsive to the environment and the social needs of the local business environments and communities where they operate (e.g., Reimann et al. 2012; Cruz and Pedrozo 2009; Kapstein and Kim 2011). Green supply chain management emerged as an important new archetype for enterprises to achieve profit and market share objectives by lowering their environmental risks and impact while raising their ecological efficiency, because environmental impact occurs at all stage of a product's life cycle (e.g. Asif et al. 2013; Ahi and Searcy 2013; Srivastava 2007). This greening of supply chain management is considered the starting point for the debate on the inclusion of stakeholders and the integration of their respective demands for sustainable SCM (SSCM), specifically in sustainable sourcing using different definitions (Seuring and Muller 2008; Carter and Rogers 2008; Pagell and Wu 2009). Pagell and Shevchenko (2014) have stated that in the past two decades, sustainable supply chain management (SSCM) research has moved successfully from being a fringe topic to becoming mainstream. However, according to said authors, the critical question for today is how to create supply chains that are sustainable, because SSCM keeps focusing on reducing the harm caused by unsustainable supply chains and addressing the question 'does it pay to be green' (Pagell and Shevchenko (2014 p. 46). These authors posit that capturing a chain's communal impacts will be an important step towards research that takes all stakeholders into account. One example given is finding ways to manage BOP suppliers that also protect the suppliers and their communities. Previous authors call for a second order change in SSCM research so as to create 'truly sustainable supply chains' (defined by Pagell and Wu (2009), see p. 14).

1.4 Transparency and assessment of the impact of inclusion on smallholders' livelihoods

Pagell and Shevchenko (2014) posit that the awareness of the impact of supply chains on communities will be a driver for research in which all stakeholders are taken into account. To be able to give insight into 'truly sustainable supply chains' and particularly into the contribution of inclusion of small holders in value chains to their livelihoods, mechanisms of transparency are needed. Transparency within the context of this study encompasses that all chain members provide full accounting of money flows to origins related to the supply chain activities producing (activities farmers), supplying (distribution from farmer to F&A MNE) and sourcing (besides the regular sourcing activities from F&A MNEs, also comprising supplier development) (based on Pagell et al. 2010; Hahn et al. 1990; Krause and Ellram 1997).

A widely applied strategy for sourcing sustainable commodities in global value chains in the past decades is based on voluntary private standards, codes of conduct, and certification arrangements/schemes (Gereffi et al. 2001; Ponte and Gibbon 2005; Giovannici and Ponte 2005). Pressures from society and globalization (deregulation) are usually seen as the key drivers towards implementation of voluntary private standards, codes of conducts, and

certification arrangements/schemes. Certification has appeared in almost every major industry, including the third party sustainable certification schemes as seen in the agro-food sector (e.g., Hatanaka et al. 2012; Raynolds et al. 2007; Geibler 2013). This sustainable labelling of food products aims to guarantee the credence quality of food products to consumers. These are quality standards of alternative conditions for production or trade that are not visible to consumers, such as standards on animal welfare, organic production, child labour, working conditions, and biodiversity (e.g. Weinrich and Spiller 2016). However, ethical labels signal positive quality but fail to create massive demand for such products (Van Dam and De Jonge (2015).

From studies on the impact of certification schemes on the livelihoods of farmers I learn that there are a variety of methods used to calculate the impact. As the marketing of sustainable certified products is based on environmental and social issues in developing economies being met by producers, questions have been raised about the effectiveness of certification schemes. This has brought forth many studies, most of them dealing with coffee, on the impact of certification on the livelihoods of farmers cultivating commodities. Assessments of the impact of certification schemes on the livelihoods of farmers cultivating commodities like coffee, cocoa, and bananas have seen positive effects on said livelihoods (e.g., Blackman and Rivera 2011; Rueda and Lambin 2013; Ruben and Fort 2011; Ruben and Zuniga 2011, Ruben et al. 2009; Jaffee 2012; Dragusanu et al. 2014; Nelson et al. 2013; KPMG 2012 and 2013; Ingram et al 2014; Kuit and Waarts 2014; Chan and Pound. 2009; Hatløy et al. 2012). The methodology applied in most of these impact studies was a variance analysis of household surveys to investigate the differences - between the actual and the counterfactual outcome - in average farm incomes and housing expenditures and access to finance, markets, and knowledge. Three studies were found using cost price calculations to compare the impact between certified organic and regular/conventional coffee production (e.g., Kilian et al. 2004 and 2006; Beuchelt and Zeller 2011) and in cocoa production in Hawaii (Fleming et al. 2009).

Surprisingly, almost all certification impact studies only considered variable costs (labour and material costs) when drawing conclusions regarding the impact of certification on farmers' livelihoods, i.e. fixed costs were not included. In addition, the costs of not using child labour and better working conditions for hired workers in cocoa farming - which are related to the social performance indicator of Elkington's (1998) triple bottom line - were also not assessed. However, it was reported in the literature that these social ills still occur on a relatively large scale, like in cocoa farming (International Labor Rights Forum 2014, Baah 2010; Tulane University 2015). The costs of resolving these social issues were missing in the total cost of cocoa production in order to comply with the triple bottom line concept.

Keeping in mind the purpose of this present research (gaining insight in the inclusion of small holders in a value chain and its effect on their livelihood and profitability for the value chain as a whole), I argue that the integral cost price approach is fundamental to rendering insight into price setting, in the array of activities concerning production and inclusion. These latter issues being basic elements of certification schemes and contract farming. The integral cost price approach, according to farm economic theory (Kay et al. 2016; FAO 2016), calculates the total cost/total revenue per unit based on integral costs (the sum of variable and fixed

cost). The relevance of the integral costs price approach stems from its coverage of all costs of agreements e.g. on production requirements, price and quality as included in certification schemes and contract farming. Value chain profitability and smallholders' livelihoods are included as well in the sense that fixed costs and turning a profit to smallholders (ensuring their continuity), should be covered by the revenues. The conclusion is that the integral cost price approach needs further elaboration from the perspective of getting insight into a 'truly sustainable supply chain'.

1.5 Problem statement and main research question and field

1.5.1 Challenges of smallholder inclusion

Food and Agribusiness Multinational Enterprises (F&A MNEs) have committed themselves to secure a (long term) sustainable supply in ways that improve the livelihoods/standard of living of the smallholders, while retaining competitive advantage. There are several challenges and options that have to be faced in order to achieve this inclusive sourcing goal. These challenges are:

1. Changing traditional sourcing strategies: an inclusive sourcing strategy reaches beyond applied corporate social responsibility (CSR) strategies, which were aimed at expressing corporate philanthropy and obtaining a social license to operate. F&A MNEs therefore need to review their sourcing strategies and related supply chains if they are to deliver value to smallholders, enabling them to improve their livelihoods.

Sourcing commodities in ways that improve smallholders' livelihoods affects current commodity supply chains. F&A MNEs traditionally source agricultural commodities mainly from selected large traders and exporters, far removed from the primary producers, i.e. smallholders. Therefore, during the past decades, most F&A MNEs have supported smallholders and their communities through charity projects via their foundations and branch organisations. The challenge for F&A MNEs remains as to how they can effectively deliver value to the smallholder business model and improve of their livelihoods through sourcing by 'Purchasing and Operation'.

2. Direct smallholder sourcing: F&A MNEs mostly source from producer organisations/cooperatives because direct sourcing from smallholders is usually economically unattractive, because of constraints on transactions and product quality. Examples being: dispersed production; low productivity; inefficient market institutions; poor physical infrastructure; unsustainable agricultural practices; and inaccessible rural financial systems (London et al. 2010; Wiggins et al. 2010; Torrero 2011). The challenge for linking smallholders to high value-adding supply chains competitively is to make smallholder farms more advanced. Smallholder farming systems must therefore be upgraded (e.g., Humphrey and Schmitz 2002; Humphrey 2004; Barrientos et al. 2011) and certified as being sustainable to achieve their full potential in assessing high value-adding supply chains effectively. Upgrading can be defined as: "...a move of firms to higher value added activities or interventions in production to improve technology, knowledge and skills, and to increase the benefits or profits deriving from participation in regional or global production networks" (Gereffi et al. 2005 p. 13). Hahn et al. (1990) introduced the concept of the Supplier

Development Programs, which can be applied/adapted to upgrade the suppliers/smallholders in developing countries in order to enable them to produce commodities for high value-adding supply chains with a sustainable business perspective. They defined this concept as a long-term cooperative effort between a buying firm and its suppliers, with an eye to upgrade the latter's technical, qualitative, delivery, and cost capabilities. The ultimate goal of the concept of Supplier Development Program is to form a mutually beneficial relationship, which will help all partners throughout the entire supply chain compete in the market. This program suggests a collaborative paradigm based on a long term cooperative relationship between buyer and suppliers throughout an entire supply chain (Hahn et al. 1990; Watts et al. 1993; Krause and Ellram 1997). The consideration is that it can be applied/adapted to sourcing/purchasing by F&A MNEs from smallholders in a way that improves the latter's livelihoods.

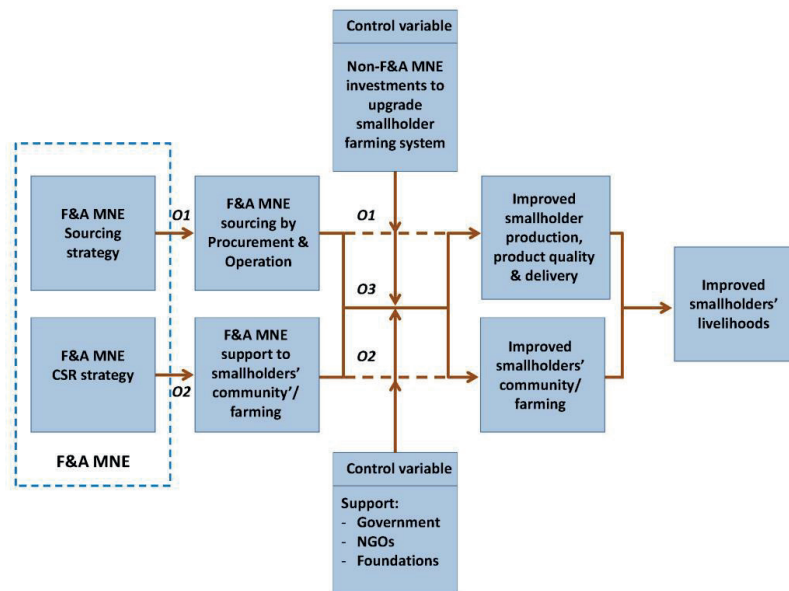
3. Critical evaluation of case studies on inclusive sourcing: case studies regarding sourcing models in which F&A MNEs are directly involved as a focal firm - providing lessons learned and evidence for inclusive smallholder supply chains design - are limited; Perez-Alleman and Sandilands 2008 (Starbucks: coffee); Alvarez et al. 2010 (Nestlé Nepresso: coffee); Gold et al. 2013 (Grameen-Danone joint venture and Nestlé: dairy); Graf et al. 2015 (Danone Mexico: dairy). These case studies focus on particular aspects of the sourcing strategy under study such as partnership and governance dynamics and sustainable supply chain management aspects. Conceptual elements, building blocks, and critical success factors of the sourcing model applied were mentioned only implicitly. Previous cases are scaled (no pilots), have proven to work, and provided accessible longitudinal data regarding achieved performances of production and participation of smallholders. These characteristics of cases are used as criteria for selecting best-practice cases in order to explore and access the applicability of the developed smallholder sourcing model and the related critical success factors.

4. Adjustment of certification schemes and mechanisms: Current widely applied sourcing strategies based on sustainable certification are principally CSR driven. Certification schemes have been applied as ways of making consumer food markets work for sustainability. Higher yields and better product quality promise higher farm income. A price premium is offered to compensate for related certification costs and also access to market shares for producers who adopt the sustainable agricultural practices and audit them through an independent third party (Hatanaka et al. 2012; Henson and Humphrey 2010). It was found in most studies on the impact of collective international third party standards of sustainable produced agricultural commodities on smallholders' livelihoods, most lacking the integral costs of production or do not measure or report improvement of the livelihoods of smallholders (Section 1.4 and 5.2.3). The challenge is how to integrate said livelihood improvement in current certification schemes and mechanisms for measuring, monitoring, and reporting of F&A MNEs' impact on smallholder livelihood improvement.

1.5.2 Main research question

The previous mentioned challenges of smallholder inclusion by F&A MNEs need to reconceptualise their sourcing strategy for impacting livelihoods of smallholders in high value-adding food supply chains. To be able to differentiate clearly between existing and future sourcing options available to F&A MNE's an overview of sourcing options is given. The main research question will be presented based on the inclusive sourcing option.

Food and Agribusiness Enterprises generally have three sourcing options for improving smallholders' livelihoods (O1, O2 and O3 see Figure 1.1) which stem from two basic starting points being (1) a sourcing strategy to procure a sustainable smallholder commodity supply, and (2) a CSR strategy to express corporate social attitudes and a responsiveness to society (first building block on the left side of Figure 1.1).



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Figure 1.1: Sourcing options for improving smallholders' livelihoods by food and agribusiness multinational enterprises

Explanation of Figure 1.1

O1: This sourcing option is a currently widely applied conventional supply strategy based on collective international sustainable certification standards. An F&A MNE's Procurement and Operation department purchases certified commodities, such as cocoa and coffee, from selected traders on a (short term) transaction basis. The F&A MNE is not involved in the certification processes and auditing, so as to guarantee the independence of the label that certifies the sustainability. Certification schemes focus mainly on environmental sustainability standards of commodity production, rather than on the improvement of smallholders' livelihoods. Moreover, certification schemes do not measure or report on smallholder

livelihood improvement - which is a critical attribute for F&A MNEs for measuring and monitoring progress - to manage the effectiveness of their interventions, nor do they externally communicate on it.

O2: This sourcing option is the applied CSR strategy supporting smallholders and their communities on a project basis, for instance through: education and training programs; access to farm inputs; access to health care services; and empowerment of women. CSR strategies are aimed at getting a social license to operate by helping smallholders and their communities improve their living and production conditions. As such, CSR strategies therefore differ from sourcing strategies that are aimed at improving smallholders' livelihoods.

O3: This sourcing option is a sourcing strategy for sustainable smallholder supply in which business perspectives (for securing a sustainable smallholder supply) and CSR perspectives (for improving smallholders' livelihoods) are integrated. In this supply option, F&A MNEs, as leaders of the smallholder supply chains, are more closely linked to smallholders; (cf. Starbucks case (Perez-Alleman and Sandilands 2008); the Nestlé Nepresso case (Alvarez et al. 2010)).

This dissertation focuses on smallholder inclusion by integrating business perspectives (for securing a sustainable smallholder supply) and CSR perspectives (for improving smallholders' livelihoods) into a sourcing strategy/model throughout the supply chain in accordance with option O3 (Figure 1.2). The consideration is that Option 3 provides the basis for an inclusive smallholder sourcing strategy for impacting the smallholder business model in a way that improves their livelihoods (see inclusive business in Section 1.1). Therefore, this social sustainability dimension of the triple bottom line needs to be integrated into SCM (sourcing/purchasing). In terms of research regarding smallholder inclusion in high value-adding supply chains, the concept of supplier development programs needs to be linked to sustainable SCM and business model research.

Considering the latter sourcing option (O3), from smallholders in ways that improve their livelihoods, while retaining competitive advantage for F&A MNEs, the following main research question is set:

Main research question

How can F&A MNEs best include smallholders in their sourcing model in order to take social responsibility for a large scale sustainable and more equitable supply, while retaining competitive advantage?

1.6 Theoretical perspectives

Smallholder inclusion in high value-adding supply chains in ways that improve smallholders' livelihoods, is related to different literature and research fields on the sustainable business model; sustainable supply chain management; and the BOP and International Business. Central to exploring and connecting the different research fields is Seuring and Gold's (2013) statement that achievement of the Triple Bottom Line (economic, social and environmental sustainability) in supply chains can only be addressed in business sphere by a joint effort, because of the interdependencies between all actors of the supply chain. A closer look at how the three research fields are interrelated and the different perspectives therein, provides important insights into the building blocks of an inclusive smallholder sourcing model and an indicator for impacting the smallholder business model.

1.6.1 The sustainable business model perspective

Achieving the Triple Bottom line means creating value. The increasing pressure on corporations to take social responsibility and play a more proactive role in solving global sustainability challenges (see Sections 1.1. and 1.3), makes the business model perspective particularly interesting. It highlights the value creation logic and value capturing of a food and agribusiness multinational enterprise and the effects of an entire sustainable supply chain on society and the environment (e.g. Schaltegger et al. 2016). A growing amount of academic publications in sustainable business model research strands have emerged. Early works on business models for sustainability deal with the structural and cultural roots of models that contribute to corporate social responsibility (Stubbs and Cockin, 2008). While extant research on sustainable business models is often rooted in ecological sustainability, resulting in the greening of supply chains and product design (e.g., Srivastaza, 2007; Ahi and Searcy, 2013). Other scholars have seen business models as a tool for addressing social needs (e.g., Seelos 2014) or as social entrepreneurship at the bottom of the pyramid (Yunus et al. 2010).

The term business model was intensively used by scholars from the mid-1990s onwards to discuss how a firm could adopt the innovations of the internet boom into business models for e-Business (e.g., Zott et al., 2011). In more recent years, the business model concept has been used as a general construct that explains how a firm collaborates with suppliers, customers and partners, in creating more value and enabling greater adaptation over time. However, reviews of emerging business model concepts in the literature - from Osterwalder et al. (2005); Storbacka and Nenonen (2009); Chesbrough (2007); Magretta (2002); Zott and Amit 2007; Teece 2010 - revealed that scholars differed somewhat in the definition of what a business model is and what business model elements (building blocks) are (see Table 1.1).

In their literature review, Zott et al. (2011) concluded that business models are often studied without explicitly defining the concept in a variety of ways. On a general level, the business model has been referred to as a representation, an architecture, a conceptual tool or model, a structural template, a method or a set. However, most scholars agree that the business model concept describes the rationale of how a firm creates and captures value (cf. Osterwalder et al. 2005). Therefore, the conventional business model definition aims at achieving the economic

(sustainability) dimension. This definition is considered to be the conventional or classical definition of the business model of a firm.

Table 1.1: Overview of business model studies (based on Nenonen and Storbacka (2010), Zott et al. (2011) and Schaltegger et al. 2016)

Author	Definition of a business model	Business model concept elements
Chesbrough & Rosenbloom (2002)	The business model is “the heuristic logic that connects technical potential with the realization of economic value” (p. 529).	<ul style="list-style-type: none"> • Value proposition • Market segment • Structure of value chain • Cost structure and profit potential • Position within value network • Competitive strategy
Magretta (2002)	”Business model answers the questions such as who is the customer, what does the customer value, how do we make money in this business, what is the underlying economic logic that explains how we can deliver value to customers at an appropriate cost.”	<ul style="list-style-type: none"> • Customer definition • Value to customer • Revenue logic • Economic logic
Teece (2010)	“The essence of a business model is in defining the manner by which the enterprise delivers value to customers, entices customers to pay for value, and converts those payments to profit”	<ul style="list-style-type: none"> • Value proposition • Value capturing • Revenue logic (converting payments into profit)
Osterwalder et al. (2005)	“A business model is a conceptual tool that contains a set of elements and their relationships and allows expressing the business logic of a specific firm. It is a description of the value a company offers to one or several segments of customers and of the architecture of the firm and its network of partners for creating, marketing, and delivering this value and relationship capital, to generate profitable and sustainable revenue streams.”	<ul style="list-style-type: none"> • Value proposition • Target customer • Distribution channel • Relationship • Value configuration • Core competency • Partner network • Cost structure • Revenue model
Zott & Amit (2007)	“A business model depicts the content, structure, and governance of transactions designed so as to create value through the exploitation of business opportunities. A business model elucidates how an organisation is linked to external stakeholders, and how it engages in economic exchanges with them to create value for all exchange partners.”	<ul style="list-style-type: none"> • Content of transactions • Structure of transactions • Governance of transactions • Value creation design • Links to external stakeholders
Storbacka & Nenonen (2009)	“Business models are defined as configurations of interrelated capabilities, governing the content, process and management of the interaction and exchange in dyadic value co-creation.”	<ul style="list-style-type: none"> • Content of exchange & interaction • Process of exchange & interaction • Management of exchange & interaction
Schaltegger et al. (2016)	A business model for sustainability helps describing, analysing, managing, and communicating (i) a company’s sustainable value proposition to its customers, and all other stakeholders, (ii) how it creates and delivers this value, (iii) and how it captures economic value while retaining or regenerating natural, social, and economic capital beyond its organisational boundaries (Schaltegger et al., 2016, p. 4).	<ul style="list-style-type: none"> • Sustainable value proposition. • Sustainable value creation and distribution • Sustainable value capturing

Recently, research contributions have taken a critical look at sustainable business models, for example by conceptualising and characterising them (Bocken et al., 2013, 2014 and 2015; Boons et al., 2013; Lüdeke-Freund et al., 2016; Long et al. 2017). Schaltegger et al. (2016) concluded that, although the scope of issues and methods in the sustainable business model research field is expanding, a common definition of business models for sustainability is still missing. They defined a sustainable business model (here called synonymously a ‘business model for sustainability’) as follows:

‘A business model for sustainability helps describing, analysing, managing, and communicating (i) a company’s sustainable value proposition to its customers, and all other stakeholders, (ii) how it creates and delivers this value, (iii) and how it captures economic value while retaining or regenerating natural, social, and economic capital beyond its organizational boundaries’ (Schaltegger et al., 2016, p. 4).

The current state of affairs in sustainable business model research is integrating the social dimension of the triple bottom line into sustainable strategy, concepts, management and products. Lüdeke-Freund, Gold and Bocken (2016) proposed that the conceptions of sustainable supply chain management, as well as sustainable business models have common objectives: to contribute to sustainable development and stakeholder integration, while focusing on value creation.

1.6.2 The Sustainable supply chain management perspective

The present research takes the dyad/network of the supply chain as its unit of analysis for building a sourcing model for a sustainable and more equitable smallholder supply. The challenge of making smallholders a core supply source for food and agribusiness enterprises is not just influenced by external factors (outside the F&A MNE), but also by internal organisational factors (within the F&A MNE). Building and retaining core supply chains is the responsibility of supply chain management and, more specifically, of the Procurement and Operation department of the F&A MNE. The challenge is how the classical sourcing strategies of food and agribusiness enterprises can address smallholder livelihood improvement, while retaining a competitive advantage. Conventional supply chain management however, focuses principally on the economic performance according to the definition of Mentzer et al. (2001, p. 18):

‘... the systemic, strategic coordination of the traditional business functions and the tactics across these business functions within a particular company and across businesses within the supply chain, for the purposes of improving the long-term performance of the individual companies and the supply chain as a whole’.

The adoption of sustainability in supply chain management (SCM) literature focuses on integrating the environmental dimensions in supply chain management (Srivastava, 2008; Ahi and Searcy, 2013). Several definitions of sustainable supply chain management were found in the literature, for example:

- Seuring and Muller (2008 p. 2): SSCM is "...the management of material, information and capital flows as well as cooperation among companies along the supply chain while taking goals from all three dimensions of sustainable development, i.e. economic, environmental and social, into account which are derived from customer and stakeholder requirements".
- Carter and Rogers (2008 p. 368): SSCM is "...the strategic, transparent integration and achievement of an organisation's social, environmental, and economic goals in the systemic coordination of key inter-organisational business processes for improving the long-term economic performance of the individual company and its supply chains".
- Pagell and Wu (2009 p. 38) defined a truly sustainable supply chain as one that complies with the triple bottom line sustainability dimensions (see Section 1.1, p. 14)

Where it comes to the differences between the definitions of SSCM, Seuring and Muller emphasize the stakeholder perspective, Carter and Rogers (2008) refer to the internal-organizational organisational aspects, while Pagell and Wu (2009) call for the development of sustainable business models. Creating a sustainable supply chain requires a proactive top management and an environment where all employees, designers included, are motivated and rewarded (Pagell et al. 2010; Van Tilburg et al. 2012; Gold et al. 2013). These definitions of the sustainability of supply chain management find common ground in the performance of the entire supply chain on the triple bottom line concept of Elkington (1998) and most of them highlight the need for collaboration and coordination of processes and activities across the supply chain and a long term perspective.

1.6.3 The Supplier development perspective

The key concept embraced and adapted for building sustainable and more equitable smallholder supply chains is the supplier development program of Hahn et al. (1990). This program suggests a collaborative paradigm based on a long term cooperative relationship between buyer and suppliers throughout an entire supply chain. The consideration is that this concept can be applied to sourcing by F&A MNEs from smallholders in a way that improves the latter's livelihoods. Most critical elements of the supplier development program are: 1) top management involvement and commitment; 2) long term perspective (payoff of investments may only occur over a relatively long time period); 3) effective two-way communication with suppliers for creating transparency and trust; and 4) the buyer-supplier relationship must be based on total cost of ownership, rather than on price (because buyer-supplier relationship based on price are short-term focused/transaction cost driven) (Krause and Ellram 1997).

This collaborative paradigm of supplier development programs is also found in the research framework of supply chain management developed by Chen and Paulraj (2004). This framework is grounded in strategic management theory that emphasizes the development of a 'collaborative' advantage as opposed to the 'competitive' advantage of Porter (1990). They approach the business world as a network of interdependent relationships, developed and fostered through strategic collaboration and aimed at deriving mutual benefits. The research framework by Chen and Paulraj (2004) draws on the 'relational view' of inter-organisational competitive advantage between firms (Dyer and Singh 1998). In this view, an entire sustainable supply chain competes against (un-)sustainable supply chains. This view on

sources of competitive advantage implies a dyad/network instead of individual firms (Barney 1991) or the industry (Porter 1990) as the unit of analysis.

For deepening insight into this dyad buyer – supplier relation specifically in food supply chains and demarcated to the focus on the inclusion of smallholders, literature on contract farming is introduced here. In the BOP/development research the role of contract farming in developing economies has been a topic of interest over the past decades and studied extensively from different angles, such as a response to market imperfection (e.g., Key and Runsten 1999, Gulati et al. 2008), in the light of the industrialization of agriculture and the globalization of world markets (e.g., Kirsten and Sartorius 2002; Barret et al. 2011) and as development intervention for improving smallholder income (Key and Rusten 1999; Mwambi et al. 2016; Ton et al. 2016; Miyata et al. 2009). Contract farming is generally defined as agricultural production carried out according to an agreement between farmers and a buyer, which places conditions on the production and marketing of the commodity (e.g. Eaton and Shepherd 2001; da Silva 2005). Farmers are usually aggregated in groups or producer organizations, while buyers are large-scale traders including retailers, exporters and food processors. The aim of the buyers is to ensure a steady supply of high value-adding industrial crops and food products meeting certain production quality standards. In the literature, contract farming has been considered as a system that has considerable potential for linking small-scale farmers in developing economies into export and processing markets. The contract could specify the price, quantity, quality, the provisions of agribusiness inputs and credit facilities, the conditions of production and the delivery and grading requirements (Key and Runsten 1999). Because the contractual agreement often involves the provisioning of farm supports by the buyer, this type of vertical coordination of value chains differs from spot market transaction, with coordination of the sourcing activities by the price mechanism and the fully integrated value chain, with one firm controlling all stages of the value chain (cf. the five governance types based on Gereffi et al. 2005, see Table 2.1). From this perspective contract farming is an institutional solution to the problem of market failures in BOP markets (Kirsten and Sartorius 2002). Moreover, contract farming has also been approached as a rural economic development intervention to improve smallholder income by creating new market opportunities (e.g.; Eaton and Shepherd 2001; Shepherd 2013) as well as to create positive multiplier effects for employment, infrastructure, and market development in local/rural economies (e.g., Helmsing 2003; Key and Runsten 1999; Shepherd 2013).

1.7 Research objectives and thesis structure

This dissertation wants to answer the research question: ‘How can F&A MNEs best include smallholders in their sourcing model in order to take social responsibility for a large scale sustainable and more equitable supply, while retaining competitive advantages?’ More specifically, how F&A MNEs can source from smallholders to secure sustainable supply in a way that improve smallholders’ livelihoods. This main objective is translated into three research objectives:

Research objective 1

To build an inclusive sourcing model for smallholder supply and its critical success factors, in which business (to secure supply) and corporate social responsibility (to impact the smallholder business model) perspectives are integrated, from the literature. This sourcing model contribute to: 1) the call in sustainable supply chain management research stream for building sustainable supply chains that adhere to the triple bottom line concept (e.g. Pagell and Shevchenko 2014; Carter and Easton 2011) and 2) to link conceptually as well as empirically the sustainable smallholder business model and sustainable supply chain management research fields to help address the social dimension of the sustainability management (Seuring and Gold 2013). This inclusive sourcing model can be applied empirically to design or reconceptualise conventional sourcing models for building supply chains that comply with the triple bottom line.

Chapter 2 develops the inclusive sourcing model with a list of CSFs based on a comprehensive literature review. Three conceptual elements were identified: Supplier development programs (Hahn et al. 1990, Watts et al. 1993; Krause and Ellram 1997), Upgrading (Humphrey and Schmitz 2002) and Captive global value chain governance structure (Gereffi et al. 2005) as a basis for the inclusive smallholder sourcing model. To identify the CSFs of inclusive sourcing, the main research question has been transformed into critical questions by matching the critical elements of sustainable supply chain management which sustainable business models, i.e. the top of the supply chain, with that of the BOP producers, i.e. the smallholder, business model.

Research objective 2

To explore the applicability and consistency of the developed inclusive smallholder sourcing model and its CSFs that impact smallholders' livelihoods in real best-practise case studies, primary and secondary data of the value chain analysis of best practise cases - the black soybean supply chain in Java/Indonesia and the tomato supply chain in India were used.

Chapter 3 explores the applicability of the developed inclusive smallholder sourcing model and its CSFs in the black soybean supply chain of an F&A MNE in Java/Indonesia. Primary and secondary data of the value chain analysis on the black soybean supply chain were used. It was part of a broader joint research program Sunrise 2.0 2010-2015 (Tait 2015) commissioned by the F&A MNE (Unilever) and the NGO (Oxfam) in three smallholder supply chains: the black soybean in Indonesia, tomato in India, and tea in Kenya. The black soybean research project was conducted by the author, while the tomato research was conducted by two consultants participating in the same research program. The aim of the Sunrise 2.0 2010-2015 research program was to learn how the F&A MNE could do business with smallholders in ways that improve the farmers' livelihoods. This case study lasted from June 2013 to April 2014.

Chapter 4 explores the consistency of the inclusive sourcing model and its CSFs through in two best practice cases, black soybean in Java and tomato in India, of the Sunrise research program. The field research of both cases was conducted through November and December of

2013 and consisted of multi-stakeholder workshops, farmer workshops, semi-structured interviews, and field observations. Primary data of the value chain analysis were used to map the supply chain, the CSFs, and the farmers' business model. To determine similarities and differences between the cases, the framework of the developed sustainable smallholders sourcing model and the list of critical success factors were used as a template. The similarities and differences observed indicated the consistency of the sourcing model -, i.e. the building blocks, and the critical success factors - which could provide arguments to fine tune or modify the critical success factors.

Research objective 3

The construction of an inclusive sourcing indicator to leverage values for impacting the smallholder business model from the farm economics theory. This inclusive sourcing indicator can be used to measure financial performance of inclusive sourcing. This indicator contribute to the need in the BOP/development research for a measure of improvement of smallholders livelihoods in strategic sourcing. The second part of the research aims at exploring of the applicability of the theoretical inclusive sourcing indicator in real cases: Cocoa case studies in Ghana and the Ivory Coast.

Chapter 5 the inclusive sourcing indicator based on the farm economic theory (Kay et al. 2016; FAO 2016), i.e. a standard integral costs structure of crop production, is constructed. It is applied to the case of the production of certified cocoa beans. Therefore a comprehensive literature study on the economy of cocoa bean production and supply chain has been conducted. Based on the findings, the integral costs structure of cocoa bean production has been determined. To meet the triple bottom line goals (Elkington 1998) the socioeconomic costs of ending/replacing child labour, and the working conditions of hired labour that do not comply with international labour standards need to be included in the total cost of certified cocoa bean production. The basic assumption of the approach in this research is that smallholders should turn profit in order to be able to improve their livelihoods/standard of living. This depends on the farm gate price smallholders receive, which needs to cover the total costs of production and include profit for the smallholder. The constructed inclusive sourcing indicator is the sum of: the total of variable and fixed costs + the costs of replacing child labour by own or hired labour (in the cocoa case) + the costs of paying minimum wage to hired labour + a residual return to the owner/farmer. The applicability of this sourcing indicator has been explored in impact case studies and cost-benefit analyses of large scale cocoa project, two in Ghana and two in Ivory Coast, which are the largest cocoa bean producing countries in the world. I discovered that only variable costs were included, i.e. fixed costs were missing from the cost price calculation. It was found in impact studies on coffee, bananas, fish and shrimps, timber, and cotton that an integral cost price was not calculated. Therefore, the profitability of sustainable commodity production could easily be overestimated.

Chapter 6 presents the general findings obtained from this dissertation and discusses limitations, directions for further research and management and policy implications

CHAPTER 2

Construction of an inclusive sourcing model for smallholder supply in high value-adding supply chains

This Chapter is based on:

August. R. Sjauw-Koen-Fa, Vincent Blok, and S.W.F. (Onno) Omta. Critical success factors for smallholder inclusion in high value-adding supply chains by Food and Agribusiness Multinational Enterprises. *International Food and Agribusiness Management Review* Vol. 19 Issue 1, 2016: pp. 83-111.

2.1 Introduction

The aim of the chapter is to develop an inclusive smallholder sourcing model that can support F&A MNEs in designing and implementing sourcing strategies enabling sustainable smallholder supply from a business perspective. As mentioned in Chapter 1 (Section 1.1) so-called critical success factors (CSFs) are the building blocks for the design of the inclusive sustainable sourcing model. After all, the CSFs determine the activities in the supply chain where ‘things must go right’ (adapted from Rockart 1979) to allow the inclusion to flourish. This model can function as a ground model for F&A MNEs to design their sourcing strategies for realizing their inclusive commitment to smallholders. After all, leading food and agribusiness multinational enterprises (F&A MNEs) - such as Unilever, Mars, Ferrero, Hershey, Nestlé, Cargill, Mondelez, and Barry Callebaut - have committed themselves to enhancing their sourcing of high value-adding commodities, such as cocoa, coffee, and bananas from small-scale farmers in ways that improves these farmers’ livelihoods/standard of living (see e.g. Appendix 3).

However, F&A MNEs traditionally mainly source commodities from selected large traders and exporters (intermediaries) rather than directly from farmers, because transaction costs are too high. F&A MNEs applied private (voluntary) food standards, ethical codes, and certification schemes as sourcing modes (e.g., Gereffi et al. 2001; Ponte and Gibbon 2005; Humphrey 2012; Geibler 2013). These conventional sourcing strategies are aimed principally at complying with consumer concerns regarding food safety and environmental issues (e.g., Manning et al 2009; Trienekens et al. 2012) rather than on improving farmers’ livelihoods.

Not only F&A MNEs need to adopt their (sourcing) activities, but as well smallholder farmers in developing and emerging economies face several productivity and transactional barriers in their efforts to access high value-adding food markets, e.g., supermarkets, regional, and global markets. These include dispersed production, low productivity, variable quality, high transaction costs, poor market institutions and governance, and an inaccessible rural financial system (e.g., London et al. 2010; Wiggins et al. 2010; IFAD 2012; Hazell et al. 2010; Sjaauw-Koen-Fa 2012; Torero 2011). Therefore, smallholder agriculture in developing countries must be upgraded to achieve its full potential in assessing high value adding supply chains (e.g., Humphrey and Schmitz 2000 and 2004; Gereffi and Fernandez-Stark 2011).

In addition to the upgrading of smallholder farming systems, long-term public and private capital investments are required to improve the infrastructure (access to water, roads, improving transport systems, and creating storage facilities) of smallholder farmers to lower transaction costs and reduce post-harvest losses (e.g., Schmidhuber et al. 2009; Hallam 2011; Hebebrand 2011). The need for public and private investments to help improve smallholder farming systems in developing economies complies with the concept of smallholder supplier development.

There could also be (corporate) finance challenges to address investments and the sequence in which to address them in smallholder supplier development, such as whether to make a local or centralized investment aimed to provide an integrated solution, often in partnership with other stakeholders (London et al. 2010; Hahn and Gold 2013; Dahan et al. 2010). Moreover, there are also organisational challenges within the MNEs that might hamper the complex process of smallholder supplier development and lead the smallholder supply chain effectively into a scaled-up phase (Olsen and Boxenbaum 2009; Reficco and Rueda 2012).

All these challenges may make the move from pilot project to scale-up situation too costly and risky for private investors.

The key question arises: How can F&A MNEs best include smallholders in their sourcing strategy and contribute to both the MNE's business objectives and the improvement of smallholders' livelihoods on a large scale?

The next section explains the methods, followed by defining the External (section 2.3) and Internal (section 2.4) CSFs for smallholder inclusion in high value-adding supply chains by F&A MNEs. Finally, the findings of the previous two sections are integrated in a sustainable smallholder sourcing model and related CSFs and business drivers for smallholder inclusion are discussed. In this model we have integrated the sourcing and CSR perspectives.

2.2 Materials and Methods

For the initial literature review five key words – representing the main research question - in the subject: 'Sourcing Strategies for Sustainable Smallholder Supply, a business perspective' were used to select publications in the literature. The five key words were applied and synonyms and closely related concepts have also been used. For example: sourcing strategies (procurement, purchasing); sustainable (CSR, certification, food standards, ethical codes); smallholders (upgrading, BOP, inclusive business, producers organisation); supply chain (management, global value, governance, partnership, integration).

First, the elements, drivers and barriers, and CSFs, and the consistency of the sourcing strategies of multinational enterprises operating in global markets were explored. Key articles were found in the supply chain management, BOP, global value chain, international business management, and business and society literature. We also searched the literature for case studies on and best practices for smallholder inclusion in high value adding supply chains by F&A MNEs to learn about their approach, structure, the process, and the CSFs, from a business perspective.

To explore CSFs of smallholder inclusion in literature we have transformed the main research question for smallholder inclusion into critical sub-questions. Therefore, we linked elements of the frameworks for SCM/sustainable sourcing to strategies for addressing constraints and implications of smallholder supply for F&A MNEs:

-. the elements of 'Supply-based continuity' and 'Reconceptualising who is in the supply chain' from Pagell et al. (2010 p. 64) and from Chen and Paulraj (2008 p. 121) the attributes of the 'buyer-suppliers relationships'.

-. the BOP producers constraints framework from London et al. (2010 p. 585) and the 'BOP vs. BOP networks and implications for MNEs from Rivera-Santos and Rufin (2010 p.130).

The literature on contract farming provides also critical factors impacting smallholder business model, i.e. what works and what not and why (e.g., Key and Rusten 1999; Barrett et al. 2011; Kirsten and Sartorius 2002; Mwambi et al. 2016). The problem is that the great heterogeneity in contract farming, with differences in contract, farmers, products, buyers, and institutional environment and controversial results, makes an comparative analysis to draw general conclusions a complex matter (Ton et al. 2016).

The aim was to identify leverage points/synergistic connections between F&A MNE sourcing and smallholder business models. The result is six sub-questions that are used to explore related CSFs in the literature:

- i. Which smallholder segments are suitable for inclusion from a business perspective?
- ii. How can smallholder productivity, product quality, and delivery reliably be improved to meet the demands of high value-adding supply chains in a sustainable and competitive way?

- iii. Which governance structures offer the best upgrading prospects for smallholder inclusion?
- iv. How can vertical coordination in the smallholder supply chains be strengthened to effectively and efficiently upgrade interventions?
- v. How can accessible and affordable rural financial systems be created to ease smallholder demand for investment, working capital, and savings effectively?
- vi. What are the commitments, attributes, and procurement organisations needed to invest in and to govern smallholder supply chains to secure a (long term) sustainable smallholder supply effectively?

Critical sub-questions *i* through to *v* are related to external challenges that occur outside (in the market place) of the F&A MNE, while sub-question *vi* is related to internal organisational challenges (within the F&A MNEs).

2.3 Results

2.3.1 Critical success factors for smallholder inclusion

Critical success factors (outside the F&A MNE)

i. Which smallholder segments are most suitable for smallholder inclusion in high value-adding supply chains for building a business case?

From the perspective of F&A MNEs, a viable business case for smallholder inclusion should be focused on commercial smallholders in tight value chains (Christen and Anderson 2013 (see Section 1.2.1)). This category of smallholders is best equipped to adapt to upgrading interventions and to have experience with contract farming (Christen and Anderson 2013). However, commercial farmers in loose value chains may also be suitable for high value-adding supply chains if they take a business-like approach to producing a reliable surplus that can be sold through local markets/traders. The CSF (1) for a viable business case of smallholder inclusion in high value-adding supply chains is that the selected smallholders are commerce/market-oriented and can adapt to upgrading interventions to meet an F&A MNE's supply needs in a competitive global market environment.

ii. How can smallholder productivity, product quality, and delivery reliability be improved to meet the demands of high value-adding supply chains in a sustainable and competitive way?

According to the literature on competitiveness, the most viable response to this type of challenge is to upgrade (e.g., Humphrey 2004; Porter 1990). Upgrading can be defined as 'a move of firms to higher value added activities or interventions in production to improve technology, knowledge and skills, and to increase the benefits or profits deriving from participation in regional or global production networks' (Gereffi et al. 2005, p. 13). This assumes a regional or global value chain approach driven by a lead firm, for example an F&A MNE. A value chain framework offers four types of economic upgrading (Humphrey and Schmitz 2002):

- Process upgrading: more efficiently transforming inputs into outputs by reorganizing the production system or by introducing superior technology.
- Product upgrading: moving into more sophisticated product lines, which can be defined in terms of increased added value per unit.
- Functional upgrading: acquiring new functions in the chain, such as design or marketing, or abandoning existing low added-value functions in favour of higher added-value activities.

- Chain or inter-sectoral upgrading: where firms move into new but often related sectors.

Upgrading patterns differ by both industry and country, based on the input-output structure of the value chain and the institutional context of each country. The typologies of upgrading were originally studied in SMEs' industrial sectors (e.g., apparel, garment, IT hardware, and footwear) in developing and emerging economies. These SMEs were led by large firms from Western countries. This phenomenon is studied in the supply chain literature as 'supplier development' (Hahn et al. 1990; Watts and Hahn 1993; Krause and Ellram 1997).

Supplier development is important from a purchasing perspective, for developing effective and reliable sources of supply, and from a corporate perspective for advancing competitive strategic objectives by linking suppliers' capabilities with internal requirements. The 'industrial' upgrading approach can also be applied to agriculture (Humphrey 2004). This will be discussed below.

In the literature, several upgrading interventions for small-scale agriculture in developing and emerging economies from a business perspective have been identified (e.g., Eaton and Shepherd 2001 p. 11; London et al. 2010 p. 588). We have grouped these upgrading interventions into the first three upgrading types of Humphrey and Schmitz (2002) in the following ways:

- Process upgrading: improvement of physical infrastructure; provision of extension services and post-harvest facilities; access to finance; skill transfer; and the strengthening of producer organisations.
- Product upgrading: provision of inputs such as fertilizers and seeds; and introduction of advanced farm technologies and certification.
- Functional upgrading: enhancement of farmers/smallholders to become crop specialists (specialization); or collaborate in joint efforts to process and market their products (vertical integration).
- Chain or inter-sectoral upgrading: e.g., introduction of a *new* crop, including related activities (post-harvest and marketing).

In the literature, the common denominator of upgrading types in global supply chains is that activities at any point in the chain are defined by the four key questions for vertical chain coordination: What is to be produced? How it is produced? How much is to be produced? And when and how is the flow of the product along the chain to be handled? (Humphrey and Schmitz 2002) A 5th question regarding smallholder inclusion can be added: 'How do smallholders benefit from upgrading interventions provided by F&A MNEs?'

A critical point for upgrading smallholder farming systems is that F&A MNEs are used to sourcing from global agricultural commodity traders and large local exporters, rather than purchasing directly from smallholders, because transaction costs - caused by dispersed production, small volumes, and poor infrastructure - are high. Moreover, product quality is variable and delivery is uncertain. In a close relationship between supply chain partners, partners are willing to invest resources and time, share risks and rewards, and retain the relationship over a longer period of time because pay-offs may occur over a long time (Landros and Monczka 1989; Krause and Ellram 1997). Therefore, F&A MNEs have to closely collaborate on a long-term basis with their suppliers/intermediaries of the smallholder supply chain, to upgrade smallholder farming systems.

It is emphasized in the literature that in order to succeed in market initiatives with the BOP, a partnership is required that involves joint efforts between the F&A MNE, suppliers, non-private sector stakeholders, and local government (e.g., Hahn and Gold 2013; Dahan et al.

2010; Rivera-Santos et al. 2012; London and Hart 2004; Perez-Aleman and Sandilands 2008; Dentoni et al. 2012; Bitzer 2012). This approach also provides a good opportunity to consider and to include local knowledge, networks, values, and social consequences of smallholder supplier development in order to gain local legitimacy (Reimann et al. 2012; Gifford and Kestler 2008).

The aim of the partnership is to bring together public and private resources and capabilities of the partners needed for smallholder supplier development. In this way, F&A MNEs can take into account smallholder supply development issues needed for upgrading. Moreover, they can also deal with a wider set of performance objectives, such as securing and stabilizing their own supply of commodities, while positively contributing to smallholder livelihoods. The mission of the partnership is identifying, building, and retaining partnerships - including non-business actors - for upgrading and developing a viable sustainable smallholder supply by F&A MNEs. The factors associated with partnership success are described by Mohr and Spekman (1994). These are the attributes of partnership (commitment, coordination, interdependence, and trust), communication behaviour (quality, information sharing, and participation), and conflict resolution techniques (joint problem solving).

Once the partnership is established, a development program must ensure that the supplier (trader- or producer-organisation) can facilitate upgrading of the smallholder farming system, and is willing to develop a close long-term working relationship with the F&A MNEs (Monczka et al. 1998).

The CSF (2) of the partnership for smallholder supplier development is that there is open two-way inter organisational communication between the partners of the farmer upgrading program (Hahn et al. 1990; Watts et al. 1993).

iii. Which governance structure offers smallholders the best upgrading prospects?

Governance can be defined as non-market coordination (Gereffi et al. 2001). It includes issues related to capacities, information, power, and decision-making. To include smallholders in high value-adding supply chains, governance functions are important since they indicate the possible leverage points to meet F&A MNE business goals.

Gereffi et al. (2005) distinguished five types of governance forms in global value chains:

1. Market chains: there are no tight relationships or asset-specific investments; switching partners is quick, easy, and not costly (typically spot markets).
2. Modular value chains: turn-key suppliers make products to the specification of the customer; the ability to codify specifications of the products is high.
3. Relational value chains: buyers and suppliers engage in complex interactions; product specifications cannot be codified, transactions are complex, and supplier capabilities are high.
4. Captive value chains: smaller supplying firms are locked in by the lead firm; the ability to codify and the complexity of product specifications are both high, but supplier capabilities are low.
5. Hierarchy chains: classical vertical integration; subsidiaries and affiliates are subject to a lot of managerial control from headquarters; product specifications cannot be codified, products are complex, and highly competent suppliers cannot be found.

Gereffi et al. (2005) also postulate a framework to determine the emerging coordination or governance structure in a global value chain. This framework is based on the interplay between three independent variables or dimensions:

- The complexity of information and knowledge required to sustain a particular transaction.
- The extent to which this information and knowledge can be codified.
- The capabilities of the supply base in relation to the requirements of the transaction.

Table 2.1. shows the results of the combination of these three variables in a specific governance form.

Table 2.1: The Five Governance Types Based on Gereffi et al. (2005)

	Complexity of transactions	Ability to codify knowledge	Supplier capabilities in reaching requirements
Market value chains	low	high	high
Modular value chains	high	high	high
Relational value chains	high	low	high
Captive value chains	high	high	low
Hierarchical value chains	high	low	low

Source. Adapted from Omta and Hoenen 2012

The question arises which of the five governance types of Gereffi et al. (2005) can be used to include a smallholder in high value-adding supply chains. The answer to this question depends on how the characteristics of the market linkages of smallholders in developing and emerging economies match the three dimensions of governance structures.

Rijsgaard et al. (2010) specified the following characteristics of smallholder supply:

- Sales of small volumes (high marketing costs per unit).
- High uncertainty of price, which is negotiated at each stage.
- Sales to many and different buyers (moral hazard problems, poor opportunities for acquiring reliable market information from buyers, poor opportunities for accessing finance and other support from buyers).
- Poorly specified quality and standards and a lack of quality control (moral hazard problems, no/low rewards for quality).
- Lack of traceability, which is a requirement for certification of food safety and sustainability.

Given these characteristics of smallholder supply, the three value chain governance dimensions of Gereffi et al. (2005) can be qualified as follows:

- Complexity of information and knowledge transfer is high due to characteristics i, ii, iii and v.
- Codification of information and knowledge is high and it significantly increases with certification to meet sustainable and food safety private standards due to characteristics iv and v.
- Capabilities of the supply base to adapt to the requirements of the transaction are low due to characteristics i, ii and iii.

It can be concluded that the characteristics of smallholder supply chains do not comply with that of the 'Market' (the complexity of information exchanged is low, transactions are relatively simple, governance mechanism is price rather than a powerful lead firm), and 'Hierarchic' governance types (product specifications cannot be codified, products are complex, governance is characterized by vertical integration and managerial control within a

lead firm). This means that the governance of sustainable smallholder supply in high value-adding chains, in which upgrading is the central issue for smallholder supply development, encompasses the 'Modular', 'Relational' and 'Captive' governance types. Of these three governance types, the 'Captive' governance type provides the best opportunities to coordinate the smallholder supplier development programs, because the complexity of transactions as well as the ability to codify transactions are high, while the capabilities in the supply base are low. Therefore, chains of smallholders-intermediary and other key partners have to be locked in by the lead or focal firm. The key difference between captive and hierarchical (vertical integration) type of governance of global value chains regarding the 'lock-in' types is that in vertical integrations the lead firm keeps full control of the entire chain for achieving short term gains, such as lowering cost, in the pursuit of maximizing firm's net returns. In captive governance type, the lead /focal firm cooperates with intermediaries aimed at upgrading capabilities and achieving synergy by focusing on long term gains in the pursuit of common prosperity.

The CSF (3) for the captive governance type of smallholder supply chains is that the 'buyer-seller' relationship shifts from an adversarial or transactional to a cooperative one (Spekman 1988; Watts et al. 1993; Krause and Ellram 1997). Transactional 'buyer-seller' relationships are driven by bargaining power and short-term contracts to achieve quick-wins at low cost by the buyer, while a cooperative one is based on partnership-like long-term contracts to achieve mutual interest, such as a smallholder inclusion relationship.

iv. How to strengthen vertical coordination in the smallholder supply chains to effectively and efficiently upgrade support?

A smallholder farm usually lacks the capacity to improve and influence the markets upon which its business depends. The challenge is then how to unify the hundreds or thousands of individual smallholders for effective upgrading interventions by F&A MNEs. The possible mechanism for this is horizontal integration (Riisgaard et al. 2010), i.e. producers' organisations (POs) of smallholders, particularly co-operatives. A PO is defined as a membership-based collective organisation or a federation of organisations with elected leaders accountable to their constituents (World Bank 2008). They are often seen as effective structures to link small farmers to commercial markets and to integrate them into regional and global value chains (e.g., Onumah et al. 2007; Koladay et al. 2007; Getnet and Anullo 2012; Chambo 2009; Bijman and Wollni 2008; Münkner 2012). Moreover, they can also strengthen producers' bargaining power.

A PO is based on the principle that acting collectively improves the position of its members, such as smallholders, and creates growth opportunities in farm productivity and income. A PO can fit together activities, such as upgrading, of sellers (farmers) and buyers (traders and processors) to more effectively meet market requirements than smallholders can individually. There are several areas in which POs can play a role in strengthening the coordination in smallholder supply chains in order to reduce transaction costs and market risks, enabling collective action, and redressing missing markets by applying (innovative) market institutions, such as market intelligent systems, grades and standards, forward contracts, contract discipline, and warehouse receipt systems (e.g., Torero 2011; Onumah et al. 2007).

Therefore, the CSF (4) for strengthening vertical coordination of sustainable smallholder supply chains is the emergence and/or empowerment of effective POs, i.e. horizontal integration of smallholders, to upgrade smallholder farming systems.

v. How can an accessible and affordable rural financing system be created to ease smallholder demands for investment, working capital, and savings effectively?

Access to affordable financial services is essential in order for smallholders to meet investment and working capital requirements and other financial services, such as insurance to cover risk and savings, to unlock their potential (e.g., London et al. 2010; Hazell et al. 2010; Wiggins et al. 2010; IFAD 2012; Sjaauw-Koen-Fa 2012).

Smallholders have to invest in new farm assets, technology, and equipment to meet the requirements of high value-adding supply chains and to expand their farming business. In developing regions however, smallholders lack collateral, credit history, and access to finance/credit. Moreover, low levels of economic activity and population density result in dispersed demand for financial services and weaknesses in the implementation of regulations. These, in turn, lead to high transaction costs, risks, and information asymmetries that make rural farm financing less attractive for commercial banking (e.g., World Bank 2007; IFC 2010; Chalmers et al. 2006; Sjaauw-Koen-Fa 2012). It should be noted that upcoming mobile banking can contribute to lower transactional costs and provide access to rural financing (e.g., Asongu 2013; Maimbo et al. 2010).

Beside investment and working capital, smallholders in developing and emerging economies also need savings and insurance services in order to respond to unexpected or irregular expenses and revenues; whether related to farming, festivities, sickness, or burials. Smallholders in developing regions are, after all, risk averse, in view of their limited (financial) capabilities to absorb shocks.

Alternative sources of affordable financing for smallholders range from microfinance institutions (MFIs) to savings and credit groups (SACCOs), and more formalised savings and credit co-operatives (World Bank 2007). In some cases, traders and processors provide financing to smallholders, such as pre-payment for contract farming (e.g., IFC 2010; Chalmers et al. 2006). Commercial smallholders have however even more difficulties when seeking medium-term and long-term financing. To ease this finance gap Doran et al. (2009), IFC (2010) and GIZ (2011) propose a revitalising of rural agricultural financing, with an emphasis on what the private sector, e.g., F&A MNEs and banks (in cooperation with public financial institutions for development), can contribute to mobilising smallholders.

Commercial banks and investment funds are used to serving the top of the farm production pyramid in developing and emerging economies. This pyramid consists of large farm enterprises and plantations.

Although F&A MNEs are not financial institutions, they can play a role in lowering financial risks for smallholders by providing prepayment before planting, offering buying commitments of the produced crops or animal products, and by providing a price guarantee to smallholders and financial access to producer organisations (e.g. Vorley and Thorpe 2014).

However, lowering financial risks will increase the creditworthiness of smallholders. This will attract (rural) financial institutions to provide finance to smallholders and the design of a value chain finance approach for smallholders (Miller and Jones 2010; Sjaauw-Koen-Fa 2012).

CSF (5) - regarding smallholder financing demands - is the creation or presence of an accessible and affordable rural financing system, to ease smallholder demand for investment and working capital, including insurance and savings.

Critical success factors within the F&A MNE

vi. What are the commitments, attributes, and procurement organisations needed to invest in and govern smallholder supply chains to secure a (long term) sustainable smallholder supply effectively?

Many F&A MNEs have been supporting smallholders in developing and emerging economies in the past decades. These F&A MNEs have mostly used Corporate Social Responsibility (CSR) strategies to express corporate philanthropy or to get a social licence-to-produce. The reason why firms should care about smallholders in developing and emerging economies is rooted in the debate on the role of business in society and has been explained in Sub-section 1.2.2. Smallholder inclusion in high value-adding supply chains needs a special business-driven sustainable smallholder sourcing model in which sourcing and CSR perspectives are integrated. Firms/F&A MNEs have different responses to social responsibility and social issues, such as smallholder inclusion. This refers to a firm's corporate commitment and capacity, such as mechanisms, procedures, arrangements, behavioural patterns, sustainability codes, and standards to anticipate on social issues (Gold et al. 2012; Tilburg van et al. 2012). Social responsiveness of firms can range from 'doing nothing' to 'doing much' regarding CSR (e.g., Carroll 1979; Maignan et al. 2002; Tilburg van et al. 2012). In the supply chain literature, the involvement and commitment of top management has been emphasized, because they best understand the needs of supply chain management, as they have the most knowledge of the firm's strategic imperatives to remain competitive in the market place (e.g., Hahn et al. 1990; Monczka et al. 1998). We concluded that to include smallholders in high value-adding supply chains, F&A MNEs need a proactive CSR strategy integrated with a clear smallholder sourcing strategy.

CSF (6) is that top-management is involved and committed, because sustainable smallholder supplier development programs are a long-term investment that is subjected to market risks.

vii. Internal organisational challenges for Smallholder Inclusion

The internal organisational challenge to guide and govern supplier development programs in global value chains was highlighted in the purchasing and supply chain literature (Watts et al. 1993; Trent and Monczka 1994 and 2002; Krause and Ellram 1997). The problem is that supplier development programs demand a procurement organisation with a long-term approach and resources. This is in contrast to conventional procurement organisations that are short-term profit-driven on a transactional basis. The challenge is how to integrate Procurement and CSR (regarding strategy, organisation and capabilities) in order to govern long-term smallholder supplier development programs.

Three categories of internal organisational challenges regarding the implementation of ventures in developing and emerging economies have been identified (Olsen and Boxenbaum 2009; Reficco and Rueda 2012). These internal organisational challenges have been adapted for smallholder inclusion in high value-adding supply chains:

- Process-related challenges: to unfold coalitions for smallholder inclusion both horizontally and vertically. Horizontally by linking functional areas within and across departments such as CSR and Procurement and Operation departments within F&A MNEs. Vertically by linking corporate management level (headquarters) with the management at country level.
- Structural and incentives-related challenges: to allocate and refine resources and capabilities for smallholder supplier development; to tune evaluation and performance

criteria; and to mandate an incentive structure between departments within an F&A MNE that are involved in sustainable smallholder supplier development.

- Cognitive challenge: to harmonize conflicting mind-sets between key actors/middle management/departments involved in smallholder inclusion.
- One of the most critical points is the refining of the traditional role and capabilities of CSR and Procurement within F&A MNEs: CSR focuses on supporting smallholder farming systems, while Procurement is concerned with procuring raw materials from multiple suppliers and spot markets at low cost on a transactional base. Therefore, sourcing from smallholders means a shift from corporate philanthropy (competence of CSR) to a sustainable sourcing strategy (competence of Procurement).

In the supply chain literature, the use of cross-functional sourcing teams led by Procurement and dedicated to strategic purposes organized around supply has been identified as an effective internal firm structure (Trent and Monczka 1994 and 2002; Mohamed et al. 2009; Driedonks et al. 2014). Cross-functional sourcing teams consist of personnel from at least three areas of a firm. The aim of these teams is to integrate different internal organisational capabilities, networks, and resources to develop smallholder supply from a strategic business perspective. Cross-functional teams can effectively and efficiently interact with supplier counterparts (cf. Hahn et al. 1990; Trent and Monczka 1994 and 2002; Krause and Ellram 1997; Driedonks et al. 2014).

CSF (7) - regarding internal organisational challenges - is the use of cross-functional teams led by Procurement and Operation, and including CSR, to integrate an organisation's values, processes, and routines, and to effectively interact with supplier counterparts.

The results summarized

The list of critical success factors for sustainable smallholder inclusion:

CSF (1): smallholders that can be included are commercially oriented and are willing and able to adapt to upgrading interventions (Christen and Anderson 2013; Torero 2011).

CSF (2): building partnerships for upgrading, i.e. entering into inter-organisational relationships with the capabilities needed to upgrade smallholders (e.g., Monczka et al. 1998; Gold et al. 2013).

CSF (3): building a captive governance structure based on a cooperative 'buyer-seller' relationship (Gereffi et al. 2005; Landros and Monczka 1989; Mohr and Spekman 1994).

CSF (4): building effective producer organisations to overcome barriers of dispersed production and high transaction costs (Onumah et al. 2007; Chambo 2009; Getnet and Anullo 2012).

CSF (5): building an accessible and affordable rural financing system (Chalmers et al. 2006; Miller and Jones 2010; Sjaauw-Koen-Fa 2012).

CSF (6): presence of a proactive CSR strategy, supported by a committed top-management (Trent and Monczka 2002; Mohamad et al. 2009; Tilburg van et al. 2012; Gold et al. 2013).

CSF (7): use of cross-functional teams within F&A MNEs to harmonize organisational values, routines, and resources, and to interact effectively with supply chain counterparts (Trent and Monczka 1994; Driedonks et al. 2013; Olsen and Boxenbaum 2009; Blok et al. 2013).

Table 2.2 provides an overview of the Journals in which the key articles used for analysing critical success factors for smallholder inclusion have been published.

Table 2.2: Important articles on smallholder inclusion in high value-adding supply chains

Articles	Journals
Humphrey and Schmitz (2002)	Regional Studies
Gereffi et al. (2005)	Review of International Political Economy
Hahn et al. (1990)	Journal of Purchasing and Material Management
Krause and Ellram (1997)	European Journal of Purchasing & Supply Chain Management
Watts et al. (1993)	International Journal of Purchasing and Material Management
London et al. (2010)	Journal of Business Research
Landros and Monczka (1989)	Journal of Purchasing and Material Management
Reiman et al. (2012)	Journal of International Management
Hahn and Gold (2013)	Journal of Business Research
Rivera-Santos et al. (2012)	Journal of Business Research
Gifford and Kestler (2008)	Journal of International Management
Mohamad et al. (2009)	International Journal of Logistics Research and Application
Maignan et al. (2002)	European Management Journal
Mohr and Spekman (1994)	Strategic Management Journal
Monczka et al. (1998)	Decision Sciences
Trent and Monczka (2002)	Academy of Management Executive
Hahn and Gold (2013)	Journal of Business Research
Gold et al. (2013)	International Business Review
Elkington (1998)	Environmental Quality management
Driedonks et al. (2013)	European Management Journal
Olsen and Boxenbaum (2009)	California Management Review
Trent and Monczka (1994)	Journal of Purchasing and Material Management
Spekman (1998)	Business Horizons
Rijsgaard et al. (2010)	Development Policy Review
Lee (2008)	International Journal of Management Review
Guinipero et al. (2012)	Journal of Purchasing & Supply Management
Caroll and Shabana (2010)	International Journal of Management
Bocken et al. (2014)	Strategy + Business Magazine
Schaltegger et al. (2016)	Organization & Environment
Barrientos et al. (2011)	International Labour Review
Pagell et al. (2010)	Journal of Supply Chain Management
Dahan et al. (2010)	Long Range Planning
Christen and Anderson (2013)	Forum note
Chen and Paulraj (2004)	Journal of Operation Management
Mohamad et al. (2009)	International Journal of Logistics: Research and Applications
Kirsten and Sartorius 2002	Development Southern Africa
Gold et al. (2013)	International Business Review
Seuring and Gold (2013)	Journal of Cleaner Production
Hahn and Gold (2013)	Journal of Business research

2.3.2 Construction of the Sustainable Smallholder Sourcing model

Conceptual elements of smallholder sourcing

We searched for articles that provide insights into smallholder inclusion in high value adding supply chains from two contrasting perspectives: top-down (from a the buyer-focal firm perspective); and bottom-up (from the seller-smallholder perspective). We found key articles in the categories of global value chains, supply chain management, international business management, development, and CSR literature. We also searched the literature for best practice case studies on smallholder inclusion in high value adding supply chains by F&A MNEs. The aim was to learn about smallholder sourcing approaches, barriers and drivers, and corporate responsiveness to social issues. For the purpose of the present study we have defined best practice cases as ones that have proven to work well over a period of time and produce good results for buyers as well as sellers. We therefore focused on scaled sustainable smallholder supply chains that could provide enough data, rather than on pilot projects.

In the literature on global value chains we have determined two key conceptual elements of sourcing strategies for smallholder inclusion.

The first one is ‘upgrading’, which is a key concept for the bottom-up global value chain approach. Gereffi et al. (2005 p. 13) define economic upgrading as ‘a move of firms to higher value added activities or interventions in production to improve technology, knowledge and skills, and to increase the benefits or profits deriving from participation in regional or global production networks’. ‘Upgrading’ interventions focus on strategies to effectively bridge the gap between capabilities required for the domestic market and those required for accessing export markets (e.g., Humphrey and Schmitz 2000; Kaplinski and Morris 2000). However, there are different types and applications of the concept of upgrading for value chains: process; product; functional; and inter-sectoral upgrading (Humphrey and Schmitz 2002).

The second conceptual element of sourcing strategies for smallholder inclusion is ‘governance’, which is a top-down global value chain approach. This concept focuses mainly on lead firms and the organisation of international industries. Global value chain approaches look at inter-firm collaboration within the supply chain as well as cooperation with non-traditional chain members such as NGOs (e.g., Webb et al. 2010; Hahn and Gold 2013; Rivera Santos et al. 2012) as a competitive advantage. Gereffi et al. (2005) distinguished five types of governance forms in global value chains and they also postulated a framework of three independent variables to determine the governance structure in global value chains. We applied the characteristics of smallholder supply as defined by Rijsgaard et al. (2010) to assess which type of Gereffi et al. (2005) governance structure can best coordinate smallholder supply chains lead by F&A MNEs. Humphrey (2004) reported on studies that highlight the role of captive relationships in product and process upgrading.

The third conceptual element for smallholder sourcing strategies from supply chain management literature is the concept of supplier development. Hahn and colleagues (1990) introduced the concept of supplier development programs, which would aid in upgrading suppliers in developing economies to produce goods - such as apparel and automobile and electronic parts - for MNEs situated in developed countries. They defined this concept as a long-term cooperative effort between a buying firm and its suppliers to upgrade the latter’s technical, quality, delivery, and cost capabilities. The ultimate goal of supplier development programs is to form a mutually beneficial relationship that will help the partners (‘buyer and seller’) of the supply chain to compete in the market place (Watts et al. 1993; Krause and Ellram 1997).

The three concepts have been adjusted for smallholder inclusion in high value-adding supply chains and integrated them into strategic sourcing concepts as the Sustainable Smallholder Sourcing model.

Design of the inclusive sustainable smallholder sourcing model

As this dissertation focuses on smallholder inclusion by combining business and CSR perspectives into a sourcing model in accordance with sourcing strategy option O3 (Section 1.3), the aforementioned three conceptual elements of smallholder sourcing and the list of CSFs (Sub-sections 2.3.1 and 2.3.2) are integrated in an inclusive sourcing model for sustainable smallholder supply, called the 3S-model (see Figure 2.1).

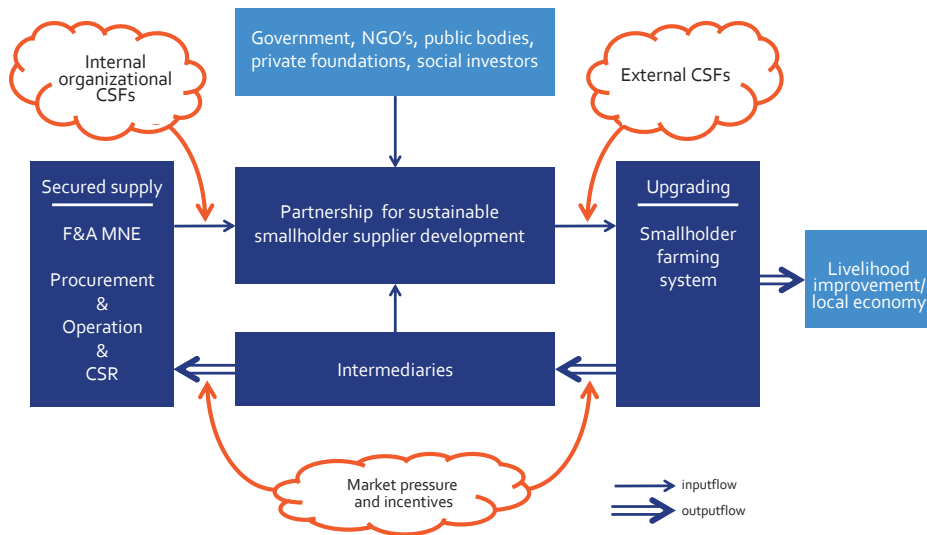


Figure 2.1: Inclusive Sustainable Smallholder Sourcing Model (3S-model)

The inclusive Sustainable Smallholder Sourcing model (3S-model) consists of six building blocks representing two activities, the buying process through the supply chain (the axis F&A MNE-Intermediaries-Smallholders) and the upgrading process through the partnership of the F&A MNE (chain leader), intermediaries, and public and private stakeholders; including governments, NGOs, private foundations, social investors, public bodies, and input suppliers.

The critical success factors that should leverage external (outside the F&AMNE) and internal (within the F&AMNE) organisational challenges of sustainable smallholder inclusion are located at the conjunction of the elements 'Partnership - Smallholder farming systems' and 'Partnership - F&A MNEs' respectively. The business drivers of the output flow are the links to open markets located on the commodity supply chain 'Smallholders – Intermediaries – MNE'. The business drivers are the links in the sourcing model, with the open market triggering the economic viability of the smallholder supply chain.

The single arrows in the figure represent the input flow of upgrading support and services to smallholders, while the double arrows represent the output flow of products (and livelihood improvement) resulting from the upgraded smallholder farming system.

External CSFs and the internal organisational challenges of sustainable smallholder inclusion are located at the conjunctions of the elements ‘Partnership – Smallholder farming system’ and ‘Partnership - F&A MNEs’ respectively. Drivers of the output flow are open market pressure and incentives.

2.4 Conclusion and Discussion

The objective of the development of the sustainable smallholder sourcing model with the list of CSFs (the 3S-model) is to contribute to filling gap 1 in the sustainable supply chain management literature for building truly sustainable supply chains that comply with the triple bottom, rather than keep building and retaining the greening of supply chains (Pagell and Shevchenko 2014 and Kleindorfer 2005). Pagell and Shevchenko (2014) stated that capturing a chain’s communal impacts will be an important step towards conducting research that accounts for all stakeholders by integrating the social dimension in sourcing strategies:

‘With such metrics, researchers could answer questions such as how to manage base-of-the-pyramid suppliers in a way that protected the suppliers and their communities. Similarly, such metrics would make it possible to re-examine issues such as the impact of global sourcing in a much more expansive fashion; perhaps by simultaneously looking at price and quality impacts on the supply chain and impacts on communities where production or consumption occur.’ (Pagell and Shevchenko 2014 p. 50)

Furthermore, this chapter also contributes to SSCM literature by linking BOP approaches and SCM to help address aspects that have so far been weakly developed, such as the social dimension of sustainability management (Seuring and Gold (2013 p. 5). Because supply chain managers often have to deal with limited resources, high transaction costs, and post-harvest losses of smallholder supply (cf. London et al. 2010; Torero 2011).

The approach of the theoretical developed 3S-model is first to view the entire supply chain and to engage all supply actors, both public and private stakeholders, in partnership (e.g., Hahn and Gold 2013; Webb et al. 2010). The main argument being the interdependence between different actors of the supply chains, in an increasingly interconnected world, is growing. As such, a single firm or organisation cannot identify and tackle sustainability challenges on its own.

Second element of the approach of the 3S-model is to integrate the two contrasting perspectives from the buyer (MNE), and the bottom-up perspective of the seller (smallholder). The main argument is to ‘integrate’ the socioeconomic dimension of the triple bottom line (Elkington 1998) into sustainable sourcing strategies.

This inclusive sustainable smallholder sourcing model can help F&A MNEs design or redesign conventional sourcing strategies/models and to tap from smallholder supply in ways to improve effective smallholders’ livelihood from a sustainable business perspective. The applied indicator for livelihood improvement is the profitability of the smallholder business model. The basic assumption is that the total/integral costs of commodity production should at least be covered by revenues generating enough profit to secure the farm’s continuity.

However, there are limitations when applying the 3S-model. The importance of the elements of the framework of the 3S-model and the related CSFs can be expected to differ, given the different characteristics of particular business cases, such as crop, geographical area, smallholder, and supplier types and capabilities. Moreover, F&A MNEs (processors, wholesalers, or retailers) can apply different sourcing and CSR strategies.

We believe that identifying and understanding these CSFs is crucial for successfully implementing and governing smallholder supply chains. In future research, the applicability of the 3S-model should be explored in different smallholder food supply chains in different geographical contexts by best-practice case studies, because our present paper is explorative and conceptual in nature. This may confirm, modify or specify the 3S-model and related CSFs and drivers. It may turn out that other CSFs are also important for smallholder inclusion in high value adding supply chains by F&A MNEs. The aforementioned analysis of sustainable smallholder sourcing strategies generally leaves questions unaddressed that represent avenues for future research regarding the appliance/implementation of the 3S-model with the list of CSFs in current conventional sourcing strategies and F&A MNEs' sustainable sourcing management.

CHAPTER 3

Exploration of the applicability of the inclusive smallholder sourcing model in the black soybean case in Java/Indonesia

This chapter is based on:

August. R. Sjauw-Koen-Fa, Vincent Blok,, and S.W.F. (Onno) Omta. Exploring the applicability of the Sustainable Smallholder Sourcing model in the Black Soybean case in Java. International Food and Agribusiness Management Review. In press, *DOI*: 10.22434/IFAMR2016.0171

3.1 Introduction

In the previous chapter, a sustainable smallholder sourcing model with a list of CSFs (3S-model) has been developed as an answer to the main research question: ‘How can F&A MNEs best include smallholders in their sourcing strategies in order to take social responsibility for a sustainable and more equitable large scale supply, while retaining competitive advantage?’ The objective of this chapter is to explore the applicability of this smallholder sourcing model by using primary data from a value chain analysis of the black soybean supply chain of an F&A MNE on Java.

The black soybean case

The black soybean supply chain was initiated in 2001, when Unilever Indonesia acquired a major stake in a Javanese company producing an authentic regional brand of sweet soy sauce based on black soybean. The problem in expanding the business lay in the fact that the black soybean supply was limited. That is why Unilever Indonesia started fostering small-scale paddy farmers to produce black soybeans of a high and constant quality as an intercrop, to be the key ingredient of authentic Indonesian sweet soy sauce.

The next section will explain the materials used and the methods applied. The case findings of the study are presented in Section 3 and the lessons learned are discussed and concluded in Section 4.

3.2 Materials and Methods

3.2.1 Research setting of the black soybean case

3.2.1.1 Soybeans and sweet soy sauce in Indonesia

There are different types (and qualities) of soybean, depending on the colour of the skin of the seeds which can be yellow, black, or white. Most soybeans of Indonesia are traditionally cultivated on the island of Java by small-scale paddy farmers as an intercrop, after the main rice harvest from April to July. The average farm size is 0.25 hectare, but farm size, agronomical conditions, planting patterns, and familiarity with growing soybeans varies widely per region and even within a region. For example, on high and dry land the planting pattern is mostly paddy-secondary crops (corn, groundnut, or soybean), while in low and wet land the pattern is paddy-paddy-secondary crop, such as soybeans, ground nuts, corn, chili pepper, red union, or melon. Moreover, in some areas farmers can lease state-owned land to grow seasonal crops, such as soybean. Differences in farming conditions between areas that rely on rainfall for water supply, are the main cause of differences in yields and production costs. To manage the differences in farming conditions could be challenging, because what seems to work in one area will not automatically works in other areas. It calls for custom-made solutions and governance.

In Indonesia, close to 90% of the soybeans are processed into the food products ‘tahu’ and ‘tempe’, which are the main source for proteins, vitamins, and fat for low-income households in Indonesia. A smaller amount is used for the production of soy milk, sauces, and other traditional Javanese food products. Per capita consumption of soybeans in Indonesia has increased significantly, while domestic soybean production has been declining in the past decades due to a large import of cheaper (yellow) soybeans, mostly from the USA. This is possible because Indonesia has applied a liberal trade policy (Daranto et al. 2011). The lack of infrastructure to support government initiatives and farmers’ lack of access to better farming technology are seen as major causes for the souring of domestic

production. Moreover, imported soybeans were preferred by the local food processing industry, because they had a better and more constant quality than domestic grown soybeans. Consequences of the liberal trade and ‘cheap’ basic food security policies of the Government was that the involvement of the government in local agricultural supply chains development, such as black soybean production, remains at arm’s length. It provides mainly general agricultural support, such as extension services, empowerment of cooperatives, and facilitating sustainable agriculture platforms.

Consequences of these soybean supply and demand patterns is that there are two separate soybean marketing systems operating in Indonesia. One for the imported soybeans, which are dominated by large importers, wholesalers, and processing industries. And the other for the domestic soybeans, a fragmented network consisting of collectors at village level, local and district traders, and provincial wholesalers, processors, and retailers. Another consequence of the large import of soybeans is that the domestic soybean price is constantly under pressure due to the lower import price of soybean (5% to 6 % average). As such the domestic soybean price is sensitive to fluctuations in world market prices and the US\$-IDR exchange rate. Unilever Indonesia sources its black soybean from the domestic market, which is ruled by the import regime and has the price level of imported yellow soybeans, which is usually about 5 % lower than domestically produced soybeans (see Figure 3.1).

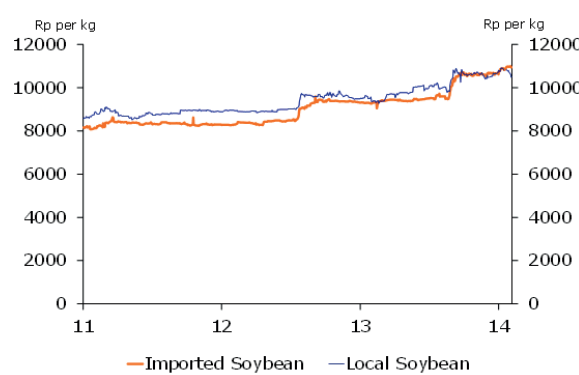


Figure 3.1: Soybean price development 2011-2014 (Source: National price tables, Ministry of trade of the Republic of Indonesia)

3.2.1.2 Historical background of Unilever’s black soybean supply chain

Unilever Indonesia is a subsidiary of Unilever that produces and sells a number of brands locally. It had implemented the fundamentals of corporate social responsibility from the early 1970s onwards, basically focusing on market and community development support (Urip 2010). In 2000, the Unilever Care Foundation Indonesia (Unilever CSR) was established in Indonesia to strengthen Unilever Indonesia’s commitment to sustainable development of Small and Medium Enterprises in Indonesia, while retaining a competitive edge, i.e. corporate social responsibility became an integral part of Unilever Indonesia’s business strategy for Indonesia. Unilever Indonesia is helping small-scale paddy famers in Java produce black soybeans of a high and constant quality for use as a key ingredient of sweet soy sauce. The specific taste of the black soybeans, the traditional recipe and the use of local small-scale paddy farmers makes it possible to advertise and sell the sweet soy sauce to local supermarkets.

In 2001, Unilever Indonesia acquired a majority stake in a Javanese company producing a regional brand of sweet soy sauce for the Indonesia market. This brand has retained its classic taste due to the consistent high-quality taste of locally produced black soybeans. It was recognized that the supply of black soybean would not be enough to meet the growing demand for the brand's sweet soy sauce, because many smallholders in Indonesia switched to other crops due to the low price of imported yellow soybeans. To solve this problem, Unilever Indonesia chose to develop its own black soybean supply chain of small-scale paddy farmers in Java, in addition to still purchasing additional black soybean from selected/qualified regional commodity traders.

However, the small-scale paddy farmers needed to be trained in cultivating black soybean according to good agricultural practices and access to inputs. In 2002 a pilot upgrading farm program with two cooperatives, including 12 small-scale paddy farmers, has started and since 2003 the University of Gaja Mada (Seed-supplier) has entered into a strategic partnership with Unilever Indonesia, providing guidance on how to grow black soybean by paddy farmers and how to breed an improved black soybean variety. They also selected a high yield variety of black soybean (Malika) that became a cornerstone of the upgrading program. A partnership, consisting of Seed-suppliers and selected cooperatives from East and Central Java (Cooperatives), was formed and a program to upgrade small-scale paddy farmers to grow black soybean on a contract basis was set up.

The period 2002-2007 is seen as the pilot phase of the black soybean supply chain. Around 2007, about 5,000 farmers from eight cooperatives were participating in the planting of black soybean; covering an area of about 1,200 hectares on Java. They contributed 10-20% of the black soybean demand in that period, while the remaining quantity was purchased from regional commodity traders operating in other areas in Indonesia (Hasibuan-Sedyono 2009). By 2007 the black soybean supply chain was scaled up to full commercial level.

Unilever Indonesia became full owner of the soy sauce company, and Malika was certified by the Indonesian authorities and became a cornerstone of the black soybean supply chain. The present study focuses on the period 2008-2013, which is the upscaling phase of the black soybean supply chain.

3.2.1.3 Case selection criteria

The black soybean supply chain in Java of Unilever Indonesia was selected to study the applicability of the 3S-model because:

1. This case study, which includes a value chain analysis, was part of a broader joint research program, Sunrise 2.0, commissioned by Unilever - one of the largest consumer goods company of the world with a clear proactive CSR strategy (Tilburg et al. 2012) - and Oxfam (an international confederation of a number of NGOs, working together with partners and local communities). The aim was to learn how the purpose of the value chain analysis:

i. To identify what the key success factors and lessons are that the final products for Sunrise 2.0 should take account of in the black soy bean case.

ii. To identify what the key leverage points are where Unilever and its suppliers can affect positive change for smallholder producers' livelihoods.

iii. To identify what incentive structures and support mechanisms within Unilever could help create the opening for suppliers to test/implement more inclusive practices.

The research approach included the fact that Unilever viewed smallholder supply chains top-down (from the F&A MNE's perspective), while Oxfam viewed them bottom-up (from the farmers' perspectives). The combined perspective was also integrated in the methods, tools and interview questionnaires used. The signed Memorandum of Understanding of the Sunrise research project 2010-2015 (see Final report of the Sunrise project, available at https://www.unilever.nl/Images/slp_project-sunrise-report_tcm164-414677_tcm1351-454001_nl.pdf) meant that Unilever and Oxfam were funders of the joint research program and both organisations may use the outcome for their own purposes and interests. These research settings ensured a more balanced results of conclusions, rather than in a case of dominance by one of the two research partners. Accordingly, the black soybean supply chain in Java provided a unique case for empirically studying the integration of business and CSR perspectives for smallholder inclusion in high value-adding supply chains. It integrates the business and CSR perspective, which is the basis of the developed Smallholder Sourcing model with the list of critical success factors (3S-model).

2. The black soybean supply chain in Java is a scaled-up supply chain that provided sufficient historical data (2007-2013) and opportunities to review the evolution of the black soybean supplier development program and the governance conditions over a period of time. Moreover, it also provided opportunities to identify and interview all relevant supply chain actors - including procurement, operations, and CSR managers, farmers, intermediaries, input suppliers, government, field workers, and public stakeholders - and to do field observations to verify the accuracy of understanding and consistency of the collected data and information.

3.2.2 Methods and tools

To explore the applicability of the sourcing model with the list of CSFs, we used the designed black soybean supply chain map (Figure 3.2) from the value chain analysis to learn about the partnership model for supplier development and the buying and the upgrading sourcing process, including the role of the different actors and trading relationship in the supply chain. We also used the outcome of the black soybean farmer business model to assess the impact of the sourcing model on farmers' livelihoods. Finally, we matched the information and lessons of the black soybean supply chain to the elements of the smallholder sourcing model, to explore similarities and differences and draw conclusions about the applicability.

The value chain analysis of the black soybean supply chain was conducted by the lead author in the period June 2013-April 2014. The desk research consisted of an evaluation of the sourcing strategy and the CSR policy of Unilever Indonesia, reviewing publications regarding the black soybean sector in Indonesia and collecting relevant information and data about the supply chain. The field research in Java was conducted in Jakarta and Jogjakarta from 24 November – 4 December 2013. The practical toolkits of the LINK methodology of the International Center for Tropical Agriculture were applied to map the black soybean supply chain, to explore the farmers' business models, and to get an indication of the impact of the applied black soybean sourcing model on smallholders' livelihoods.

Before the field research on Java was conducted, the black soybean supply chain was preliminary mapped in cooperation with Unilever Indonesia. The aim was to select and invite participants of all categories of supply chain actors (input suppliers, farmers, cooperatives, regional commodity traders, managers of Unilever Indonesia, government

representatives, field workers, NGOs) for multi-stakeholder workshops, to select interviewees for semi-structured interviews and to hold field observations. The number of smallholders (out of about 8,200 distributed across nine areas on Java) that could be invited for the workshop and interviews was limited (17 in total) because they had to come (fly) to Jogjakarta. We selected smallholders that had several years of experience with the black soybean upgrading program because we primarily focussed on why smallholders stayed in the black soybean program. The assumption we made was that the profitability and income security of producing black soybean in accordance with the conditions of the upgrading program were the key consideration to join and to stay in the program. Moreover, farmers were free to join the black soybean supply program because they can grow other crops such as corn, chili peppers, and ground nuts for the market. We cross-checked the impact of the applied black soybean supply program on smallholder livelihoods during the workshops and field visits, and by means of personal communication with supply chain actors.

The program of the field research conducted on Java consisted of the following elements:

- A multi-stakeholder workshop with all key stakeholders of the black soybean supply chain - including Unilever Indonesia Procurement and CSR managers, Cooperative executives, farmers, seed suppliers, field workers, NGOs, local government servants - (n= 22) was held to explore the (trade) relations and the flow of products, services, and payments between stakeholders in order to map the black soybean supply chain. Topics discussed during the multi-stakeholder workshop were: What are the core processes in the supply chain? How is the supply chain organized? Who are the key partners? How do products, payments, services, and information flow through the supply chain? What are the external influences that affect the performance of the supply chain?
- A farmers' workshop (n=17) to map the farmers' business model. We used the business model canvas exercise to get an indication of the cost-revenue structure. In addition, we used the standard cost price calculation of black soybeans that is used to determine the contract price in order to calculate the break-even price of black soybean at farm gate level (Indonesian Rupiah/Kg).
- Twenty-three semi-structured interviews with representatives of different categories of stakeholders of the partnership and regional commodity black soybean suppliers were conducted: executives of cooperatives (n=3); Unilever Indonesia-procurement manager (n=1); Unilever Indonesia Operations manager (n=1); Unilever Indonesia-Supplier development manager (n=1); Unilever Indonesia CSR managers (n=2); representatives of the seed supplier (n=1); field assistants (n=2); government extension agents (n=1); women's groups (n=2); NGO (n=1); regional commodity traders (n=3); and farmers (n=5). The aim was to explore each profile and each relationship in contract terms, and all barriers and drivers, success factors, performance indicators, and future perspectives. For each stakeholder category a semi-structured questionnaire was developed (see Appendix 1). All interviews were recorded and transcribed in English. A Bahasa interpreter was hired in case interviewees and participants of the workshops were not able to communicate in English. Reports of the workshops were drawn up and the interviews were transcribed.
- A field observation of a cooperative near Jogjakarta was done to get an in-depth view of the organisation and its practices, such as the storage and sorting facilities they provide to farmers. Two executives of a farmer women's group were interviewed to explore the role of farmer women in the black soybean supply chain.

- A meeting with a delegation of the Indonesian Human Rights committee for Social Justice about the black soybean supply program arranged by Oxfam Indonesia in Jakarta.

Practical toolkits from the Sunrise 2.0 research program that were used to explore the impact of the upgrading program of black soybean on smallholder livelihoods were from the LINK (acronym from 'LINKing' smallholders to markets) methodology developed by the International Center for Tropical Agriculture (Available at <http://dapa.ciat.cgiar.org/linking-smallholders-a-guide-on-inclusive-business-models/>):

- i. A business model canvas exercise to map the farmers' business model canvas during the farmers' workshop. The business model describes the rationale of how an individual firm creates, captures, and delivers value (Osterwalder 2005) and covers four areas (how, what, who, and how much) and consist of nine building blocks.
- ii. The score card within the New Business Model Principles that was applied in the multi-stakeholder workshop to examine the inclusiveness of the black soybean program and the business model canvas. Stakeholders were asked to score from 0 (strongly disagree) to 5 (strongly agree) on the following six inclusive business principles: chain-wide collaboration, effective market linkages, fair and transparent governance, equitable access to services, inclusive innovation, and measurement of outcomes.

The research aim of the LINK Methodology is to foster inclusive trading relations between farmer organisations and formal markets.

3.3 Results

3.3.1 Design of the black soybean supply chain map

Figure 3.2 shows the black soybean supply chain map that resulted from the multi-stakeholder workshop and information collected from the interviewees

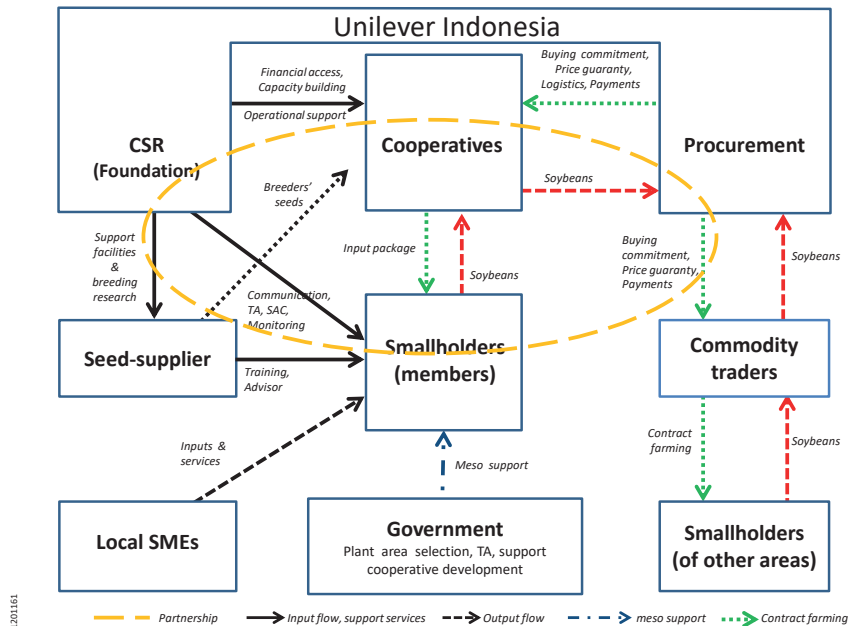


Figure 3.2: Black soybean supply chain map in Java

There were two supply chains of black soybeans to Unilever Indonesia: 1). the traditional supply from smallholders of other areas to regional commodity traders and on to Unilever Indonesia; and 2). the newly developed supply chain from smallholders (member farms) to Cooperatives to Unilever Indonesia. The latter supply chain has increasingly become the supply source, while the traditional supply chain was used as leverage to meet the total black soybean demand of Unilever Indonesia. The farmer price and delivery conditions of the black soybeans of both supply chains are equivalent.

In the present study we focused on the development of the black soybean supply chain of Unilever Indonesia. However, both supply chains are interrelated by the use of a similar price, product quality, and delivery conditions. The black soybean supply chain developed consisted of two activities: 1) the buying processes (the axis Unilever Procurement – Cooperatives – smallholders) led by Procurement; and 2) the upgrading processes (the partnership consisting of Unilever CSR – Cooperatives - Seed supplier (circle)) led by Unilever CSR, because of their mission to support Unilever Indonesia corporate sustainable development in Indonesia (Urip 2010: p. 99-122). The different arrows represent the flow of products, payments, and upgrading interventions provided by supply actors during the planting season. Within Unilever Indonesia, close coordination between Foundation and Procurement staff enables this program to run smoothly. Formal communication mechanisms (regular meetings) had been established from Unilever Indonesia to cooperatives and from cooperatives to smallholders groups. Informal and spontaneous communication seemed to be less fluid.

The sourcing process of black soybeans started with the calculation of the required beans needed for the next season to produce sweet soy sauce. Buying conditions were: the price was guaranteed before planting and there was a commitment to buy all black soybeans that were produced and had the required quality. With this information, Unilever-CSR consulted cooperatives and seed-suppliers to explore how many of the demanded black soybeans could be produced by the smallholders who are small-scale paddy farmers. The outcomes of the assessment and the agreed terms were written down in a Memorandum of Understanding signed by the cooperatives and seed supplier. Side selling by farmers was not permitted but was not penalized either. Remaining soybeans that the MNE needed for the next season came from selected regional commodity traders that operated in other areas than those operated in by the Cooperatives. These traders had a long standing supply relationship with Unilever Indonesia.

It was also found that smallholders are free to join the supply program. They could choose to grow another crop, like corn, pepper and groundnut for the local market, which could be more attractive from the business perspective of the smallholder. Existence of some degree of free ridding of smallholders without penalties occurred, when price offered by traders were higher. Domestic soybean price depends on the import price, which is over the year relatively stable. In the period 2011-2014 the domestic price was on average 5 % above the import price. The prefixed contract farm gate price of black soybeans was related to the domestic price, and was set 5 to 10% higher.

During the planting seasons, field assistants of Unilever Indonesia-CSR were frequently in touch with farmers and each month a meeting was held with field assistants and cooperatives. One month before the harvest, Unilever Indonesia paid 80% in advance on sales that allowed them to provide a cash loan to farmers before the harvest, and the remaining part was paid shortly after delivery. The total estimated harvest to be delivered was determined by cooperatives along with Unilever-CSR. After the harvest, the cooperatives facilitated the collection of the beans, the sorting (by hired women farmers), the storage, and the payment to farmers or farmer groups. Finally, the beans were collected by Unilever Indonesia-Procurement and transported to the soy sauce factory near Jakarta.

The involvement of the government in the black soybean supply chain was at 'arm's length', i.e. they were not directly involved in the partnership. This was due to the liberal economic development and international trade policy of Indonesia that allowed large imports of cheaper yellow soybeans. The critical performance indicators of the black soybean supply chain in the period 2008-2013 are shown in Table 3.1.

1. Number of smallholders	5,000 – 8,300
2. Yield increase on average	360 - 700 Kg per hectare
3. Supply of total soybean demand	From 20% to 60%
4. Return/Costs –ratio per unit (pre-calculation 2013)	1.8

Table 3.1: Performance indicators of the black soybean supply chain 2007-2012 (Source: Unilever Foundation Indonesia 2013)

The aggregated performance figures however disguise variances and differences between cooperatives/regions and farmers, because the agronomical conditions and soil quality vary widely between regions. This is an important point of concern for Unilever Indonesia to minimize supply risks and also for the smallholders, such as in 2012 when production was exceptionally higher (over one third) than forecast, due to favourable weather conditions. Due to the fact that Unilever Indonesia are committed to buy all the produced black soybeans.

In 2013 Unilever Indonesia started with the certification of black soybean farmers according to the companies Sustainable Agriculture Code (SAC) for black soybean production. This consisted of minimum sustainability standards regarding soil management, crop and animal husbandry, working conditions, and environmental resources, which are applied to their suppliers and the farmers who supply them. It was reported that in 2014, about 65% of the farmers were certified as SAC farmers.

The growth in number of smallholders participating in the black soybean supply program, the yield increase on average, and using a pre-calculated return/cost -ratio (R/C-ratio) much larger than the one for pricing in the period 2007-2012, indicated that the black soybean case is a best practice empirical case in which Unilever Indonesia sources effectively from smallholders.

3.3.2 Indicators for smallholder livelihood improvement

The impact of the applied black soybean upgrading program on smallholder livelihoods was measured in two ways (see Section 3.2) .

First, Figure 3.3 shows the findings of the business model canvas exercise (Osterwalder et al. 2005) on the business model of black soybean farmers on Java as it was applied in a multi-stakeholder workshop.

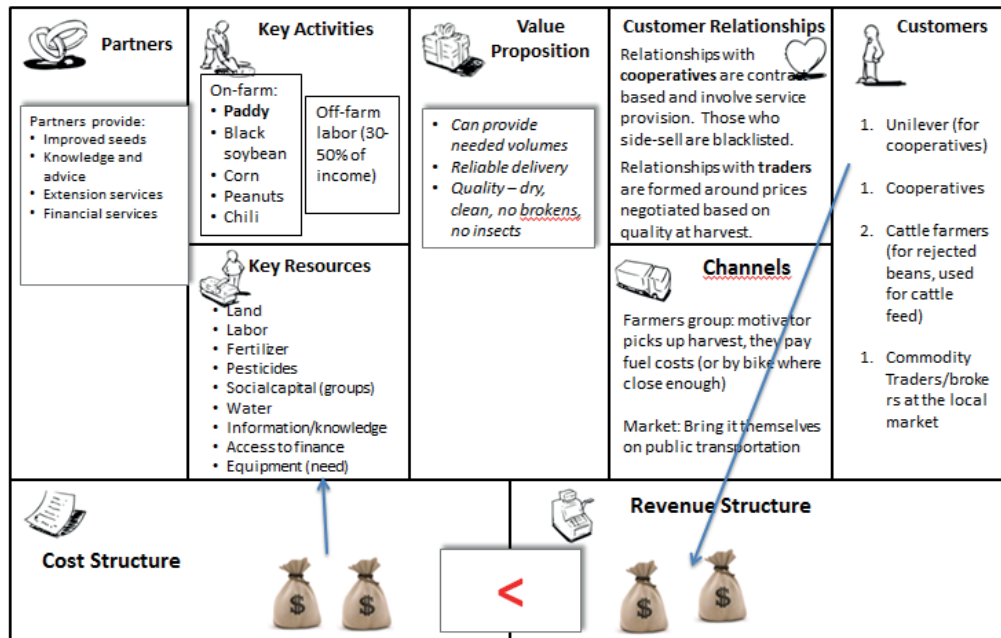


Figure 3.3: Business model of black soybean farmers on Java

The found business model canvas of black soybean smallholders clearly shows that the balance of the cost-revenue structure of the farmers' business model was positive, which is an indicator of the improved livelihoods of farmers. This was also confirmed by exploring the standard cost price calculation per unit of black soybean production used for the upgrading program. The outcome of the farmers' business model was that the calculated total production costs per kg of black soybean was more than sixty percent of the contract price (farm gate price) of the upgrading program (2013). This means that planting black soybeans was profitable for farmers, according to the farmers' business model canvas exercise. Also during the farmer workshop it was confirmed that the value of the black soybean as an intercrop is that it is a secure and reliable source of income.

Second, Figure 3.4 shows that the average scores on the six inclusive business principles of the New Business Model Principles were positive.

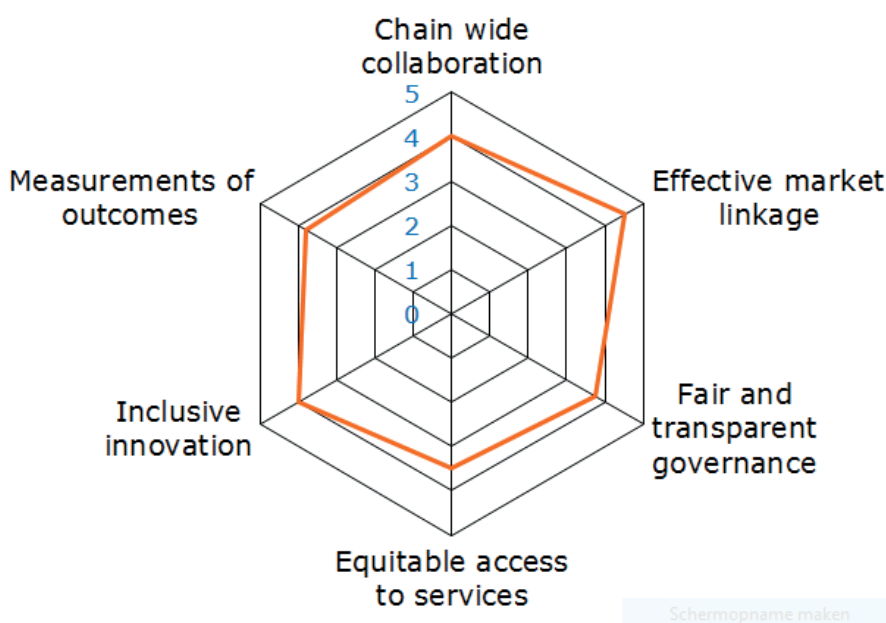


Figure 3.4: Inclusiveness of the black soybean business model in Java

The highest score is on the inclusive criteria 'Effective market linkages' (4.5). Key elements of these criteria are: trading relations and product offer is stable and profitable for all actors; intermediaries respond to needs for both supplier and buyers; and cooperatives function well.

The lowest score (3.5) is on equitable access to services, of which key elements are the availability of or access to services such as technical assistance, storage facilities, and financial services providing room for improvement.

We conclude that, based on the positive outcomes of the two approaches, the applied black soybean sourcing model indicates a positive impact on smallholder livelihoods.

3.3.3 Critical Success Factors of the black soybean supply chain

The found CSFs of the black soybean supply chain on Java were:

CSF 1: The farmers selected to grow black soybean are commerce/market-oriented small-scale paddy farmers.

We found that the characteristics of paddy farmers participating in the black soybean supply program meet the characteristics of commercial farms in tight value chains according to Christen and Anderson (2013). The farm size of these farmers was 0.3 hectare on average. These farmers were likely to carry out a variety of other activities. They sold almost all of the paddy on the local market and used the dry season to plant an intercrop, such as chili peppers, corn, and groundnuts. They were members of a cooperative and participated in farmers' groups to cultivate black soybean as an intercrop.

CSF 2: A long-term partnership was formed and a supplier development program was set up for upgrading.

We found that Unilever Indonesia has set up a partnership with selected farmers' cooperatives and seed suppliers and created a supplier development program to upgrade paddy farmers to cultivate black soybean. Unilever -Procurement led the buying processes while Unilever-CSR led the upgrading processes of the upgrading program, because upgrading small-scale paddy farmers was also considered a community development activity. This is consistent with the mission of Unilever-CSR, namely to strengthen Unilever Indonesia's commitment to sustainable development to retain a competitive edge.

CSF 3: The governance structure of the black soybean supply chain is of a captive type and based on a cooperative 'buyer-seller' relationship for black soybean supplier development.

The found governance structure of the black soybean supply chain can be classified, according to the classification of Gereffi et al. (2005), as a captive type of governance, because the supply chain was locked in by Unilever Indonesia. The relationship between partners is based on a cooperative instead of a short-term transactional buyer-seller relationship, because of the long-term business perspective of the upgrading program. The communication within the black soybean partnership is a two-way and open system. There are regular meetings, visits to farmers during the planting period, and standard cost price calculations are used during the negotiations.

The local government did not participate in the black soybean partnership consisting of Unilever Indonesia, the cooperatives, and the University of Gadjara Mada (seed supplier).

CSF 4: Cooperatives were empowered in order to strengthen the vertical coordination of the black soybean supply chain.

We found that the Cooperatives participating in the upgrading program of the black soybean supply chain are key contracting partners representing the member farmers. They play a central role in facilitating the flow of information, inputs, provision of upgrading support, and collection, sorting, storage, and delivery of the contracted black soybeans. Farmers are aggregated in groups in order to communicate effectively and to lower transactional costs. Unilever Indonesia-CSR supports the improvement of management capabilities and the financial access of the cooperatives to strengthen vertical coordination in the black soybean supply chain.

CSF 5: Unilever Indonesia offers a prepaid system before the harvest and a buying commitment for all soybeans produced.

Unilever Indonesia offered price guarantees before planting and a buying commitment for all black soybeans harvested. Unilever Indonesia is not a financial institution, however, these buying conditions eased the credit demand and lowered the risks of the black soybean smallholder farmers. Farmers received 80% in advance on sales one month before the harvest, while the remaining 20% was paid within two weeks of delivery to the factory. This payment system, combined with the buying commitment of the black soybeans produced, eased the credit demand, lowered costs, and reduced the risks of the black soybean smallholders. In addition, it was noticed in the farmers' workshop and during the interviews that this finance system was of great value, especially to small-scale farmers, because it is a secure source of income.

CSF 6: Presence of a clear smallholder sourcing strategy and commitment to a secured sustainable black soybean supply integrated with a proactive CSR strategy from a business perspective.

The CSR strategy was established to strengthen Unilever Indonesia's commitment to sustainable development in Indonesia. The final aim of this CSR strategy is to retain the competitive advantage of Unilever Indonesia, while continuously ensuring the business commitments to community building, creation of employment and wealth, as well as caring for the environment. In practice, this means that Unilever Indonesia-CSR supports the sustainability performance of the projects of the business units of Unilever Indonesia. The development of an alternative black soybean supply chain fits into the sustainable business development approach of Unilever Indonesia.

CSF 7: Use of cross-functional sourcing teams, consisting of Procurement and CSR with clear division of tasks, resources, and incentives for effective black soybean supplier development; but both focus on the same Unilever Indonesia inclusive goal.

Within Unilever Indonesia, close coordination between Unilever Indonesia-CSR and Unilever Indonesia-Procurement staff enabled them to run the upgrading program in a smooth way. Unilever Indonesia-CSR played a program management role in the upgrading processes from input supply to the sorting out stage of the soybeans harvested. Procurement steered buying processes in the collection and logistics of the soybeans from the cooperatives to the soy sauce factory and the payment of the delivered black soybeans. Unilever Indonesia-Procurement as well as the Unilever Indonesia-CSR were focused on the same strategic corporate goal, i.e. the development of a sustainable smallholder supply chain to strengthen Unilever Indonesia's market position in Indonesia and contributing to smallholders' livelihoods. There was a clear division of tasks between Unilever Indonesia-CSR, which is a company foundation, and Unilever Indonesia-Procurement, which is a department of Unilever Indonesia. However, both had compatible tasks and complementary competences, resources/funds, and incentives and there was open communication and understanding between them.

The overall finding of the case study is that the CSFs in the black soybean case were in line with the CSFs of the 3S-model. However, differences found were the role of Unilever Indonesia in providing affordable farm financing (CSF 5) and the business from Unilever Indonesia-CSR.

3.3.4 Matching of the black soybean map with the 3S-model frame work

To illustrate the applicability and the dynamics of the 3S-model we have matched the empirical black soybean supply chain map (Figure 3.1) with the 3S-model (Figure 2.1). The result is shown in Table 3.2. We conclude that the black soybean supply map is generally in line with the framework (building blocks) of the 3S-model with related CSFs.

Building blocks of the 3S model	Black soybean supply chain map
F&A MNE	ULI represented by: -.Procurement (buying black soybeans from cooperatives). -.ULI-CSR (a <i>company's foundation</i> , leading upgrading processes).
Intermediary	<i>Cooperatives</i> : representing farmers in the partnership, organizing member farmers for production, facilitating upgrading and delivering processes of black soybean.
Smallholders	Commercially oriented small-scale paddy farmers growing black soybeans on a contractual base
Partnership model	Consisting of MNE, cooperatives and seed supplier (a <i>university</i>), using a farmer development program for upgrading
Government, NGOs, Public bodies, private foundation, social investors: (control variables)	-Government has been involved <i>at arm's length</i> . -NGO empowered women group -Local SME's provided farm services
Smallholder livelihood improvement	Positive indication (e.g., R/C-ratio > one)

Table 3.2: Black soybean supply chain map according to the 3S-model

3.4 Conclusions and Discussion

The purpose of the present article was to explore the applicability and the dynamics of the sustainable sourcing model for sustainable smallholder supply (3S-model) based on a best practice case as empirical background. In this model the business perspective (to secure stable access to sustainable smallholders' commodity supply) and CSR perspective (improvement of smallholders' livelihoods) are integrated.

The overall finding of the study is that the dynamics of the Unilever case can be understood with the help of the 3S-model. Similarities include the use of a partnership model for upgrading, a captive governance structure, and the existence of a clear proactive and committed corporate sustainable smallholder sourcing strategy. At the same time we also found differences regarding the role of the ULI in farm financing, the business form of suppliers and the cross functional sourcing team that influence the concept of the 3S-model.

The lessons learned from these differences are:

First, regarding building partnerships for upgrading (CSF 2), although the 3S-model for sustainable smallholder sourcing has a business perspective, input suppliers can also be public organisations instead of just private companies. We think that in the pilot and start-up phase of a smallholder supply development program this isn't a constraint, because of the supportive character of the program. However, in the scale up phase of the supply chain, the limits of a public organisation in a business setting could be more pressing, because of the non-commercial orientation of the public organisation to grow together with the business in

a competitive global market environment (e.g., provision of long term investment capital and profit making).

Second, regarding providing access to finance to smallholders (CSF 5), F&A MNEs can play an important role in lowering financing cost and risks for smallholders by offering buying commitments and price guarantees and down payments before planting, although they are no credit institution themselves. These facilities can attract rural banks to provide farm financing to smallholders, because such buying guarantees lower financing risks for bank credit (smallholders in developing regions often miss reliable collateral, land titles, and professional book keeping over a long period of time).

Moreover, this type of producers' contractual financial relationship between MNE-Intermediary- Smallholders in the value chain could also provide opportunities for value chain financing by banks. F&A MNEs are then taking the lead (as lead contractor) within the value chain on farm financing. The concept of value chain financing can be defined as financial services and products flowing to and/or through value chain participants in order to address and alleviate driving constraints to growth and competitiveness of that value chain (e.g., Miller and Jones 2010).

Third, regarding the sourcing organisation of the F&A MNE for governing long-term smallholder supplier development programs effectively (CSF 7), because there are process-related, cognitive, structural, and incentive-related challenges to overcome, one of the most critical points is the refining of the traditional role and capabilities of Unilever Indonesia's CSR and Procurement departments and their activities within the F&A MNE. The use of cross-functional teams consisting of Procurement and CSR staff and resources (CSF 7 of the 3S-model) as we found in the black soybean case. In this case, Unilever Indonesia-CSR related activities are employed via the company's foundation, i.e. an independent non-profit organisation with a corporate sustainability mission and resources, that works at the Bottom of the economic Pyramid to strengthen a company's license to operate, rather than a department of the core business organisation of F&A MNEs. The advantage of this internal organisation within F&A MNEs is that corporate social responsibility goals can be integrated with core business sourcing goals of the F&A MNE, i.e. to make a company (more) business inclusive.

Based on the lessons learned from the black soybean case study the following CSFs have been sharpened:

- CSF 5: 'Providing access to finance to smallholder' has been changed to 'Lowering financing costs and risks of smallholders', because MNEs are no credit institutions. However, they can offer to buy the produce at a guaranteed price and make down payments to farmers before planting to ease smallholders' financing needs.
- CSF 7: 'Use of cross-functional sourcing teams' has been changed into 'Use of cross-functional sourcing teams that integrate corporate sourcing and CSR goals', because a common focus on the corporate sourcing goals of the team is more important than the organisation of a team member.

However, there are questions still to be discussed:

First, despite a positive indication of the contribution of the smallholder sourcing model to livelihoods, the question remains whether smallholders get an equitable piece of the cake, i.e. do they get the real price for their produce that covers at least all costs and risks? A clear answer to this question can hardly be given because of several reasons; for instance, because of the business development and learning character of supplier development programs. Primary sources for raising farm income are improvement of productivity (higher yields per

hectare) and product quality (higher price). Moreover, smallholders in developing economies are mostly not familiar with cost price calculations and bookkeeping, lack price and market information, or are surrendered to the practices of a middlemen (e.g., London and Hart 2010).

Second, the question is what Unilever would do in case there is an excessive supply of black soybeans? The consideration of Unilever to develop an own smallholder black soybean supply chain has been driven by the expectation that demand of black soybean will exceed supply on the one hand. On the other hand, it was an opportunity to express Unilever's CSR commitments in community development building, creating employment and livelihood improvement of small-scale farmers in Indonesia (Urip 2010). Accordingly, Unilever offered farmers price guarantees before planting and a buying commitment for all black soybeans harvested. The agreed terms were written down in a Memorandum of Understanding. These two considerations compelled Unilever to fulfil the obligations, avoiding reputational risks.

However, in 2012 the production of the contracted black soybeans was 35 % higher than the forecast, due to favourable weather conditions. Due to the fact that Unilever Indonesia was committed to buy all the harvested black soybeans the storage capacity proved insufficient and questions were raised about the accuracy of the production forecasting system.

Third, the questions is, what will happen with the black soybean sourcing model in case of severe downturns in Unilever's fortunes or in case of crop failure because of severe drought or extreme soya price drops? On the one hand, there is no guarantee that Unilever will never change its strategy, such as in case of a downturn, because firms need to be profitable in order to survive and grow in a challenging global food system. On the other hand, the best guarantee that F&A MNE's take their responsibilities serious is the level of their CSR commitment. In the case of Unilever the company has a proactive CSR strategy, implying that it has the capacity, procedures, arrangements, behaviour patterns, sustainable codes, and standards to anticipate on social issues and a committed top management (Tilburg et al. 2012). This is a precondition for long-term investment in smallholder supplier development programs in order to secure a (long-term) sustainable and more equitable commodity supply from a business perspective (CSF 6).

Although we have illustrated in this study that MNEs can include smallholders in a sustainable and more equitable way in high value-adding supply chains from a business perspective, the overall effect of F&A MNEs in solving global food security and sustainable development challenges must not be overestimated. Constraints are, among other things, their short-term commercial and business model orientation and their relatively small scale in the global food system compared to the estimated 200 million small-scale commercially oriented farmers operating at the Bottom of the Pyramid (Christen and Anderson 2013), i.e. F&A MNEs cannot do it alone (e.g., World Economic Forum 2011).

Nonetheless, we believe that the fact that the value chain analysis of the black soybean supply chain is commissioned by both an international NGO (OXFAM) and a corporate actor (Unilever), provides a unique case for studying integration of business and CSR perspectives in smallholder inclusion in high value-adding supply chains, which is the underlying basic principle of the 3S-model with CSFs and drivers of supply chain dynamics.

The added value of this research, especially to management scholars, is that the black soybean case illustrates that MNEs can include smallholders in a sustainable and more equitable way in high value adding supply chains. It can help in (re-)designing (conventional) sustainable smallholder sourcing strategies.

However, there are limitations to this study, because the findings were based on a single case; food sectors, geographical conditions, the political context, and sourcing strategies of F&A MNEs may differ. Accordingly, we recommend further case study research in order to further confirm, modify, or fine-tune the 3S-model.

CHAPTER 4

Exploration of the critical success factors of the inclusive smallholder sourcing model in two cases: the black soybean case in Java/Indonesia and the tomato case in Maharashtra/India

This chapter is based on:

August. R. Sjauw-Koen-Fa, Vincent Blok, and S.W.F. (Onno) Omta. Exploring the integration of business and CSR perspectives in smallholder sourcing: black soybean in Indonesia and tomato in India. *Journal of Agribusiness in Developing and Emerging Economies*.

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4.1 Introduction

This chapter explores the integration of the business and the corporate social responsibility perspective in two best-practise cases by comparing the building blocks and the CSFs of both supply chains. Thereby, using the developed inclusive sustainable smallholder sourcing model and its critical success factors (3S-model) as template/guide. Similarities and difference impacting the consistency of the model.

Both cases stem from the Sunrise 2.0 2010-2015 joined research program, conducted in the same period as the black soybean case, that used the same methodology and tools in its the value chain analysis as in the black soybean case. Similarities and differences between the cases indicate the consistency of the inclusive sourcing model, i.e. the building blocks of the developed inclusive smallholder sourcing model and the critical success factors of smallholder inclusion and will be introduced briefly below.

The tomato case

The tomato supply chain was initiated in 2010. For tomato paste the key ingredient of their branded tomato ketchup, Unilever India was dependent on imports from China. Unilever India aims to source 100% of its tomato paste from Indian smallholder farmers. Unilever India, in partnership with the processor and others, want to help small-scale farmers in the Indian state Maharashtra to produce suitable tomatoes to substitute the import of paste from China.

In this chapter only a summary of the literature review on the critical success factors will be provided in Section 2. For a complete literature review on the inclusive sourcing model and the critical success factors for smallholder inclusion (see Chapter 2). In the next section are explanations of the materials and methods used. The case findings of the study are presented in Section 3 and discussed and concluded in Section 4.

4.2 Materials and methods

4.2.1 Case description

The cases selected to explore the applicability of the sustainable smallholder sourcing model were Unilever's black soybean supply chain on Java/Indonesia and its tomato supply chain in Maharashtra/India.

The black soybean supply chain was initiated by Unilever Indonesia in partnership with cooperatives of small-scale paddy farmers and the supplier of improved black soybean seeds in 2002/2003. The aim was to secure a sustainable supply which is a key ingredient of the authentic black soybean sweet soy sauce brand of Unilever. Locally produced black soybeans, which were traditionally supplied by regional commodity traders, were limited. The aim was to help small-scale paddy farmers in Java produce black soybeans. The research was focused on the scale-up phase between 2008-2013.

The tomato supply chain was initiated in 2011 in partnership with a local food processor. The aim was to produce tomatoes by local small-scale farmers in compliance with Unilever's sustainability codes set by a local food processor in Maharashtra. These tomatoes were processed into paste for Unilever India, and used as a key ingredient of their branded tomato ketchup. Until then, Unilever India was largely dependent on imports of paste from China, which has higher transaction costs and sustainability certification costs.

4.2.2 Historical background of the cases

- For the background of the black soybean case (see Chapter 3, Sub-section 2.1.1).
- For the tomato case (see below):

Hindustan Unilever Ltd. (MNE), a subsidiary of Unilever in India, one of the largest food processing companies in India, used to depend on imports for the sourcing of the majority of its tomato paste. Paste is the key ingredient of its tomato ketchup brand. It is produced from fresh tomatoes that must be of good quality, reasonably firm, free of cracks, and bright red in colour with dry matter content.

The MNE aims to source 100% of tomato paste from sustainable sources by 2015 (60% in 2011), while enhancing smallholders' livelihoods positively. However, sourcing tomatoes locally had several barriers including lack of consistent quality, lack of availability, high transactional cost, and high price volatility. The Indian farm structure is fragmented, the marketing system is regulated by the government and a paste processor must be able to organize a tomato supply sustainably, of a desired sustainable quality and quantity, and process them into paste. Therefore a smallholder supplier development program to upgrade smallholder farming is needed and the MNE entered into partnerships with the state government of Maharashtra (Government), Varun Agro Foods Pvt Ltd (Processor) and Bayer Crop Science (Pesticides supplier), and also collaborated with Syngenta (Seed supplier) and Yara (fertilizer supplier).

Around 2010, Hindustan Unilever (the MNE) began looking for more domestic sources (local supply) to reduce landed costs of imported tomato paste, a key ingredient of their tomato ketchup brand. At that time the Processor, a local established food processing company, set up a new ISO-certified (International Organization for Standardization) processing plant to produce tomato paste and fruit pulp. Local smallholders were contracted by the Processor to cultivate tomatoes and fruits. The MNE decided therefore to enter into a partnership with the supplier for the supply of tomato paste produced from locally cultivated tomatoes by smallholders.

However, the locally produced tomatoes were of inconsistent quality, productivity was low, and the agricultural practice didn't comply with the MNEs sustainability requirements. To ensure a sustainable local tomato supply to the processor, a supplier development program to upgrade smallholder farming system was set up. Smallholders had to be organized in farmers groups for providing upgrading support and to lower transactional cost.

In 2011, the MNE entered into a public-private partnership with the government for sustainable sourcing of tomatoes locally. The objective was to mobilize farmers into producer groups, train & equip them on good agricultural practices, ultimately improving their productivity and the quality of the produce. As a part of this initiative, the MNE provides farmers with a buy-back guarantee for their produce. It also offers global and local knowledge and expertise in sustainable agriculture practices in tomato cultivation; this includes the latest agricultural techniques, irrigation practices, and recommendation for the right type of seeds.

Execution of good agricultural practices and adoption of drip irrigation systems see farmers make significant savings in water, labour, pesticide, and fertilizer, limiting any negative impact on the environment.

In 2012 the MNE and pesticide supplier entered into a 'Food Chain Partnership'. The aim is to support smallholder tomato farmers in improving their productivity and quality of fresh produce and thereby improving net returns from farming through the implementation of good agricultural practices (the Sustainable Agricultural Code). This Food Chain Partnership project was set up with the following objectives:

- Adoption of good agricultural practices
- Training of all participating contract farmers
- High-quality production of tomatoes as per the specifications
- Improvement in yields

As such, the pesticides supplier was looped in by the MNE to play the role of supporting technology partner for tomato cultivation in the tomato supply project in Maharashtra.

In 2012 the MNE also collaborated with the fertilizer and the seed supplier to help farmers with good agricultural practices and help increase their yields. In the first year (season 2012-2013) there was a yield increase from 24 tons to 65 tons per hectare by using a hybrid instead of a local tomato variety and adapting new farming methods through an intensive training and monitoring program.

Achievements of the tomato smallholders reported were:

- 15-20 % increase in yields in a year-on-year comparison
- Higher quality produce resulting in higher returns
- 10-15 % reduction in crop protection costs

Based on these positive outcomes the project has been scaled up in acreage and the volume of tomato cultivation grew in 2013 and the years after. The number of farmers participating in the contract farming program has grown from 650 in 2012 to 1,500 in 2013, 2,200 in 2014, 3,000 in 2015, 5,000 in 2016.

(Source figures from 2014-2016: Bayer Crop Science India

(<https://www.foodchainpartnership.cropscience.bayer.com/Brochures/SearchResults.aspx?type=crop&cat=Tomato&subCat=India>), and Hindustan Unilever Ltd

<https://www.hul.co.in/sustainable-living/case-studies/tomato-sourcing-public-private-partnership-with-government-of-maharashtra.html>, and <https://www.hul.co.in/sustainable-living/case-studies/>). In 2015 the locally sourced tomatoes for producing paste meets 100% (60% in 2011).

4.2.3 Case selection criteria

These two cases were selected because they were scaled up and provided longitudinal data and opportunities to review the evolution of the supplier development program (Hahn et al. 1990 and Watts et al. 1992), the upgrading program (Humphrey and Schmitz 2002), and the governance structure (Gereffi et al. 2005) over a period of time. They were part of a joint research program run by Unilever in partnership with an NGO (Oxfam) in the period 2010-2015 (Tait 2015). For the research design they applied similar methods consisting of value

chain analysis, data collection methods, and practical toolkits. They used the Link methodology of CIAT, i.e. the Business Model Canvas exercise and the New Business Model Principles (<https://cgspace.cgiar.org/handle/10568/49605>). Both were applied during the farmer workshops. The New Business Model Principles are a set of six business principles that can help evaluate current business practices in terms of their inclusiveness and can help spawn practical ideas on enhancing businesses' inclusiveness. This toolkit was applied to the multi-stakeholder workshop.

4.2.4 Data sources of the cases

Primary data for both cases was done by field research during November-December 2013 consisting of (the number of semi-structured interviews, workshops and field visits of the black soybean can be found in sub-Section 3.2.2):

- 1) Multi-stakeholder workshops (tomato case: one with 16 participants) with the main chain actors, to explore the (trade) relationships and the flow of products, services, and payments between stakeholders in order to design the supply chain map and the inclusiveness of the supplier development program.
- 2) Farmer workshops (tomato case: 3 with 48 farmers) with groups of farmers with experience of upgrading programs to map the farmers' business model
- 3) Semi-structured interviews (tomato case: 9) with a number of representatives of all categories of supply chains, key managers (procurement, operation and CSR), farmers, intermediaries, input suppliers, local government servants, NGOs, and field assistants.
- 4) Field observations (tomato case: 11), or secondary data was collected as well, such as those on Unilever sourcing and CSR strategy, local government food security and sector development policy, and statistical data from websites. Case data which were used for the exploration of the applicability of the model were the supply chain map and the farmers' business model, and the found CSFs of each case. The results of the exploration are presented for the black soybean case in Sections 4.4.1 and 4.4.2, and for the tomato case in Sections 4.4.3 and 4.4.4. In Section 4.4.5 the results are evaluated, using the framework of the developed inclusive sourcing model with the CSFs (3S-model) as template, and similarities and differences between the two supply chains are outlined.

The critical sub-questions determined for the main research question (see above) and the related CSFs, including the key literature on them, were:

1. Sub question 1: What are the key characteristics of smallholders in developing regions that are suitable for inclusion from a viable business perspective?
CSF (1): Smallholders that can be included are commercially oriented and are willing and able to adapt to upgrading interventions (Christen and Anderson 2013; Torero 2011).
2. Sub-question 2: How can smallholder productivity, product quality, and delivery be reliably improved to meet the demands of high value-adding supply chains in a sustainable and competitive way?

- CSF (2): Building partnerships for upgrading, i.e. entering into inter-organisational relationships and the capabilities needed to upgrade smallholders (e.g., Monczka et al. 1998; Gold et al. 2013).
3. Sub-question 3: Which governance structures offer the best upgrading prospects for smallholder inclusion in high value chains?
CSF (3): Building a captive governance structure based on a cooperative ‘buyer-seller’ relationship (Gereffi et al. 2005; Landros and Monczka 1989; Mohr and Spekman 1994).
 4. Sub-question 4: How can vertical coordination in smallholder supply chains be strengthened to effectively and efficiently upgrade interventions?
CSF (4): Building effective producer organisations to overcome barriers of dispersed production and high transaction costs (Onumah et al. 2007; Chambo 2009; Getnet and Anullo 2012).
 5. Sub-question 5: How can accessible and affordable rural financial systems be created to effectively ease smallholder demand for investment, working capital, and savings?
CSF (5): Building an accessible and affordable rural financing system (Chalmers et al. 2006; Miller and Jones 2010; Sjauw-Koen-Fa 2012).
 6. Sub-question 6: What are the commitments, attributes, and procurements that organisations need to invest in so as to generate effective smallholder supplier development programs?
CSF (6): Presence of a proactive CSR strategy supported by a committed top-management (Trent and Monczka 2002; Mohamad et al. 2009; Tilburg van et al. 2012; Gold et al. 2013).
CSF (7): Use of Cross-functional teams within F&A MNEs to harmonize organisational values, routines, and resources and to interact effectively with supply chain counterparts (Trent and Monczka 1994; Driedonks et al. 2013; Olsen and Boxenbaum 2009).

4.3 Results

4.3.1 Design of the black soybean supply chain map and the farmers’ business model

Figure 2 demonstrates an overview of the black soybean smallholder supply chains of Unilever Indonesia on Java, based on the multi-stakeholder workshop and information given by the interviewees. There are two black soybean supply chains. One is Unilever Indonesia’s self-developed supply chain, which runs ‘Smallholders (members) - Cooperatives - Unilever Indonesia Procurement’. The other is the traditional supply chain consisting of selected regional commodity traders running ‘Smallholders (from other areas than from the cooperatives) - Commodity traders - Unilever Indonesia Procurement’. However, both supply chains were interrelated through the application of similar price, product quality demands, and delivery conditions, set by Unilever Indonesia. For this section, only results of the ‘own’ black soybean supply chain developed by Unilever Indonesia are presented.

The developed black soybean supply chain (see Figure 3.2, p. 58) consists of two activities. The first is the buying processes (the axis Unilever Indonesia – Cooperatives – Smallholders) led by Unilever Procurement and the second is the upgrading processes (the axis Unilever Indonesia-Cooperatives and the Seed supplier) led by Unilever CSR. In this case the mission of Unilever CSR is to support corporate sustainable business development in Indonesia (Urip 2010 p. 99-122). A partnership consisting of the Unilever Indonesia cooperatives and the seed supplier (represented by the yellow [ellipse]) was formed to organize and decide how much black soybean could be produced by the small-scale paddy farmers according to an agreed supply program.

The different arrows on the map represent the flow of product, payments, and upgrading support provided by supply chain stakeholders during the planting season (see legend of Figure 2). In this map, the appliance of the concepts of upgrading (Humphrey and Schmitz 2002), the supplier development program (Hahn et al. 1990 and Watts et al. 1993), and the captive governance structure based on a long term cooperative relationship with partners by Unilever Indonesia (Gereffi et al. 2005) of the 3S-model have been found.

The sourcing process of black soybeans to produce sweet soy sauce started with Procurement calculating the required amount of soybeans to produce sweet soy sauce for the next season. With this information Unilever CSR consulted the cooperatives and the partnership seed-supplier to explore how many of the black soybeans could be produced by the small-scale paddy farmer/smallholders. The outcomes of the negotiations on buying conditions were written down in a memorandum of understanding, co-signed by Unilever Indonesia, the cooperatives, and the seed supplier. As this supply chain could not deliver all the beans Unilever Indonesia required, the remaining soybeans needed for the next season were contracted from selected regional commodity traders operating in other areas than those of the Cooperatives.

It was found that the government was only involved at arm's length in the partnership for upgrading of the smallholders. The explanation is that the Indonesian government was implementing liberal import policies regarding domestic soybean supply, favouring the import of cheaper (yellow) soybeans (Daranto and Usman 2011). The aim was to provide cheap food proteins based on soybeans (e.g., tahu, tempe and tauchu) to low-income households.

Critical performance indicators of the black soybean supply chain in the period 2007-2013 provided by Unilever Foundation show progressive results. The number of farmers participating in the black soybean program increased from 5,000 to 8,300 in this period. The total planted area and average yield rose from 1,033 to 2,560 hectare and 360 to 700 kg per hectare respectively. The share of the own supply chain in the total demand of black soybeans of Unilever Indonesia increased from 20 to 60 percent in the same period.

The result of the farmer workshop is the farmers' business model (see Figure 3.3, p. 61). The starting point for reading Figure 3.3 is the building block 'Partners' (Unilever Indonesia/Intermediaries/ input suppliers) where an upgrading program is offered to farmers for growing black soybeans/tomatoes under certain buying and price conditions. The Customers for the products are the intermediaries (cooperatives/processor/local traders),

Unilever Indonesia sources from these intermediaries. However, farmers can choose to grow different crops (Key activities) which require different inputs (Key resources) and costs of production per unit (Cost structure). The Value proposition of growing black soybeans/tomatoes is that they must comply with Unilever Indonesia's requirements.

Farmers must therefore enter into a contractual relationship (Customer relationship) with the intermediaries. Farmers sell their harvests to different customers (Channels) and get payment for their deliveries, which is the farm gate price per unit (Revenue structure). To turn a profit, the total revenues per unit (R) must exceed the total costs of production per unit (C) at an expected yield per hectare. Therefore, the indicator Revenue/Cost (R/C)-ratio is used. A ratio higher than 1 indicates the farmer is turning a profit, while a ratio lower than 1 indicates a loss. The pre-calculated R/C-ratio was 1.8 (2013). The cost price of black soybean production was calculated by the University of Gadjah Mada. The key parameters of the cost price were: costs (labour, inputs, land rent, tax, and spraying); yield; and revenues per unit (farm gate price). A positive result (R/C -ratio larger than one) of growing black soybeans was also confirmed by cross-checking during the semi-structured interviews with farmers and in the farmer workshop. This indicated that planting black soybeans was profitable for farmers. The score card of the New Business Model Principles to examine the inclusiveness of the black soybean supply program also showed positive results.

The overall conclusion is that the black soybean case can generally be conceptualized within the framework of the sustainable smallholder supply model, although a direct role for the government in the partnership for upgrading was not confirmed.

4.3.2 Critical Success Factors of the black soybean case

The CSFs related to the model that were found in the black soybean supply chain on Java were:

CSF 1: the selected farmers cultivating black soybean are commercially/market oriented small-scale paddy farmers (0.3 hectares on average).

CSF 2: a partnership was formed and a supplier development program was set up for upgrading small-scale paddy farmers. Unilever Indonesia Procurement led the buying processes while CSR led the upgrading processes, because upgrading local small-scale paddy farmers is consistent with the mission of the Unilever CSR policy.

CSF 3: the governance structure of the black soybean supply chain is of a captive type led by Unilever Indonesia and is based on a cooperative 'buyer-seller' relationship for black soybean supplier development.

CSF 4: cooperatives were empowered by Unilever Indonesia in order to strengthen the vertical coordination of the black soybean supply chain. Farmers were clustered into groups in order to communicate effectively and lower the transactional costs.

CSF 5: the guaranteed price for black soybean of a certain quality, the prepay system before harvest, and a buying commitment provided by Unilever Indonesia eased the credit demand of, and lowered the risks for, the black soybean farmers.

CSF 6: presence of a proactive CSR strategy for developing a smallholder supply chain to secure a sustainable supply of black soybeans, supported by a commitment of the management at head-quarter as well as subsidiary level of Unilever.

CSF 7: use of cross-functional teams of Unilever Indonesia Procurement and CSR with a clear division of tasks, resources, and incentives for effective black soybean supplier development, both focused on the same strategic sourcing goal.

The overall conclusion of the assessment regarding the critical success factors (CSFs) of the black soybean supply chain is that they are generally in line with the CSFs identified in the sustainable smallholder supply model. A clear difference we found was that Unilever Indonesia did not extend credit and loans to farmers, as they are not a credit institution.

4.3.3 The tomato supply chain map

Figure 4.1 gives an overview of the tomato supply chain map for producing tomato paste in the Indian state of Maharashtra. Unilever India is chain leader and buys the paste from a local qualified fruit and vegetable processor, for which smallholders produce the tomatoes that meet Unilever sustainability standards. Therefore, they participate on a contract basis in a upgrading program from the Food Processor. The different arrows in Figure 4.1 represent the flow of farm inputs and of upgrading support services and outputs (products and payments) between chain actors. The circle represents the partnership for upgrading support services, consisting of Unilever India, Processor, and input suppliers.

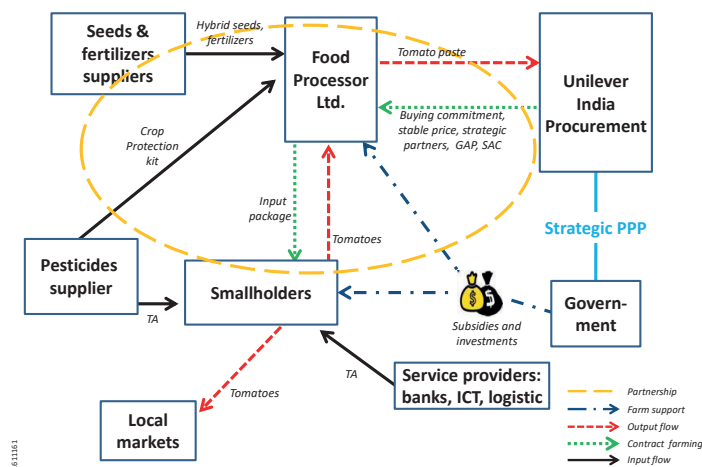


Figure 4.1: The tomato supply chain map in Maharashtra/India

The sourcing process of the tomatoes consists of two activities: 1). the buying process of sustainable tomatoes to be processed into paste by Unilever India in the supply chain (the axis Unilever India-Processor (intermediary)-smallholders; and 2). the upgrading process to improve smallholder farming in the supply chain (the partnership of Unilever India-Processor-input suppliers). The participation of the input suppliers as well as the state government of Maharashtra in the upgrading process of smallholder farming were based on a strategic partnership with Unilever India (represented by the yellow ellipse). As such, Unilever India is qualified as leader of the entire tomato (paste) supply chain. The direct involvement of the state government stems from the fact that the marketing system for fruits and vegetables, tomatoes included, in India has historically been strongly regulated by the government (Hegde et al. 2013). Therefore, Indian marketing regulations prescribe primary producers (farmers) of fruit and vegetables to sell their harvest in 'mandis' (wholesale markets yards) which are governmentally regulated and monitored (Krishnamurthy and Witsoe 2012).

The drivers of the business case of the tomato supply chain in Maharashtra were the increasing domestic demand for ketchup and the wish to replace the more expensive imports of paste from China. The sourcing process of tomatoes starts with a guarantee by Unilever India to the processor for a minimum volume at a fixed price of the tomato paste supply. Based on this buying commitment, the Processor contracts smallholders for the cultivation of tomatoes that meet the high quality and sustainability standards of Unilever (Sustainable Agricultural Codes) at pre-fixed prices and with a short payment time. These also included a package consisting of training of smallholders, technical assistance, and input materials. The processor committed itself to buy up to 100% of the produce, but smallholders were allowed to sell a maximum of 25% of their produce on the open market if the market price was higher. Farmers were organized in groups with a lead farmer as a single point of contact for keeping transactional costs low.

Smallholders are free to participate in the supply program. They planted on average 50% of their of their land with tomatoes, the other half of the land they grow vegetables, fruit and livestock. Tomato market price is highly volatile because production depends highly on weather condition (production shocks) and lack of warehousing (perishables). Smallholder were organized in groups with a lead farmer as a single point of contact for keeping transactional costs low. Information flows freely through the chain in a variety of ways: training and information services provided by input suppliers and the Processor to smallholders groups, with visits once a week and by mobile phone. There was even interactions between Unilever India and smallholders through meetings and farm visits.

In this map the appliance of the concepts of upgrading (Humphrey and Schmitz 2002), the supplier development program (Hahn et al. 1990 and Watts et al. 1992), and the captive governance structure based on a cooperative relationship with chain partners by Unilever Indonesia (Gereffi et al. 2005) of the inclusive 3S-model have been found.

Critical performance indicators of the tomato supply chain in the period 2011-2014 have shown progressive results. The number of farmers participating in the supply program increased from 650 to 2,500.

The average yield per hectare increased with 15-20 percent per year. The tomatoes supplied by contracted farmers increased from 60 to 85 percent of the total demand.

The results of drawing the farmers' business model canvas (Osterwalder et al. 2005) derived from the farmer workshops and consists of nine interrelated building blocks. It describes the rationale of how farmers create, deliver, and capture value (see Figure 4.2).

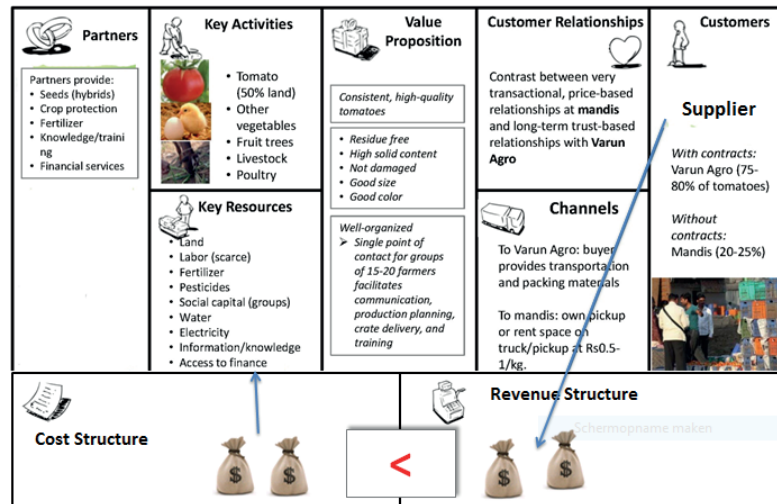


Figure 4.2: The tomato farmers' business model in Maharashtra

The Revenue/Costs -ratio of tomato production found was positive (much larger than one). This information was based on data and information emerging in the interviews, and multi-stakeholder and farmer workshops.

This indicated that planting tomatoes was profitable for farmers. The score card of the New Business Model Principles to examine the inclusiveness of the tomato supply program also showed positive results.

4.3.4 Critical Success Factors of the tomato case

The following critical success factors were found in the tomato case:

CSFs 1: tomato producers were commercially oriented smallholders (1.31 hectare on average).

CSF 2: a partnership was set up to upgrade smallholder tomato farming, led by Unilever India and the processor, with input from suppliers and the state government.

CSF 3: the governance structure of the supply chain was a captive type, led by Unilever India and based on a cooperative relationship.

CSF 4: the existence of producers organisation/cooperative was not detected, because the processor (intermediary) in the tomato case is a private company.

CSF 5: Unilever India provided buying commitments, price guarantees, and short terms of payment to ease farmers' demand for credit and to lower their risks.

CSF 6: a clear sustainable smallholder strategy by Unilever India was present.

CSF 7: use of cross-functional teams by Unilever India was not found. The upgrading process was outsourced to the processor who cooperated with the input suppliers. Unilever India-CSR (company foundation) was not involved in the upgrading process.

The overall conclusion is that most of the critical success factors found in the tomato case are in line with the CSFs related to the sourcing model. Differences were found regarding CSFs 4, 5, and 7.

4.3.5 Findings from the cross-case analysis of the black soybean and tomato supply chain

Conceptualization of the two supply chains within the inclusive 3S-model

In both supply chain the concepts of: 1). upgrading to improve smallholder production (Humphrey and Schmitz 2002); 2). the supplier development program in which 'buyer and seller' enter into a cooperative long term partnership for upgrading (Hahn et al. 1990 and Watts et al. 1993); and 3). the captive governance structure in which the focal firm coordinates the entire smallholder supply chain (Gereffi et al. 2005) have been found.

The cross-case analysis is concerned with the determination of the building blocks of the two supply chains, using the frame work of the developed sustainable smallholder sourcing model as a template (Table 1).

Table 4.1: Cross-case analysis of the black soybean and tomato supply chain within the framework of the 3S-model

Building blocks of the 3S-model	Black soybean supply chain map	Tomato supply chain map
<u>F&A MNE</u> Procurement and CSR	<u>UNILEVER INDONESIA</u> -Procurement: buying black soybeans from cooperatives and traders. -CSR Indonesia (<i>company foundation</i>): leading upgrading processes of smallholders and supporting partnerships in close cooperation with Procurement. - Procurement and CSR formed cross-functional teams	<u>UNILEVER INDIA</u> -Procurement: buying tomato paste from the local food processor on a supplier (forward) contract basis. Upgrading process of smallholders is <i>outsourced</i> to the local food processor with field support from input suppliers. -CSR India (<i>company foundation</i>) was not involved in the case

Intermediary	<i>Cooperatives</i> : representing and facilitating member farmers producing black soybean on a contract basis. Worked with farmers groups consisting of 15-20 farmers. Unilever Indonesia supported capacity building of the cooperatives and community development.	Local food processor (<i>private company</i>) delivered tomato paste to Unilever India on a supply contract basis. Processor organized smallholders to produce tomatoes on a contract farming basis, and led the upgrading processes with support from input suppliers. Smallholders were grouped into 15-20 farmers.
Smallholders	Commercially/market-oriented small-scale paddy farmers	Commercially/market-oriented smallholders.
Partnership model	Partners: Unilever Indonesia, cooperatives, and the seed supplier (a <i>university</i>). Government is involved <i>at arm's length</i> .	Partners: Unilever India, local food processor, input suppliers (<i>multinational companies</i>). The State Government is directly involved through a <i>strategic partnership</i> with Unilever India.
Other chain actors	Local SMEs (farm services providers) NGO (empowerment women farmers)	Local SMEs (farm services providers). No NGO was involved
Contribution to smallholders' livelihoods	Positive indication	Positive indication
Sourcing aim	To secure stable sustainable supply and accelerating the improvement of smallholders' livelihoods.	To replace import of tomato paste with local produce and accelerating the improvement of smallholders' livelihoods.

All building blocks of the sustainable smallholder supply model were found in both supply chains, i.e. both cases can be conceptualized through the model. However, there were also differences between the two supply chain maps, namely:

- 1) the involvement in the upgrading process: in the black soybean case Unilever Indonesia was directly involved in organizing the upgrading program, while in the tomato case this was 'outsourced' to the processor (supplier) ;
- 2) the involvement of the government in the upgrading program: in the black soybean case at arm's length, while in the tomato case they were direct involved;

3) the business form of the intermediaries: cooperatives in the black soybean case vs. a private company in the tomato case;

4) The pesticide and plant protection, and fertilizer suppliers were not involved in the black soybean case because smallholders purchased the inputs from local suppliers (SMEs) by themselves. Fertilizers and plant protection chemicals suppliers were in the tomato case involved in the Partnership, providing not only tailored (kits) fertilizers, fungicides and pesticides, but also expertise in the area of micronutrients and soil improvement to smallholders farmers through field-level technical staff. After all, the use of fertilizers and plant protection chemicals in the cultivation of tomatoes are more critical in terms of supply risks, food safety, environmental sustainability and costs of production than black soybean.

5) the input suppliers: a public organisation in the black soybean case vs. multinational companies in the tomato case.

These differences provide important lessons for (re)designing sustainable smallholder sourcing strategies. For this we need to take the context into consideration, such as geographical and political differences, and the sourcing strategies of F&A MNEs.

Considerations are: Unilever had different positions in the upgrading activity in each smallholder supply chain, but it kept its role as chain leader in both cases, thus demonstrating to have a proactive CSR strategy (e.g., Tilburg et al. 2012; Trent and Monczka 2002; Gold et al 2013). This is the key characteristic of the captive governance structure (Gereffi 2005) and as such confirms CSF 3 in the sustainable smallholder sourcing model. There were similarities between both cases in attributes of the alliances found in the smallholder supply partnerships. For instance, there was a deep understanding of, and commitment to the sustainable sourcing strategy, both at Unilever Indonesia and Unilever India. There were similar capabilities too, including access to local networks to facilitate upgrading and interventions in the long term. In both cases the alliances were based on commitment, trust and coordination, two way communication, and joint problem solving.

The lesson learned from the two cases is that the attributes of alliances of intermediaries (suppliers) and commitment to sustainable and more equitable smallholder inclusion are more important than their business forms. However, the business form is important too, for instance a cooperative gives member farmers more influence on strategies and gives them a voice with which to create a power balance in the value chain. The role and involvement of the government in both supply chains was different. This was geographically determined, and dependant on the marketing system. It was regulated in the tomato case and under a liberal market policy in the black soybean case. Nonetheless, government involvement in smallholder supplier development programs is a critical attribute because of its supportive character and its impact on local economic development (Helmsing 2001).

The differences found in regard to the business forms of intermediaries (cooperatives vs. private company), and input suppliers (public organisation vs. multinationals) confirmed that the business form of the intermediary is not a critical attribute of upgrading programs.

Similarities and differences in critical success factors between the two case

Comparing the CSFs of both cases resulted in similarities with regard to CSFs 1, 3 and 6, and differences with regard to CSFs 2, 4, 5, and 7.

The differences were:

CSF 2: partnerships can be built on an operational level for upgrading (in both cases) but also on a strategic level (in the tomato case).

CSF 4: this CSF was not found in the tomato case, because the processor is a private company instead of a producer organisation/cooperative. The assumption is that a cooperative representing (naturally) a large number of member smallholders have a better position to lower transaction costs. What learned from the cases is that business form of the intermediary is not a critical factor. More critical attributes were: 1) the aggregation of smallholders in groups of 15-100 guided by a lead farmer (to lower transaction costs), 2) open communication (transparency) regarding the price which is based on a standard cost price calculation and 3) buying commitments of the F&A MNE. However, both the processor (in the tomato case) and the cooperatives (in the black soybean case) worked with informal farmer groups. Therefore, this CSF has been adjusted to: 'Building effective producer organisations including cooperatives and forming informal farmer groups.'

CSF 5: in both cases Unilever eased smallholder financial burdens by providing buying commitments, price guarantees, down payments before planting, and harvesting through the intermediaries (cooperatives as well as the processor). These interventions lower costs and smallholder risks. Therefore, CSF 5 has been modified: 'Reducing farmers' funding costs and risks by providing buying commitment and price guarantees.'

CSF 7: In the black soybean case the members of the cross functional teams consisted of staff members of Procurement and CSR of F&A MNE, while in the tomato case the members were intercompany because the project management of the upgrading activity was outsourced to the Processor. Only Procurement of the F&A MNE was involved in the team. What we learned that this is not a weak point. Therefore, we have adjust this CSF in: 'The used of cross-function team within and outside a firm'.

The conclusion can be drawn that the use of cross-functional teams is not always functional for upgrading small-scale farmers. It was not necessary for integrating CSR values, processes, and routines (within Unilever India) or for effective interaction with suppliers (outside Unilever India). Therefore, this CSF has been removed from the list of CSFs related to the sustainable smallholder sourcing model (3S-model).

4.4 Conclusions and Discussion

As viewed from the MNEs, the food supply challenge is that the global economy is entering a new phase in which a growing concentration of Global Value Chains are driving transformations that are reshaping current governance structures (Gereffi 2014). In addition, MNEs are increasingly driven by pressures and incentives to play a more proactive role in

solving the pressing global problems at the 'Bottom of the economic Pyramid' (e.g., Seuring and Muller 2008; Kolk and Tulder 2010; UN Sustainable Development Goals (2015-2030). MNEs are therefore urged to take responsibility for the upstream of supply chains as well, when sourcing from smallholders in developing and emerging economies, to pave the way to a more sustainable world.

Leading F&A MNEs have (pro-actively) committed themselves to increasingly source more sustainably produced commodities from small-scale farmers to improve farmers' livelihoods in the years to come. Current conventional smallholder sourcing strategies, such as certification schemes and green supplying, are not effective because they are principally focused on environmental sustainability. The newly developed sustainable smallholder sourcing model (3S-model) differs from conventional ones in that producers/farmers are locked in, based on a cooperative relationship by the focal firm (MNE) and it includes a list of CSFs to improve farmers' livelihoods, rather than focusing on environmental sustainability performances.

The purpose of this chapter is to explore the applicability of the developed model in two best-practice cases. The overall conclusion is that: 1). both cases could be conceptualized through the 3S-model and: 2). CSF 2 and 4 have been fine-tuned, CSF 5 has been modified, and CSF 7 has been removed.

This research project setting in which a multinational and an NGO are involved in value chain analysis has impacted the inclusive interpretation of the research questions, the applied methodology, tools, and the used indicators. As such, it strengthened the link between the bottom-up as well the top-down perspectives of the smallholder supply chains. Second, the selected cases cover two smallholder supply chains in different geographical areas under one MNE. The advantage of this approach was, that differences in corporate strategy, when comparing cases from different MNEs, could be mitigated in this case. Furthermore, the geographical impact, being the role of the government in the inclusion of smallholders in high value-adding supply chains, could be explored as a control variable of the 3S-model. Based on the findings of this research, it was concluded that the 3S-model would be a suitable way to conceptualize the dynamics behind sustainable smallholder supply. However, it raises questions about the limitations of the present study.

First, despite a positive indication of the contribution to smallholders' livelihoods, the question remains whether smallholders actually get an equitable piece of the pie. In other words, do they get a fair price for their produce that covers all costs and risks? For several reasons it is hard to give a clear answer to this question. For instance, the business development and learning characteristics of supplier development programs, and agronomical conditions and soil quality can vary greatly between regions and farms. Moreover, smallholders in developing economies are mostly unfamiliar with cost price calculations and bookkeeping, and their lack of price and market information often puts them at the mercy of middlemen (e.g. London and Hart 2004).

Second, although this study illustrates that MNEs can involve smallholders in a sustainable and more equitable way in high value-adding supply chains from a business perspective. However, the overall effect of F&A MNEs in solving global food security and sustainable development challenges must not be overestimated. Among other things, they are constrained by their short-term commercial and business model orientation and their relatively small scale in the global food system compared to the magnitude of the economic development challenge of developing economies. They probably cannot do it alone (e.g., Seuring and Gold 2013; World Economic Forum 2011 and 2012).

Third, a question that needs a clear answer is how autonomy, democracy and mutual social and economic benefits are embedded in both cases, because the interaction between business partners are voluntary based?

Autonomy, democracy and mutual benefits of the supplier and customer interaction can be demonstrated as follows:

- Both smallholder supply chains were no vertical integrations that are characterized by managerial control, flowing from managers to subordinates, or from headquarters to subsidiaries and affiliates. But, it were captive value chains based on a long term cooperative relationship aimed at upgrading of smallholders to supply high value-adding supply chains. The supply chain maps (Figure 2 and 4) demonstrate the network structure and role of each chain partners.

- The contracting process for supply started with an proposal from the F&A MNE. Based this proposal Intermediaries consulted smallholders for supply. The result of this consultation round is that proposed farm gate price and buying commitments from the F&A MNEs could be adjusted. The aim is to attract as much as smallholder to meet the required demand of black soybean and tomatoes.

- The critical performance indicators of both supply chain showed progressive results.

- In both cases smallholders were free to participate in the supply program. They could choose whether to plant black soybeans/tomatoes or another crop like corn, pepper or peanuts for the local markets. There was some degree of free ridding of black soybean smallholders without penalties when price offered by local traders are higher (we will add this point to the text. In the tomato case, smallholders planted on average 50% of their of their land with tomatoes, the other half they grow vegetables, fruit and livestock. They were allowed to sell maximum 25% of the produced tomatoes to the Processor at a fixed prices regardless of the whole sale market prices.

Fourth, the findings of this study are based on just two cases. Food sectors, geographical conditions, the political context, and the sourcing strategies of F&A MNE's can vary significantly. Therefore, further research and more cases are recommended in order to further confirm or modify the developed smallholder sourcing model with the list of critical success factors, and to validate CSFs by measuring their impact on the performance indicators of the inclusive sourcing model as critical subjects for further research.

CHAPTER 5

Construction of an inclusive sourcing indicator

This chapter is based on:

August. R. Sjauw-Koen-Fa, Vincent Blok, and S.W.F. (Onno) Omta.
Multinationals' sourcing indicator for improving farmers' livelihoods: Calculation of the integral costs of certified cocoa in Ghana and the Ivory Coast. *International Journal on Food System Dynamics*.
Second round review.

5.1 Introduction

Food and Agribusiness multinational enterprises (F&A MNEs) - such as Mars, Ferrero, Hershey, Nestlé-USA, Cargill, Mondelez International, and Unilever - dominate the world cocoa bean trade, grinding, and chocolate manufacturing industry and have committed themselves to source close to 100% sustainable certified cocoa beans in the years to come (see Appendix 3). They have promised to do this in ways that improve the livelihoods or standard of living of small-scale cocoa farmers (smallholders) in developing economies. To support such companies to develop sustainable sourcing strategies to reach their goals on improving smallholders' livelihood and still be profitable as a supply chain, the 3 S-model is developed (see chapter 2) and its applicability is empirically explored (see chapters 3 and 4). To achieve the inclusive sourcing goal while retaining competitive advantage MNEs and farmers face challenges (described in sections 1.5.1). The importance for involved MNEs and smallholders is then to have a tool which renders transparency in all activities in the supply chain such as sourcing, upgrading smallholders, production of commodities related to costs and revenues. Such a tool should enable insight in the influence of those activities on competitiveness and the contribution to smallholders' livelihood. This inclusive sourcing indicator is constructed by integrating two contrasting supply chain perspectives from the buyer/focal firm business model perspective and from the seller/farmer business model perspective. This two way approach of the supply chain for inclusion of smallholders aims at creating transparency throughout the entire supply chain (see section 1.4 p. 19 for explanation). This is in contrast with conventional sourcing strategies that view the supply chain only one way, i.e. from the focal firm perspective.

A theoretically based inclusive sourcing indicator will be constructed, as presented in this chapter, and empirically explored through four case studies. The inclusive sourcing indicator represents the integral costs (see section 1.4) of cocoa bean production. This indicator consists of the following elements: 1). the total variable and fixed costs of cocoa bean production; 2). the costs of not using child labour and hired labour earning a minimum wage; and 3). a residual return for the farmer/owner. By encompassing these three elements, the sourcing indicator shed light on how sustainability is achieved, returns for the overall sustainable supply chain and returns for the smallholder. .

5.2 Theory

5.2.1 The economic nature of a cocoa farm

To determine the costs and returns of certified cocoa bean production it must be considered that a cocoa farm/orchard/plantation is a fixed asset investment (capital good) that generates variable cash flows over multiple time periods. As capital goods are not entirely consumed over one production year, it is necessary to allocate the costs of capital goods to the production years for which they provide their services (FAO 2016; Kay et al. 2016). Short term profitability (the economic profit) can be calculated by the breakeven analysis (the ratio total costs-total revenues), while the concepts of Net Present Value and Cost-Benefit analysis (Breadley et al. 2011) can be applied to profitability (the internal rate of returns) of long term investments in cocoa farms. A break-even analysis shows what farm-gate price - given the

project yield - would be required just to cover the total of the variable and fixed costs, which is a short-term survival tactic.

Although this theoretical concept of economic profit is correct, an economic profit of one - which is the bare minimum for staying in business - is not sufficient for a small-scale cocoa farm's long term continuity (Fleming et al. 2009; Kay et al. 2016). Therefore, a margin on top of a breakeven (residual return to the farmer/owner or management investment income) is needed to absorb long term risks in price and yield fluctuations. A mean residual return for the farmer/owner over the years is therefore considered to be critical for a cocoa farm's continuity from a business perspective. The initial farmer response to farm-gate prices being lower than the total costs may not be to stop production however, cocoa being a permanent crop with an economic life cycle of 20-25 years. They will first exploit the labour force (e.g., through low wages, excessive hours, and use of forced labour) or cut down on environmental management (Blowfield 2003). In turn, this behaviour will harm the reputation of MNEs seeking to take responsibility for their supply chains. This is why a residual return for the farmer/owner has been included in the inclusive smallholder sourcing indicator we have developed.

BOX 1: Cocoa (*Theobroma cacao*): Fruits of the God

*A cocoa tree (*Theobroma cacao*), used as a cash crop, is a tropical plant grown mainly in a hot rainy climate by 5 to 6 million smallholders on 3 hectares of land or less. The main producing (and exporting) cocoa countries are Ivory coast, Ghana, Indonesia, Nigeria and Cameroon respectively. A cocoa tree's fruit pods contain 30-40 seeds, which are extracted before being fermented and dried in the sun, so becoming cocoa beans. A cocoa tree takes up to five years to produce its first beans and reaches peak production in around 10 years. It will typically produce a large number of pods for a further 12 years (two harvest per year). Large cocoa plantations generally have a density of 1,000 to 1,200 cocoa trees per hectare, but the plantations of the small family farmers contain on average only less than 500 trees per hectare. Cocoa is susceptible to a range of pests and diseases, with some estimates putting losses up to 30% of world production. After harvesting and preliminary (on farm) processing, cocoa beans are roasted and shelled, the nib is ground into a paste known as cocoa liquor which is then pressed to extract the cocoa butter and cake/powder. The butter is used in the baking and confectionary industries whilst powder is used, among other things, for liquid drinks and bars (e.g. Afoaka, E.O. (2010), in *Chocolate Science and Technology*, ISBN: 978-1-405-19906-3).*

The world cocoa production is about 4.1 million tons (2012) of cocoa beans for a total export value of \$ 8.4 billion. More than 90% of the world's cocoa beans on around 5.5 million small-scale family-based farms employing some 14 million rural workers. World cocoa production is highly concentrated in 6 countries: Ivory Coast; Ghana; Indonesia; Cameroon; Brazil; and Nigeria. Currently, only an estimated 22% of the world's cocoa bean production is certified (Pott et al. 2014). To meet the MNEs demand for certified cocoa, much more cocoa farmers will need to switch from regular to sustainable certified cocoa production. This shift poses particular challenges for small-scale farmers however, because they often lack the institutional, technological, infrastructural, and financial capabilities to effect the necessary changes themselves (e.g., Bush and Bain 2004; London et al. 2010).

5.2.2. The on-farm costs of cocoa bean production

Cocoa production on a farm consists of the following stages: growing; harvesting; fermenting and drying; packaging; and delivery to the first buyer (International Cocoa Organization, www.icco.org). Cocoa pods ripen at different rates, so harvest is done mainly by hand rather than by the use of machinery. The harvesting of cocoa pods (fruits) involves the removal of pods from the trees and the extraction of the beans and pulp from the pod; the beans are then separated by hand and the placenta is removed. This is followed by a process where the beans are fermented, which leads to the formation of constituents or flavour precursors, and dried in the sun. The dried beans are then packed up in bags and transported to the first buyer.

For the purpose of the present study, literature was sought on the total costs of on-farm production. Only one study - which deals with the economy of cocoa production in Hawaii (Fleming et al. 2009) - was found to provide a total cost (variable and fixed costs) price calculation of cocoa wet bean production. The costs of fermentation and drying were however not included in the calculation because these Hawaiian farmers deliver their wet beans directly to the processor. This total cost structure has been used in the present study as best-example for constructing the cocoa total cost structure (see Section 3), and for estimating the fixed costs of cocoa bean production in Ghana and the Ivory Coast (see Section 4).

5.2.3 The costs of cocoa certification

To produce sustainable certified cocoa, a farmer must be certified by one of the standard setting organisations, of which Fairtrade Labelling Organizations International (FLO), Rainforest Alliance (RA), UTZ certified (UTZ), and Organic are the largest. Each has its own distinct background (see Appendix 2), the FLO centres around supporting small-scale producers, RA and Organic focus on the protection of ecosystems and biodiversity, and UTZ takes the market-based mainstreaming of sustainability principles as a starting point. Certification organisations set protocols for environmental and social issues, advise/guide farmers on how to implement sustainable agricultural practices, and take care of auditing and third party verification. The structure and objectives for achieving sustainable certified production and the costs vary among the schemes (see Table 5.1).

Table 5.1: Certification structures of the largest cocoa certification schemes in Ghana (Source: Hatloy et al. 2012)

Main issues and focus largest Certification schemes		
UTZ	Rain Forest	Fair trade
<ol style="list-style-type: none"> 1. Traceability, Product identification and Separation 2. Management System, Record Keeping and Self-inspection 3. Varieties and Rootstocks 4. Soil Management 5. Fertilizer use 6. Irrigation 7. Crop Protection Products 8. Harvesting 9. Post-Harvest Product Handling 10. Worker health, Safety and Welfare 11. Environment 	<ol style="list-style-type: none"> 1. Social and environmental management system 2. Ecosystem conservation 3. Wildlife protection 4. Water conservation 5. Fair treatment and good working conditions for employees 6. Occupational health and safety 7. Community relations 8. Integrated crop management 9. Soil management and conservation 10. Integrated waste management 	<ol style="list-style-type: none"> 1. Social Development <ol style="list-style-type: none"> 1.1 Fair trade adds Development Potential 1.2 Members are Small Producers 1.3 Democracy, Participation and Transparency 1.4 Non-Discrimination 2. Economic Development <ol style="list-style-type: none"> 2.1 Fair trade Premium 2.2 Export Ability 2.3 Economic Strengthening of the organization 3. Environmental Development <ol style="list-style-type: none"> 3.1 Impact Assessment, Planning and Monitoring 3.2 Agrochemicals 3.3 Waste 3.4 Soil and water 3.5 Fire 3.6 Genetically Modified Organisms (GMO) 4. Standards on Labor Conditions <ol style="list-style-type: none"> 4.1 Forced Labor and Child Labor 4.2 Freedom of Association & Collective Bargaining 4.3 Conditions of Employment 4.4 Occupational Health and Safety
<i>Economic, Social and Environmental</i>	<i>Environmental</i>	<i>Economic</i>

When adopting sustainable farm practices, in the initial period, the yields per unit and the costs of cocoa bean production are not optimal because the farmer is still going through a learning process. As the whole process of certification can take up to five years, covering the initial costs of implementing certification schemes is therefore critical when investing in certified farming. In practice, initial investment costs were often covered by grants from donors and private foundations (Kuit and Waards 2014). This indicates that small-scale cocoa farmers might need public project funding to accelerate the switch from regular to certified production, because it can take up to five years before a farmer gets fully certified. The risk for farmers is that they remain dependent on grants to cover the costs of certification. The certification costs on farm level are: Internal Control System; training; audit; labour; certification investment; and fees paid to the scheme owner (KPMG 2012). Certification costs are a fixed cost dimension of cocoa bean production.

5.2.4 Impact of the marketing system on the costs and revenues of cocoa beans in Ghana and the Ivory Coast.

Cocoa farmers in Ghana and the Ivory Coast face many challenges when navigating a complex industry, especially if they are not organized in producer-organisations/cooperatives as is the case in the Ivory Coast. While each country has its own supply chain (see Figure 1.1), smallholders have to deal with issues relating to government regulations and institutional infrastructures, affecting the costs and revenues of production.

In the Ivory Coast the majority of cocoa farmers do not participate in cooperatives and instead individually sell their cocoa beans to commission agents, called *pisteurs*. They are contracted seasonally by *traitants* or registered cocoa trading companies; *traitants* are licensed by the government to trade cocoa. *Pisteurs* as well as *traitants* are able to offer farmers immediate cash payments because they are financed by foreign-owned exporters who are not allowed to purchase beans directly from farmers (Healy et al. 2014). Producer prices for each season are set by a multi-stakeholder platform (CCC) that sells the future production of cocoa traders during auctions that take place before the harvest. In the Ivory Coast, farmers sell 80-85 percent of the cocoa beans they produce to *pisteurs*, while the remaining cocoa (15-20 percent) is sold through their cooperatives.

The cocoa market In Ghana is fully regulated by the government through the state-run cocoa marketing board (COCOBOD) which completely controls the export, marketing, and purchasing of cocoa beans. The price for cocoa paid to farmers is decided on by a multi-stakeholder committee (PPRC) that uses a percentage (70%) of the net Free On Board (FOB) price, which is the price of cocoa beans at the port of embarking in Ghana. Each season, COCOBOD authorizes a number of government-licensed organisations - called Licensed Buying Companies (LBCs') - to purchase cocoa beans that they are then required to sell to COCOBOD. Therefore, LBCs hire sourcing agents - called Purchasing Clerks - to purchase cocoa from farmers or cooperatives and deliver it at LBC warehouses, where it is graded and sealed by the state-owned Quality Control Division of the COCOBOD. COCOBOD provides a number of goods and services to cocoa farmers, such as subsidized fertilizer, mass spraying of pesticides, hybrid seedlings, and funding for farmers' houses and roads. The aim is to address issues such as low productivity and aging farmers and trees (e.g., Camargo and Nantumbo 2016). In Ghana, almost all cocoa beans are delivered to the LBCs; only a small number are sold to unorganized middlemen (Healey et al. 2014). The extended local supply chain structure (see Figure 5.1) makes it difficult for F&A MNEs to impact directly on farmers' business models in order to assure improvement of their livelihoods through sourcing. Therefore, F&A MNEs need a different sourcing strategy.

5.3. Materials and Methods

The materials and methods applied for: 1). the construction of the standard costs of crop and certified cocoa bean production; 2). the inclusive sourcing indicator to measure livelihood improvement of smallholders; and 3). the cases used to explore the applicability of the inclusive sourcing indicator can be found in the sub-section of section 5.4.

5.4 Results

5.3.1 Construction of total cost structure for certified cocoa bean production

Materials and methods

There were three steps involved in the construction of the total cost structure for certified cocoa bean production: First, the different phases of on-farm cocoa bean production: growing; harvesting; fermenting and drying; packaging; and delivering to the first buyer, have been studied in the literature (e.g., Camargo and Nantumbo 2016, www.icco.org/about-cocoa/growing). The aim was to understand the consistency of the production processes and

related costs. Second, a general total costs structure of crop production has been defined using the cost dimensions of crop production of the FAO (2016 p. 14), integrated with the Enterprise Budget for crop production from Kay et al. (2016 pp. 180). The aim is to understand how costs of crop production can be portioned into components for costs calculations. Third, this total costs structure for crop production was then matched to the total cost structure of cocoa bean production by Fleming et al. (2009).

The total cost structure of crop production

The result of the construction of the general total costs structure of crop production is shown in Table 5.2.

Table 5.2: Total costs of crop production

Total costs of crop production = total variable + total fixed costs	
Variable costs	Fixed costs
Cash costs <ul style="list-style-type: none"> - Purchased seed, fertilizers, pesticides on - Paid (hired) labour - Custom services (machinery, etc.) - Tool and materials - Fuels and water (irrigation) - Interest (loans and credits) Non-Cash costs <ul style="list-style-type: none"> - Unpaid family labour - Farm-produced inputs - Owned machinery 	Capital costs <ul style="list-style-type: none"> - Depreciation costs and opportunity costs of capital owned machinery, buildings and farm equipment Farm overhead costs <ul style="list-style-type: none"> - Unallocated fixed costs - Farm - level taxes, permits, licenses, etc. Land costs <ul style="list-style-type: none"> - Land rents and imputed rents, land related taxes
Total variable costs	Total fixed costs

Total costs are defined as the sum of the total variable (operating costs) and the total fixed costs (ownership costs). Variable costs are all costs directly associated with: growing; harvesting (including pre-processing); packaging; storage; and delivering to the buyer. Variable costs vary with the quantities produced, while fixed cost are independent of the quantities produced, like the costs of buildings, machines, and the purchase of land. In both categories of production costs there are those paid for by the farmer in cash or that are unpaid (not in cash, at least) such as family work. Fixed costs are primarily annualized costs, consisting of capital costs, farm overhead costs, and land charges, they mainly involve production resources: land; management; and the capital investment required (primarily for orchard establishment).

The total costs structure of cocoa bean production

The results of constructing a template for the total costs of cocoa production are shown in Table 3. That is to say, the cost structure for crop production (Table 5.2) has been matched to the total cost structure consisting of variable and fixed cost dimensions of Fleming et al. (2009) (see Appendix 4). In contrast to the cost structure of crop production, it has segmented variable costs of production, harvest expenditures that consist of labour and material costs,

and a list of fixed (or ownership) costs of cocoa bean production. These cocoa cost dimensions were matched with the cost dimensions of crop production (see Table 5.3). Costs related to certification were not included in the calculations of the FAO (2016) and Kay et al. (2016). The certification costs from KPMG (2012) have been included as (paid) fixed costs, as the present study relates to certified cocoa bean production.

Table 5.3 The standard total costs structure of certified cocoa bean production

Variable or operational costs.		Fixed costs or ownerships costs.
1. Labour costs related to source in: own family (unpaid) hired (paid)	2 Material costs: - fungicides - pesticides - fertilizer - herbicides - bags and ropes - tools	3. Land charge
1. Labour cost related to on-farm activities: - weeding - pruning - crop protection - nursing seedlings - replacing trees - harvesting - fermenting and drying	- fuel, electricity - rentals: machines and equipment - irrigation, water - interest (operating expenses)	4. Costs of certification: - internal control system - training and labour costs - certification specific investments - audit costs - fees paid to scheme owner
		5. Costs of own capital: - depreciation: buildings, machinery, equipment's, and annual replacement rate of trees - property taxes, insurance expenses - farm management overhead costs - opportunity costs of own capital
<i>Total labour costs (1)</i>	<i>Total material costs (2)</i>	<i>Total fixed cost (sum 3 through 5)</i>

Explanation of the cost dimensions of the total cost structure of cocoa bean production (Table 3):

1. Labour costs: these costs can be related either to the source or to the activities and are the biggest cost items of the total production costs of dry fermented cocoa beans. Depending on the wage rate used, they are estimated to cover more than 70 percent of the total cost of cocoa beans (e.g., Gockowski 2013; KPMG 2012). The largest part of the total labour is done by the farmer and his/her family. The rest is done by hired labour, mainly during harvesting and processing; hired labour is paid in cash or in kind. No representative information on the division between own and hired labour in cocoa-farming could be found.

2. Material costs: material costs cover the different types of materials needed for the growing of cocoa, such as fertilizer and pesticides. The costs of pesticides and fungicides are the highest input costs, because diseases and pests pose the biggest threat to cocoa farming, before market risks like the volatility of prices and exchange rates (World Bank 2011).

3. Land rent: land can be owned by the farmer or rented from others under a wide range of contractual arrangements (e.g., rents) or through arrangements which involve payment in kind (e.g., share cropping). The costs of owned land are the costs associated with the use of the land itself by the farmer, i.e. the calculated forgone revenues to the operator-owner. Unlike

capital inputs, such as farm buildings and machineries - which generally wear out and therefore have a limited service life - the service provided by land can last indefinitely (FAO 2016). Other cost items related to owning land are property taxes, water rights, and water management.

4. Costs of own capital: First are costs associated with the consumption related to own capital assets that are not used during one production period, such as buildings, machinery, and equipment. Livestock used for breeding or milk production and permanent crops such as cocoa, coffee, and oil palm are also considered to be capital goods. As such it is necessary to allocate the costs of the capital invested in cocoa plantation to the production years for which they provide this service. When a cocoa farm is to be operated in a steady-state or equilibrium characterized by a fixed asset base, the capital costs can be calculated by a constant replacement rate of trees as a percentage of the total trees per hectare per year. Second, are the costs of own capital, which are the opportunity costs of the owner's investment. This represents the expected return on the capital invested in farm operation, had it been invested in the next best alternative. These costs represent the expected returns (as a management and investment income for management and capital) on the own capital (FAO 2016; Fleming et al. 2009).

5.3.2 Construction of the inclusive sourcing indicator for improving farmers' livelihoods

The dimensions of the inclusive sourcing indicator

The aim of the present study is to construct a theoretically based sourcing indicator consisting of all the costs of cocoa bean production for improving farmers' livelihoods as an answer to MNEs' inclusive sourcing commitment. Therefore, first, the general total cost structure of permanent crop production has been constructed on the basis of the farm economics theory (table 2). This total cost structure has been transformed into a standard total cost structure for cocoa production (table 3). It was also argued that the socioeconomic costs to end child labour and working condition of hired labour that do not comply with international labour standards (Chapter 1) need to be included in the total cost of sustainable certified cocoa production in order to meet the triple bottom line approach of sustainability.

The final result of the exploration of the production costs is the inclusive sourcing indicator, defined as of the sum of the total variable and fixed cost + the costs of not using child labour + the costs of paying hired labour in accordance with the minimum wages of international labour standards + a residual return to the farmers, representing the integral cost of cocoa bean production (see Table 5.4). This sourcing indicator should be covered by farm revenues (farm gate price) with an eye to improving his/her livelihood.

Table 5.4: The Inclusive Sourcing Indicator for improving smallholders' livelihoods

The elements of the inclusive sourcing indicator or integral costs of production	
Cost dimensions	Specification
1 The variable and fixed costs	Variable costs: labour costs (paid and unpaid) + material costs Fixed Costs: land charge + costs of certification + costs of own capital
2. Costs of replacing/not using child labour	Total working days (8 hours per working day) X minimum wage per hour in accordance with international minimum wage standard
3. Costs of hired labour in accordance with international labour standards	Total workings day X (minimum wage in accordance with international standards – paid wages)
4. Residual return for the farmer/owner	p.m.
The integral costs = sum of cost dimensions 1 though 4	

In Section 4.2 and 4.3 the impact of these two costs dimensions on the total costs of cocoa production has been estimated as an example, using data from Ghana.

Estimation of the costs of not using child labour in cocoa bean production

Cocoa growing households include children - defined as human beings between 5-17 years old -working for more than 80 percent on average in harvesting and post-harvest activities on the cocoa farm (Tulane University 2015). Involvement of children in farm maintenance, harvesting, and post-harvesting activities was determined to be 14 percent of the total labour required on a cocoa farm (Ministry of Man Power, Youth and Employment from Ghana, 2007; Baah 2008). The total labour needed for activities which were previously carried out by children is calculated at 65 eight-hour working days per hectare. Accordingly, the amount of (unpaid) child labour is estimated to be 9.1 working days per hectare. Based on a minimum wage of US\$2 per eight-hour working day (UN), the impact of child labour on the total costs is US\$18.20 per hectare. This is US\$0.05 per kg on the basis of the yield (403 kg per hectare), or 8 percent of the total operation costs of US\$0.62 (calculation KPMG (2012). The costs of not using child labour by hired labour are included in the inclusive smallholder sourcing indicator. The aim is to enhance the transition to cocoa production free from child labour.

Estimation of the costs of paying standard minimum wage to hired workers

Cocoa production, particularly in small-scale farming systems, is highly labour intensive, rather than capital intensive. Farmers use a combination of family, hired, and communal labour in cocoa production. The main source is family labour, which contributes 60 percent of the total labour requirements - child labour included - while hired labour accounts for 27.6 percent in Ghana (Ministry of Man Power, Youth and Employment from Ghana, 2007; Baah 2008). Based on a total labour requirement per hectare, including (re)planting activities of 70 working days, the total hired labour in cocoa production is 19 eight-hour working days per hectare.

It was reported that the hired workers, of which many migrated from neighbouring countries -

such as Mali and Burkina Faso in the case of Ghana - are the most marginalized actors in the cocoa supply chain, receiving wages far below the minimum rate set by the government (e.g., ILRF 2014). The consideration being that these workers are even more impoverished than the cocoa farmers that employ them, since small-scale farmers – who draw poverty-level incomes themselves – earn too little to pay their hired workers more. According to the Cocoa Barometer (2015) a cocoa farmer's earnings fall below the UN's absolute poverty line of US\$1.25 a day, which is equal to the minimum wage (2013/2014) set by the Ghanaian government. When assuming that hired workers should earn the UN poverty line of US\$2.00 per eight-hour working day, the costs of a better wage for hired workers amount to US\$14,25 (19 days x US\$0.75) per hectare. This comes to US\$0.035 per kg (yield 403 kg per hectare, see Table 1) or 13.5 percent of the total variable costs. The aim is to include payment of minimum wages to hired labour in the inclusive sourcing indicator to help small-scale cocoa farmers comply with international labour standards.

5.3.3 Application of the standard total costs structure of cocoa bean production and the inclusive sourcing indicator in four cases

Materials

The following research fields in the empirical literature were explored to find relevant best-practical cases: 1). the cost price of cocoa bean production; 2). impact studies of certification on cocoa farmers' livelihoods; and 3). a cost-benefit analysis of cocoa projects. This resulted in two studies found in the literature that concluded that there is a lack of (accurate) information and transparency on the cost items of cocoa bean production (KPMG 2012; Kuit and Waarts 2014). Moreover, the cost calculations in the studies were based on assumptions, such as volumes produced per farm or price premiums received by farmers, which made drawing conclusions about the profitability of cocoa production - when compared to each other - difficult.

Three studies could be selected, providing four cases in total, two in Ghana and two in the Ivory Coast:

1. Impact studies on certification schemes and their effect on farmers' livelihoods:
 - Ingram et al. (2014): This is an impact study of UTZ certification of cocoa in the Ivory Coast. It is based on a quantitative and qualitative interview-based assessment among 780 farmers from a representative sample, supplemented by in-depth interviews with cooperative managers, village chiefs, groups of villagers, and support organisations to obtain more qualitative information. Cost data were obtained from 720 farmers participating in the UTZ program. In the present study the data on the labour and material costs and the average yield of certified beans have been used.

- KPMG (2012): One in Ghana and one in the Ivory Coast.

This study focuses on the costs, advantages, and disadvantages of three certification schemes (Fairtrade, UTZ Certified and Rain Forest Alliance) in Ghana and the Ivory Coast. As such, this study provided two cases for the assessment. The UTZ certification was used instead of the Fairtrade and RA certifications, because the other impact study also deals with UTZ

certification. The KPMG study combined a comprehensive literature study with semi-structured interviews with NGOs, certification organisations, and other interviewees. This study data provided detailed data on cost certification and the impact of the marketing system on the material costs of cocoa production.

2. Gockowski et al. (2013). This study used the discounted cash flow analysis to estimate the Net Present Value (NPV) of operation costs and revenues and the internal rate of return (IRR) to the establishment of a new cocoa plantation in the Ivory Coast. The economic lifecycle was set to 21 years. This study is based on primary data on long-run cocoa trails, supplemented with secondary sources regarding input and output prices, labour estimates, and expert interviews. For the purpose of this study the averages of the labour and material costs over the 21-year period were used, representing the average variable costs of cocoa bean production. Other cocoa cost benefit analysis studies that were found, such as from Obiri et al. (2007) in Ghana and Nkang et al. (2007) in Nigeria, were excluded from the present study because the cost data were incomplete and not transparent.

One study on the economics of cocoa production in Hawaii (Fleming et al. 2009) was found which provided an integral cost price structure of wet cocoa beans in Hawaii (see Appendix 4). Because no integral cost price calculation of cocoa bean production from a West-African cocoa producing country could be found in the literature, the ratio fixed-total cost of cocoa bean production was used to estimate the fixed cost of cocoa bean production in Ghana and the Ivory Coast.

Results of the application of the standard total costs of cocoa beans to the cases

The research process started with collecting and addressing the cost dimensions of cocoa bean production from the four cases according to the developed standard total cost structure of cocoa bean production (see Table 3). The aim was to compare the costs structure and dimensions of cocoa bean production to draw conclusions regarding the differences in cost dimensions per case, but not to compare costs between cases. This is because the cases differed too much from each other to be able to draw conclusions.

To calculate the total costs per kg in US\$ of cocoa bean production per case in both countries, the costs per hectare were converted to an average yield in kg per hectare and costs per ton were converted to kg. Costs expressed in local currency, Ghanaian Cedis (GHS) and Ivorian francs (CFA), were converted to US\$ on the basis of the average exchange rate of the US\$ from the first half of 2013 (because the cases were from that period 2012-2013, i.e. avoiding impact of adjustments of exchange rates of the countries). The result is shown in Table 5.5.

Table 5.5: The costs of cocoa bean production in Ghana and the Ivory Coast based upon cost data from the cases

Costs of cocoa bean production based on costs data from cases				
Standard costs dimensions	Ivory Coast (Ingram et al. 2014) In CFA per hectare	Ivory Coast (KPMG 2012) In US\$ per ton	Ghana (Gockowski et al. 2013) In GHS per hectare	Ghana (KPMG 2012) In US\$ per ton
I. Variable costs				
1. Labour costs	CFA118,123	Not specified (n.s.)	GHS1,183	n.s.
2. Input costs	CFA39,152	n.s.	GHS187	n.s.
Total variable costs	CFA157,275 Or US\$235.91	US\$455	GHS1,370 or US\$328,80	US\$405.5
II. Fixed costs				
1. Certification costs	US\$20.27*	US\$43.40	US\$84.74*	US\$101
2. Land charge**	Not included (n.i)	n.i.	n.i	n.i.
3. Costs of own capital**	n.i.	n.i.	n.i.	n.i.
Total fixed costs	Not complete (n.c.)	n.c	n.c.	n.c.
III. Total variable costs and certification costs	US\$256.18 per hectare	US\$498.40 per ton	US\$413.54 per hectare	US\$506.5 per ton
Yield (kg per hectare)	467	565	839 (high yield cocoa hybrid variety)-	403
IV. Total variable costs and certification costs per kg. Currency rate (average first half from 2013): CFA1 = USD0.0015 GSH1 = USD0.24	US\$0.55	US\$0.50	US\$0.49	US\$0.51

* In these cases certification costs were not calculated. Therefore, we applied (and converted into kg) the certification costs from the KPMG cases. For example for Ivory Coast: 467 (yield kg per hectare) x US\$0.0434 (per kg) = US\$ 20.27 per hectare.

** These fixed costs dimensions were not included in the costs of certified cocoa bean production in the four cases.

Results of the application of sourcing indicator (the integral costs) to the cases

To calculate the integral costs of cocoa bean production, consisting of the total variable and fixed costs, the costs of not using child labour and paying minimum wage to hired labour, from the four cases, we first estimated the total fixed costs of the four cases because these were missing (see Table 4). Therefore, we used the model integral costs calculation from Fleming et al 2009 (see Appendix 4) for cocoa bean production in Hawaii. This is because no standard integral cost price calculation of cocoa bean production in a West-African country could be found. However, cocoa farming in Hawaii differs greatly from that in West-African countries. 1). Labour costs in Hawaii are much higher than those in West Africa. Labour costs in Hawaii are about eight times higher than the minimum wages per eight-hour working day as set by the government of Ghana (US\$ 12 vs. US\$ 1.50 for 2014 (retrieved from <http://www.mywage.org/ghana/home/salary/minimum-wages/minimum-wage-timeline>, April 2017).

This implies that the share of labour costs in the variable costs from the West African cases are relatively higher than those from the Hawaiian case. 2). Because disease and pest control are less relevant in the Hawaiian case, the share of material costs in the Hawaiian case is lower than those of the West African cases.

To estimate the fixed costs of cocoa bean production in Ghana and the Ivory Coast, the ratio of fixed-variable growing costs of the Hawaiian case was used. The harvesting costs, which are almost all labour costs, were excluded for the estimation of fixed cost of cocoa beans in Ghana and Ivory Coast, because of the high labour costs in Hawaii compared to said countries. The consideration is that the estimation becomes more real. This ratio was calculated at 16.25 percent (see Appendix 4).

The result of the calculation of the integral costs of cocoa bean production in the four cases, based on the inclusive sourcing indicator, is presented in Table 5. When calculated into the inclusive sourcing indicator for improving farmers' livelihoods, representing the integral costs of cocoa bean production in Ghana and the Ivory Coast, the total costs of cocoa production from the studies (see III, Table 5) should be increased by the sum of: 16.25 percent for fixed costs; 8 percent for replacing child labour (Section 4.2); and 13.5 percent for paying minimum wage to hired labour (Section 4.3); totalling an increase of 40 percent. The results of the calculations are shown in Table 4. The required (long-term) residual income of the owner/farmer as a bottom line for the continuity of the cocoa farm as a 'going concern' is included as p.m. In the Hawaii case, the residual return for the owner/farmer was calculated at 23.3 percent of the total (integral) costs (table 5.6).

Table 5.6: Calculation of the integral costs of cocoa bean production based on data from the cases in Ghana and the Ivory Coast.

Calculation of the integral costs of cocoa bean production of cases in Ghana and the Ivory Coast				
In US\$	A. Ivory Coast (Ingram et al. 2014)	B. Ivory Coast (KPMG 2012)	A. Ghana (Gockowski et al. 2013)	B. Ghana (KPMG 2012)
1.Total variable costs and certification costs per kg (see IV Table 4).	0.55	0.50	0.49	0.51
2. Fixed costs: 16.25%	0.09	0.08	0.08	0.08
3.Total variable and fixed costs (1+2)	0.64	0.58	0.57	0.59
4.Child labour: 8%	0.05	0.05	0.05	0.05
5.Hired labour: 13.5%	0.09	0.08	0.08	0.08
6.Residual returns	p.m.	p.m.	p.m.	p.m.
7. Integral costs (3 + 4+ 5 +6)	0.78	0.70	0.69	0.72

5.5 Conclusions and Discussion

Cocoa multinationals have committed themselves to source up to 100 percent sustainable certified cocoa so as to improve farmers' livelihoods in the years to come. The present study seeks to aid this by developing a sourcing indicator derived from the literature and consisting of the integral costs of sustainable certified cocoa bean production, including the costs for replacing child labour, paying minimum wages to hired labour, and a residual return to the owner/farmer. This inclusive sourcing indicator is considered to represent the integral costs of sustainable certified cocoa bean production and can be used to determine the improvement of farmers' livelihoods and standards of living from a sustainable business perspective. The basic consideration being that the integral costs are covered by farm returns, i.e. the breakeven price -the ratio of total costs (the indicator) to total revenue (the farm gate price) per unit- should at least be one. Accordingly, measuring the impact of certified sustainable sourcing on smallholders' livelihoods would be based upon the integral costs of commodity production in order to comply with the triple bottom line (Elkington 1998).

However, the present study clearly states that there are implications for achieving this goal in practice. The problem being that MNEs traditionally source from large traders and exporters (acting as turn-key suppliers), who generally deliver commodities - like sustainable certified/labelled cocoa beans - to the specification of the customer (MNEs). In addition, the extended local cocoa supply chain structure (see Figure 1) makes a transfer of price benefits directly to cocoa farmers in developing countries a challenging task. Nevertheless, MNEs need to get closer to the producers/farmers, using their dominant position in cocoa global supply chains (Perez-Aleman and Sandilands 2008; Alvarez et al. 2010; Gold et al. 2013), or using current market base mechanisms based on certification schemes (Dragusanu et al. 2014)

to make their inclusive commitment a reality. These sourcing challenges have not been studied extensively.

Second, the ultimate problem rests with the consumers found at the end of the cocoa value chain from cocoa bean to cup/bar. Consumers should be motivated to pay for the integral costs of cocoa beans. Therefore, reducing the information asymmetry vis-à-vis consumers signalling the positive ethical quality of cocoa products -such as the improvement of farmer's livelihoods- seems critical to gaining success. Some scholars have however argued that negative signalling of the low ethical quality of a product has a stronger effect on the adoption of ethical products (Van Dam and De Jonge 2015). According this view, the problem of consumer buying behaviour will be mitigated when MNEs smallholder sourcing strategies for improving farmers' livelihoods based on integral price of cocoa beans is mainstreaming.

However, there are limitations to the calculation of integral costs of cocoa beans in Ghana and the Ivory Coast, because they are based on two cases per country. Moreover, the integral costs structure as a benchmark is from Hawaii, and not from a West African case. Calculation of production costs per kg cocoa beans depends on many local and farming conditions including; farmers' entrepreneurship; differences in approaches; and used indicators and scale (e.g., Tallontire et al. 2012; Kuit and Waards 2014). Accordingly, we recommend further research including more cases in order to calculate the integral cost price of cocoa beans in West Africa. The critical question remaining is that the outcome of the variable and fixed costs calculation depends on the quality/source of the collected cost data of cocoa bean production. The problem is that smallholders in developing economies are mostly unfamiliar with cost price calculation and bookkeeping (e.g., lack of year-to-year track records). Their lack of price and market information often puts them at the mercy of middlemen (London et al. 2010).

Another question for further research regards the implementation of the inclusive sourcing indicator regarding the operationalisation of the inclusive sourcing indicator throughout the entire cocoa supply chain as a norm for sustainable smallholder sourcing that would be monitored and reported on.

CHAPTER 6

Discussion and Conclusions

6.1 Introduction

This research began with the observation that Food and Agribusiness Multinational Enterprises (F&A MNEs) have increasingly committed themselves to sourcing commodities produced by small-scale farmers in developing and emerging economies (smallholders) in a way that contributes to the farmers' livelihoods while retaining a business perspective. Coffee, cocoa, bananas, spices, fish, timber, fruits, vegetables, and cotton are commodities in which smallholders in developing and emerging economies play a role as sustainable producers and their role could increase to a more important and global one. The key issue however, is how to tap into the underused production potential of smallholder agriculture in a way that adheres to the triple bottom line (economic, social, and environment) proposed by Elkington (1998) and to uphold the business perspective. The challenge is that smallholders farming need to be upgraded for assess global value chains. F&A MNEs therefore need other sourcing strategies, as the current ones are principally aimed at economic and environmental sustainability, i.e. do not aim to improve smallholders' livelihoods (the social sustainability dimension). This dissertation therefore poses the following main research question:

MAIN RESEARCH QUESTION

How can Food & Agribusiness Multinational Enterprises best include smallholders in their sourcing strategy, in order to take social responsibility for a large scale sustainable and more equitable supply, while retaining a competitive advantage?

In the present dissertation this main research question is answered by developing an evidence based inclusive sustainable sourcing model, including a list of critical success factors, for impacting the livelihoods of smallholders in high value-adding supply chains, and an inclusive sourcing indicator to render transparency to activities of supplier development and farmers' activities and measuring the contribution of inclusion to livelihood. The research approach started with a comprehensive literature review in research fields that covered the research topic: sustainable supply chain management, bottom of the pyramid and development, sustainable business model, global value chain governance, international business, and business and society. To be able to develop the inclusive sustainable smallholder sourcing model (gap 1) and the inclusive sourcing indicator (gap 2), the social dimension of sustainability needs to be developed although already part of the sustainability concept however neglected in literature. A literature search opened the insight that the social dimension of the triple bottom line concept has been under-exposed in sustainable SCM research (Kleindorfer et al. 2007; Pagell and Shevchenko 2014; Carter and Easton 2011) as well as in the sustainable business model research (Lüdeke-Freund et al. 2016; Bocken et al. 2014; Schaltegger et al. 2016). Moreover, it was also stated that to conceptually and empirically link the research fields of the bottom of the pyramid (smallholder business model) with supply chain management (sourcing/purchasing strategy) social dimensions of sustainable management needed to be included to strengthen the thus far weakly developed social dimension of sustainability management (Seuring and Gold 2013).

When having designed the inclusive sourcing model (including CSFs) and the inclusive sourcing indicator, both based on theory, both model and indicator are empirically deployed in best practice cases. The aim is to draw conclusions regarding the conceptualization of the model and its related CSFs, and the indicator.

This chapter is structured as follows. First, Section 6.2 presents the main conclusions regarding four studies (Chapter 2, 3, 4 and 5) that were conducted that meet the study objectives. Section 6.3 summarizes the general conclusions bringing together the subjects covered, followed by the theoretical contributions (Section 6.4) and limitations and recommendations (6.5). Section 6.6 explains the main management and policy implications.

6.2 Conclusions per research objective

Research Objective 1

Chapter 2 presents the inclusive sourcing model built for sustainable smallholder supply, which can be utilised to (re-)design conventional sourcing strategies to procure from smallholders in a way that delivers value to smallholders business model through which they can improve their livelihoods.

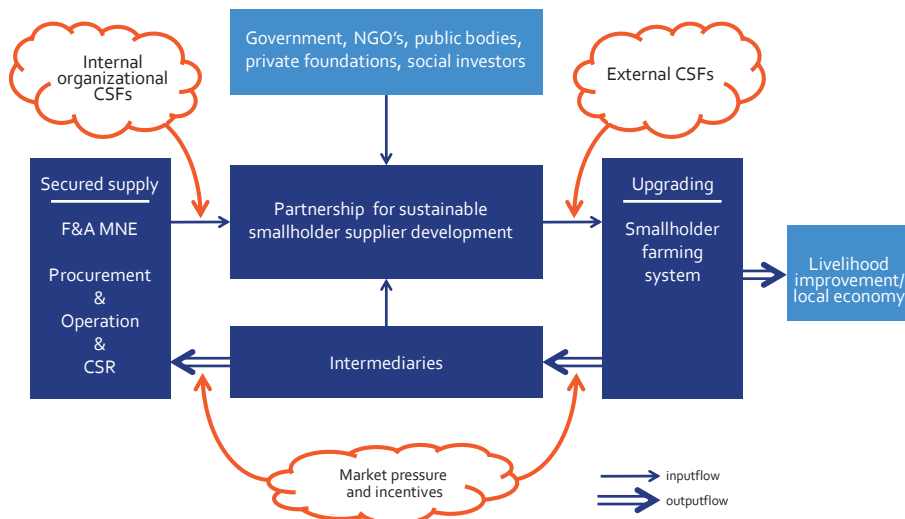


Figure 6.1: Inclusive sustainable sourcing model (3S-model)

This inclusive sourcing model is based on 3 conceptual elements: upgrading; supplier development programs; and global value chain governance structure.

The features of this smallholder sourcing model are:

1. the sourcing model considers an entire supply chain approach, from F&A MNE down through to the smallholders.
2. a long term partnership with all chain actors - intermediaries (suppliers) and public stakeholders included - for sustainable smallholder supplier development.

3. a link with the open market, for monitoring the economic viability/competitive advantage of the smallholder supply chain.

The critical success factors of this model are:

1. The selected smallholders are commercially oriented
2. The building of a partnership for upgrading of suppliers/smallholders
3. The presence of a captive governance value chain structure, based on transparency and a cooperative relationship
4. Building of effective producer organisations
5. Providing accessible and affordable financial services to farmers
6. The presence of a proactive CSR strategy and committed top-management
7. The use of cross-functional teams

The inclusive sourcing model is an example of supply Option 3 (see figure 1.4.2), which integrates business perspectives (for securing a sustainable smallholder supply) and CSR perspectives (for improving smallholders' livelihoods). This supply option considers that F&A MNEs - as leaders of the smallholder supply chains - are closely linked to smallholders through partnerships with intermediaries and non-business stakeholders, such as shown in the black soybean case (Chapter 3) and the tomato case (Chapter 4).

Research Objective 2

Chapter 3 explored the applicability of the inclusive sourcing model to the black soybean supply chain in Java, which is considered a best-practise case because it is scaled (i.e. not a pilot project), proves to work in the open market, has progressive performance and (historical) data, and is run by a food and agribusiness multinational enterprise. In addition, the value chain analysis - which was conducted at the end of 2013 and commissioned by the F&A MNE and an NGO - was aimed at learning how the F&A MNE can do business with smallholders in ways that improve their livelihoods. Therefore, the relationship between procurement and the smallholder business model were explored in-depth, through workshops, semi-structured interviews, a field observation, and the breakeven analysis of the black soybeans produced.

The overall finding of the study was that the dynamics of the black soybean case could be understood with the help of the 3S-model. Similarities include: the use of a partnership model for upgrading; a captive governance structure; and the existence of a clear proactive and committed corporate sustainable smallholder sourcing strategy. On the other hand I also found differences that influence the concept of the inclusive 3S-model, regarding the role of the F&A MNE in farm financing, the business forms of suppliers, and the cross functional sourcing team. The lessons learned from these differences led to a tightening in the definitions of CSF 5 (the presence of accessible and affordable financial systems for smallholders) and CSF 7 (Use of cross-functional teams within and outside a firm). The driving forces that made

the black soybean become a core supply chain stems from the F&A MNE's proactive corporate social responsibility strategy, its leadership, and its commitment. There are limitations to this study because the findings were based on a single case. Food sectors, geographical conditions, the political context, and sourcing strategies of F&A MNEs may differ. Accordingly, I recommend further case study research in order to further confirm, modify, or fine-tune the 3S-model.

However, open questions still remain regarding the continuation of the black soybean supply chain; for example, in case of a severe economic downturn or acquisition of the F&A MNE by venture capitalists seeking a quick buck.

Research Objective 3

Chapter 4 assessed the impact of two best practice cases involving the same F&A MNE, one on Java/Indonesia and one in Maharashtra/India, on the consistency of the inclusive 3S-model with the list of CSFs. The framework of the 3S-model is used as the template for addressing the elements of the supply model and the related critical success factors of the cases. Both supply chains stem from the same joint research program of the F&A MNE and NGO and utilise the same methods and practical tool kit. In addition, I compared the CSR strategies and operations of headquarters and subsidiary and the approaches in different geographical areas. In the black soybean supply chain, the F&A MNE is directly involved in the smallholders' upgrading activities with cooperatives acting as intermediaries, while in the tomato case those activities were outsourced to the contracting partner-processor i.e. the supplier of the tomato paste processed from the tomatoes produced. However, as chain leader, the F&A MNE can influence the conditions of the farmers, the tomato price, and the sustainability quality conditions though the contracts with the processors/suppliers (cf. CSR regarding captive governance structure).

Based on the findings of this research, I conclude that the 3S-model is a suitable way for the conceptualization of the dynamics behind a sustainable smallholder supply aimed at improving smallholders' livelihoods. The similarities and differences found between the two cases lead to a fine-tuning of the critical success factors:

These fine-tuned CSFs are:

1. The selected smallholders are commercially oriented farmers
2. The building of a partnership for upgrading, on an operational as well as on a strategic level
3. The appliance of a captive governance value chain structure based on cooperative relationships
4. The building of effective producer organisations, cooperatives and farmer groups included

5. A reduction of farmers' funding costs and risks by providing buying commitments and price guarantees
6. A proactive CSR strategy and a committed top-management
7. The use of cross-functional teams within and outside a firm

However, questions have arisen on the limitations of the present study. This study's findings are based on just two cases and no F&A MNE is like the other. Therefore, further research on a larger number of cases is needed to further confirm the inclusive smallholder sourcing model and the list of critical success factors.

Research Objective 4

In chapter 5, a sourcing indicator was developed to measure the impact of the smallholder business model on the improvement of smallholders' livelihoods through food and agribusiness multinational enterprises. Impact assessment studies on commodities such as coffee, cocoa, bananas, and cotton have been explored to find cost data and cost price calculations. Most studies do not use the total costs of production (variable and fixed) in their analysis. I chose the cases of cocoa bean production in Ghana and the Ivory Coast - the leading cocoa bean producing countries in the world - because these cases were outlined in studies that provided detailed cost data. The economics and sustainability of cocoa farming were studied in order to construct a general cost structure for cocoa bean production consisting of variable as well as fixed cost dimensions. It is suggested that, in addition to the total economic costs, a residual return for the owner/farmer is required to assure a farm's long term continuity. I also explored the farm economics theory in order to construct a general cost price structure for crop production. Combined with the information on the economics of cocoa production, I was able to construct a standard cost price structure for cocoa bean production.

However, the literature review also revealed that conforming to the social sustainability dimension of triple bottom line goals (Elkington 1998) concept is a challenge, as the child labour in cocoa production and the hired labour working conditions do not conform to international labour standards. As this dissertation focuses on smallholder sourcing by F&A MNEs that complies with economic, social, and environmental sustainability in a way that improves smallholders' livelihoods, I have calculated the costs of not using child labour and paying minimum wage to hired labour and added those to the total (economic) costs of cocoa bean production. The sum of the economic and socioeconomic costs are the integral costs of production: the inclusive sourcing indicator (see table 5.4).

The consideration being that to improve his livelihood, a smallholder needs to cover at least the integral costs through farm revenues (farm gate price). This consideration is limited however, because in practice smallholder performance varies wildly due to things like agronomical conditions, farm size, and entrepreneurship, resulting in differences in productivity and product quality. The appliance of 'on average' instead of 'every smallholder' is a more dynamic threshold for smallholder inclusion in high value-adding supply chains

from a viable business perspective, i.e. for building viable smallholder supply chains in an open market environment.

The limitation of the inclusive sourcing indicator is that F&A MNEs traditionally source from large traders and exporters (acting as turn-key suppliers), who generally deliver commodities - like sustainable certified/labelled cocoa beans - to the customer's (i.e. F&A MNEs') specification. In addition, the extended local cocoa supply chain structure (see Figure 5.1) makes a transfer of price benefits directly down to the cocoa farmers in developing countries a challenging task. MNEs nevertheless need to get closer to the producers/farmers through the use of their dominant position in cocoa global supply chains, or by using current market based mechanisms on the basis of certification schemes to make their inclusive commitment a reality. These sourcing challenges have not been studied extensively.

The ultimate problem rests at the end of the cocoa value chain from bean to cup, i.e. with the consumers who should be motivated to pay for the integral costs of cocoa beans. Studies have confirmed that, in general, only a quite limited percentage of consumers translates environmental and social concerns into buying behaviour. Therefore, reducing the information asymmetry vis-à-vis consumers by signalling the positive ethical quality of cocoa products - such as the improvement of farmer's livelihoods - seems critical for success. Other scholars have however argued that negative signalling of the low ethical quality of a product has a stronger effect on the adoption of ethical products. According to this view, the problem of consumer buying behaviour will be mitigated when MNE smallholder sourcing strategies for improving farmers' livelihoods, based on the integral price of cocoa beans, are mainstreaming.

6.3 General conclusions

As mentioned, the aim of this dissertation is to find answers to the main research question: how F&A MNEs can change their sourcing strategies in order to take social responsibility for a sustainable and more equitable large scale smallholder supply, while retaining competitive advantage. Based on the bottom of pyramid/economic development research strand I can conclude that to overcome the constraints for inclusion of smallholders in high value adding supply chains effectively, while retaining a business perspective, smallholders' farms need to become more advanced (e.g., London et al. 2010; Rivera-Santos and Rufin 2010; Torero 2011; Wiggins et al. 2010). From the supply chain research strands, I used the concepts of upgrading (Humphrey and Schmitz 2002; Gereffi and Fernandez-Stark 2011; Barrientos et al. 2011) and supplier development programs (Hahn et al. 1990; Watts et al. 1995). These can be applied by the 'buyer' (F&A MNE) to overcome constraints in productivity, product quality, and transactions in order to secure a sustainable supply. The missing aspect necessary for the inclusion of smallholders is how a buyer can improve smallholders' livelihoods from a business perspective while retaining a competitive advantage in a competitive global market environment.

To answer these questions, I explored the purpose of a firm/corporation, i.e. its business model, within the business model/organisation research strand. In this research, the unit of analysis under consideration is an individual firm. According to the 'narrow' definition, a

business model is the rationale behind a firm for creating and capturing value (e.g., Osterwalder et al. 2005; see Table 1.1). This definition is supported by Simons (2013), who argued that competing for ‘customers’ and ‘investors’ is ‘the essence of business’. However, firms/corporations are being urged to play a key role in addressing issues that appear to go beyond their primary economic function, for example rural development, climate change, human rights, child labour, and labour rights. As this research aims at constructing an inclusive sustainable sourcing model enabling access of smallholders to F&A MNE’s supply chains, the potential number of included smallholders would increase from 7% (the present commercial smallholders in tight value chains) with 33% (the present smallholders in loose value chains) to **40%**. This would effectuate for **33%** (or 165 million) more smallholders a structural improvement of their livelihood.

In the past decades, corporations engaged with broader society through philanthropy and community development. The primary function of a corporation however remains focused on profit generation, which limits the extent of corporate involvement with broader social issues. The business model/organisation research strand also yielded alternative definitions of a business model (the purpose of a firm), such as the Creating Shared Value business model (Porter and Kramer 2011), or ‘Creating value for stakeholders creates value for shareholders’ (Freeman et al. 2004; Donaldson et al. 1995). Crane et al. (2014) commented that Porter and Kramer are trying to solve a system-level problem merely through organisational-level change. They posed that the ‘creating share value’ business model approach is an example of the dual analysis of Business & Society (cf. Inclusive Business). Therefore, I applied the ‘narrow’ definition of a business model and integrate the CSR perspective (delivering value for improving smallholders’ livelihoods through sourcing) with the business perspective (to secure a sustainable smallholder supply). Our research aim was therefore not to seek to develop a new theory of the firm, but an attempt to marry the efficiency of business with conforming to the triple bottom line in sustainable supply chain management.

Food and agribusiness multinational enterprises generally have three sourcing strategies (options) for impacting smallholder business model: 1) business as usual; 2) applying a CSR strategy to support smallholders and their community; and 3) integrating both strategies into a smallholder sourcing model for a sustainable and more equitable smallholder supply (see Figure 1.4.2). In Chapter 2 (research objective 1) I developed such a sourcing model and its critical success factors for inclusion of smallholders in high value-adding supply chains by F&A MNEs. The applicability of the inclusive sourcing model was successfully explored in a best-practice case: the black soybean case (Chapter 3, research objective 1). and the consistency of the inclusive sourcing model and its CSFs has been explored in two best-practice cases (Chapter 4, research objective 2).

However, the sourcing model I developed needed an indicator to leverage value to smallholders that could improve their livelihoods and a way of measuring said improvement (Chapter 5). It was concluded that such a sourcing indicator can also be applied to business as usual sourcing strategies, i.e. the purchasing of third party sustainable certified commodities. But the implications of this are: how are we to measure the improvement of smallholders’ livelihoods by F&A MNEs, and is it ‘one size fits all’ or differentiated? I have concluded that

current certification schemes and mechanisms cannot easily adopt this socioeconomic dimension of the triple bottom line. They therefore need to be transformed, this however is a topic for further research.

Taking the conclusions and considerations from the research into account, the general conclusions are:

1. The inclusive sustainable sourcing model is a suitable tool for the conceptualisation of sourcing models in order to secure a sustainable and more equitable smallholder supply. However, this sourcing model requires a close link with the smallholders through the application of a captive value chain governance structure. Current widely applied sustainable certified sourcing strategies and models therefore need to be adjusted/redefined.

2. The integral costs of high value-adding crop production, as defined in the Inclusive Sourcing Indicator, can be used to leverage value through a supply chain. In particular down to smallholders to improve their livelihoods and to measure said improvement through strategic sourcing/purchasing. This indicator is a practical tool for the sustainable sourcing model I developed as well as for conventional sourcing models based on certification schemes.

It is recommended that, when studying the impact of sourcing strategies on the improvement of producers' livelihoods, it is best to include a break-even analysis based on a standard cost price calculation of production.

6.4 Theoretical and methodological contributions

To answer the main research question, I started with a comprehensive literature review in the research streams of supply chain management, bottom of the pyramid, and business models.

It was found in a comprehensive literature review that the social dimension of the triple bottom line concept has been under-exposed in sustainable SCM research and sustainable business model research,, and the conceptually and empirically link the research of the bottom of the pyramid (smallholder business model) with supply chain management (sourcing/purchasing strategy) to include the social dimensions of sustainable management in order to help to address the social dimension of sustainability management.(see Section 6.1). This dissertation aspires to strengthen these weaknesses in sustainable SCM and business model literature, and in the BOP literature enabling the development of the inclusive smallholder sourcing model in which business (to secure sustainable supply) and CSR (to improve smallholders' livelihoods are integrated, and an inclusive sourcing indicator for impacting and measuring smallholders' livelihoods improvement.

The methodological approach and tools - including theories, conceptual elements, research frame works, and the practical tools – were outlined in Section 1.7. Key element of the approach was linking the sustainable supply chain with the BOP and sustainable business model research strands. Because the sourcing model and the indicator for sustainable smallholder inclusion in high value-adding supply chains are explorative and conceptual in nature, I have explored the applicability and consistency of both in best-practise cases.

This dissertation has contributed by filling the gaps in the knowledge I found in the research streams of sustainable supply chain management and BOP in the following ways: First, Chapter 2 provides the answer to gap in the supply chain management research strand by presenting the sustainable smallholder sourcing model I developed with five external (outside the F&A MNE) and two internal (within the F&A MNE) critical success factors. In Chapter 3 and 4 I explored the applicability and impact of the sustainable smallholder sourcing model through two best-practise cases, because our research is explorative and conceptual in nature. The outcome is that both smallholder supply chains can be conceptualized through the framework of the sourcing model I developed - which consists of six building blocks - while some critical success factors have been fine-tuned.

Second, Chapter 5 is the answer to gap in the BOP research stream. By presenting the inclusive sourcing indicator I enable transparency in the relation between activities costs and returns and enable insight in the impact of F&A MNE's sourcing strategies on smallholders' livelihoods.

Finally, the inclusive sustainable smallholder sourcing model including the list of CSFs, when integrated with the inclusive sourcing indicator, can help F&A MNEs build smallholder supply chains that adhere to the triple bottom line concept or give input for redesigning conventional sourcing strategies. All in all, this model and indicator provide the answer to the main research question.

6.5 Limitations and directions for future research

The applicability of the inclusive 3S-model I developed is based on just two best-practice cases from a single food and agribusiness multinational enterprise. More best-practice cases are needed to confirm or adjust the model and its critical success factors. Despite positive indications of a contribution to smallholders' livelihoods, the question remains whether smallholders actually receive an equitable piece of the pie. In other words, does their produce fetch a fair price that covers all costs and risks? For several reasons it is hard to give a clear answer to this question. For instance, the business development and learning characteristics of supplier development programs and the agronomical conditions and soil quality can vary greatly between regions and farms. Moreover, smallholders in developing economies are mostly unfamiliar with cost price calculations and bookkeeping, and their lack of price and market information (information asymmetry) often puts them at the mercy of middlemen. Second, although this study illustrates that F&A MNEs can involve smallholders in high value-adding supply chains from a business perspective in a sustainable and more equitable way, the overall effectiveness of F&A MNEs in solving global food security and sustainable development challenges must not be overestimated. They are, among other things, constrained by their short-term commercial and business model orientation and their relatively small size in the global food system when compared to the magnitude of the economic development challenges of developing economies; they probably cannot do it alone (Seuring and Gold 2013; World Economic Forum 2011 and 2012).

Based on the findings of our literature review on studies gauging the impact of certified schemes on the improvement of the livelihoods of smallholders who cultivate ‘things’ like cocoa, coffee, and bananas, I recommend:

- the drawing up of a smallholder business model by applying the business model canvas template to farmer workshops.
- calculating the integral costs of production when measuring the improvement of smallholders’ livelihoods, rather than draw conclusions on qualitative information derived from interviews and indicators, such as average net farm income growth and access to knowledge and financial services.

With an eye to future research, it was observed that new drivers of change (innovations) are emerging that will open up new opportunities for smallholders, strengthening their bargaining position in value chains and improving their access to markets, farm inputs, and financing.. Digital technologies promise to link smallholders to markets and provide farmers with information on matters like water management, pest control, and the market (prices, supply and demand, etc.). These services open up possibilities that will allow smallholders to capture emerging market opportunities more effectively, mainly by reducing information asymmetry. Future research is needed on how this topic will affect the inclusive sourcing model including the list of CSFs, conceptually as well as empirically. Therefore I recommend the inclusion of a cost price calculation of said innovations in the smallholder business model, like I have done in the cocoa case covered in Chapter 5.

6.6 Management and policy implications

When considering the relevancy of the research for ‘Inclusive ‘Business’, and the implications of policies and decision-making processes of corporations (e.g., F&A MNEs) and public organisations, I gleaned the following from the cases I covered:

Management implications

1. finding local intermediaries and stakeholders for long term partnerships that will aid in setting up and leading supplier development programs which need to comply with F&A MNE’s sustainable supplier codes.
2. the distribution of resources and mandates among, and the relationship between, headquarters and subsidiary (centralized or decentralized governance structure) and between Procurement & Operation and CSR must be scrutinized in order to achieve synergy and effectiveness.
3. applying one international standard to measure smallholder livelihood improvement, i.e. one size fits all, will limit the ability of an F&A MNE to distinguish itself from another regarding its contribution to social sustainability in accordance with, for example, UN Sustainable Development goals.

Policy implications

1. the supplier development program must be linked to the local economy and rural development. Because of its supportive character and its impact, involvement of local government in smallholder supplier development programs is dependent on the food security policy applied.

2. governmental and donor support must be rendered functional and transparent. Several impact studies of certification on smallholders' livelihoods concluded that many certification programs are co-funded by donors or subsidized by local government, like the situation in Ghana. This has led to program costs or cost prices that are not always transparent and make it almost impossible to assess what the benefits of certification would be if no financial support was available. It was also noted that donor funding is likely to remain important for field level implementation. If such funding/subsidy is withdrawn, certificate holders and smallholders may not be able to meet the certification costs.

3. the question is how the improvement of smallholders' livelihoods, i.e. the inclusive sourcing indicator, can be inserted into the structures and mechanisms of - and be measured within - currently widely applied certification schemes and private food standards in regional and global value chains. Certification is defined here as being a mark or label applied to consumer food products that is recognizable to consumers as assuring certain production conditions with regards to environmental and social issues. In addition, there are several certification organisations/bodies - such as Fairtrade, UTZ Kapeh, Rain Forest Alliance, and Organic - and each scheme has its own focus and sustainability standards, mechanisms, and approaches that go with them. Suppliers (i.e. traders, producer organisations, or individuals) of certified commodities are certificate holders of one of these bodies when engaging with smallholders in certified production. F&A MNEs prefer at least one or more of these schemes, depending on the focus of their CSR strategy. The challenge is to define a single standard measure for the improvement of smallholders' livelihoods that covers all certification schemes /organisations. Greater transparency will promote the acceptance of the socioeconomic sustainability product quality. Whether current certification schemes and related mechanisms can incorporate the 'livelihood improvement of smallholders' and how they are to do so is a topic for future research.

Summary

1. Problem statement, main research question, and research objectives

Many food and agribusiness multinational enterprises have committed themselves to source close to 100 percent (certified) sustainable agricultural commodities -cocoa, coffee, bananas, fish and cotton- to largely be produced by smallholders in the years to come. Their aim is to secure a (long term) sustainable commodity supply in ways that improve the livelihoods/standard of living of the smallholders, while retaining competitive advantage. This inclusive sourcing strategy goes beyond the corporate social responsibility (CSR) strategies that F&A MNEs adhere to and that are often aimed at expressing corporate philanthropy in order to obtain a social license to operate. Furthermore, current widely applied sourcing strategies are based on tripartite sustainable certification schemes and applied as collective international standards. They predominantly focus on environmental aspects of production rather than on improving smallholders' livelihoods. F&A MNEs traditionally source commodities mainly through a network of selected large traders and exporters (intermediaries) on a transaction basis, making improvement of smallholders' livelihoods challenging.

The problem is that smallholders in developing and emerging economies face productivity, product quality and transactional constraints in their effort to access high value-adding food markets. To overcome these constraints, smallholders need to become more advanced. However, they often need resources, capabilities, and infrastructures to meet effective market demands and to capture value. The assumption is that food and agribusiness multinational enterprises can help improve smallholders agriculture from a business perspective. Moreover, the inclusive commitment of F&A MNEs corresponds to the increasingly call upon corporations to play a more proactive role in contributing to global sustainability challenges like, for example, the United Nation Sustainable Development Goals 2015-2030. This is why F&A MNEs need other sourcing strategies and models.

This dissertation therefore poses the following main research question:

Main research question

How can F&A MNEs best include smallholders in their sourcing model in order to take social responsibility for a large scale sustainable and more equitable supply, while retaining competitive advantage?

To answer this question, I started with a comprehensive literature review in sustainable supply chain management, bottom of the pyramid, sustainable business model and international business, global value chain, and business and society research strands. It was found that the social dimension of the triple bottom line concept has been under-exposed in sustainable SCM research, and in the sustainable business model research. Moreover, the interchangeable usage of the terms 'sustainability' and 'environment', both by researchers and practitioners, has not contributed to the understanding of sustainability from the triple bottom line meaning. It was also stated that to conceptually and empirically link the research fields of the bottom of the pyramid (smallholder business model) with supply chain management (sourcing/purchasing strategy) to include the social dimensions of sustainable management in order to help to

address aspects that are so far weakly developed, such as the social dimension of sustainability management. This threw up the following gaps in the literature:

The need for supply chains that comply with the triple bottom line concept, rather than supply chains that are just more ‘green’ and the need to conceptually integrate the research fields of the bottom of the pyramid (smallholder business model) with supply chain management for addressing the social dimension of sustainable management.

This dissertation aspires to fill these gaps by means of: the building of a sourcing model, containing a list of critical success factors for a sustainable smallholder supply with a business perspective (research objective 1); followed by an exploration of the applicability of the sourcing model with the list of critical success factors to a best practice smallholder supply chain (research objective 2); and to assess the impact of multiple best practice cases on the consistency of the framework of the 3S-model with the list of critical success factors (research objective 3); research objective 4 is the development of an indicator that can be used to leverage and measure the contribution to the improvement of smallholders’ livelihoods in sustainable smallholder supply chains.

2. Conclusions per research objective

Research Objective 1

Chapter 2 presents the inclusive smallholder sourcing model (called 3S-model) built for a sustainable smallholder supply for meeting the triple bottom line goals (Elkington 1998) (see Figure 1) that can be used to (re-)design conventional sourcing strategies and models to procure from smallholders in ways that deliver value to smallholders for improving their livelihoods.

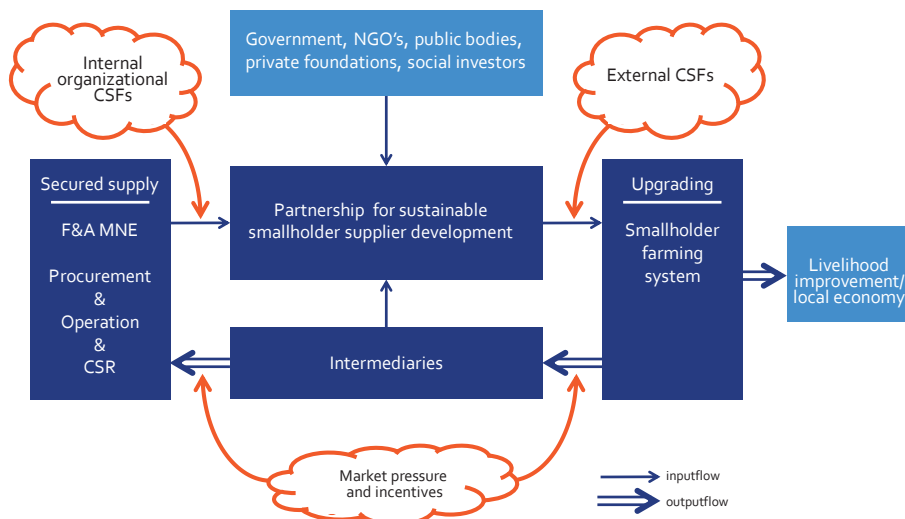


Figure 1: Inclusive Sustainable Smallholder Sourcing Model (3S-model)

This model is based on 3 conceptual elements: upgrading; supplier development programs; and global value chain governance structure. The aim of the model is to secure sustainable commodity supply in ways that improve smallholders' livelihoods. The critical success factors of this model are:

1. The selected smallholders are commercially oriented
2. Building partnership for upgrading suppliers/smallholders
3. The presence of a captive governance structure based on transparency and a cooperative relationship
4. Building effective producer organisations
5. Provision of accessible and affordable financial services to farmers
6. Presence of a pro-active CSR strategy and a committed top-management
7. Use of cross-functional teams within and outside a firm

Food and agribusiness multinational enterprises however do generally not procure directly from smallholders, but traditionally source collective international sustainable agricultural commodities from a network of selected suppliers (large traders and exporters), far removed from the smallholders. The challenge is to integrate the improvement of smallholders' livelihood into currently applied certification schemes/mechanisms. Therefore, an inclusive sourcing indicator to leverage value for the improvement of smallholders' livelihoods and to measure said improvement (see research objective 4) is needed. The applicability of the theoretical inclusive 3S-model with the list of CSFs and drivers has been explored in best-practise cases from a food and agribusiness multinational enterprise in Indonesia and India. The importance of the conceptual elements of the 3S-model and the related CSFs can be expected to vary, given the different characteristics of particular business cases, such as type of crop, geographical area, smallholder and supplier types, and capabilities. Moreover, F&A MNEs (processors, wholesalers, or retailers) can apply different sourcing and CSR strategies.

Chapter 3 explored the applicability of the inclusive 3S-model to the black soybean supply chain on Java, which is considered a best-practise case because it is scaled (i.e. not a pilot project), has been proven to work in the open market, has progressive results and (historical) data, and is run by a food and agribusiness multinational enterprise. In addition, the value chain analysis - which was conducted at the end of 2013 and commissioned by the F&A MNE and an NGO – was aimed at learning how the F&A MNE can do business with smallholders in ways that improve their livelihoods. Therefore, the link between procurement and the smallholder business model were explored in-depth through workshops, semi-structured interviews, a field observation, and the breakeven analysis of the black soybeans produced.

The overall finding of the study was that the dynamics of the black soybean case could be understood with the help of the inclusive 3S-model. Similarities include: the use of a partnership model for upgrading; a captive governance structure; and the existence of a clear proactive and committed corporate sustainable smallholder sourcing strategy. On the other hand I also found differences that influence the concept of the 3S-model, regarding the role of the F&A MNE in farm financing, the business forms of suppliers, and the cross functional sourcing team. The lessons learned from these differences led to a tightening in the definitions

of CSFs (the presence of accessible and affordable financial systems for smallholders) and CSF 7 (Use of cross-functional teams within and outside a firm). The driving forces that made the black soybean become a core supply chain stems from the F&A MNE's proactive corporate social responsibility strategy, its leadership, and its commitment.

There are limitations to this study because the findings were based on a single case. Food sectors, geographical conditions, the political context and sourcing strategies of F&A MNEs may differ. Accordingly, I recommend further case study research in order to further confirm, modify, or fine-tune the 3S-model. However, open questions still remain regarding the continuation of the black soybean supply chain; for example, in case of a severe economic downturn or acquisition of the F&A MNE by venture capitalists seeking a quick buck.

Research Objective 2

Chapter 4 assessed the impact of two best practice cases involving the same F&A MNE, one on Java/Indonesia and one in Maharashtra/India, on the consistency of the 3S-model with the list of CSFs. The framework of the Sustainable Smallholder Sourcing model is used as the template for addressing the elements of the supply model and the related critical success factors of the cases. Both supply chains stem from the same joint research program of the F&A MNE and NGO and utilise the same methods and practical tool kit. In addition, I compared the CSR strategies and operations of headquarters and subsidiary and the approaches in different geographical areas. In the black soybean supply chain, the F&A MNE is directly involved in the smallholders' upgrading activities with cooperatives acting as intermediaries, while in the tomato case those activities were outsourced to the contracting partner-processor, i.e. the supplier of the tomato paste processed from the tomatoes produced. However, as chain leader, the F&A MNE can influence the conditions of the farmers, the tomato price, and the sustainability quality conditions through the contracts with the processors/suppliers (cf. CSR regarding captive governance structure).

Based on the findings of this research, I conclude that the developed sustainable sourcing model is a suitable way for the conceptualization of the dynamics behind a sustainable smallholder supply aimed at improving smallholders' livelihoods. The similarities and differences found between the two cases lead to a fine-tuning of the following critical success factors:

- CSF 2: Building partnership for upgrading on an operational as well on a strategic level
- CSF 4: Building effective producer organisations, including cooperatives and farmers group
- CSF 5: Reducing farmers' funding costs and risks by providing buying commitments and price guarantees
- CSF 7: Use of cross-functional teams within and outside a company

However, questions have arisen on the limitations of the present study. This study's findings are based on just two cases and no F&A MNE is like the other. Therefore, further research and a larger number of cases are needed to further confirm the smallholder sourcing model and the list of critical success factors.

Research Objective 3

Chapter 5 constructs an inclusive sourcing indicator was developed to impact smallholder business model, which can be used to measure the impact of smallholders' livelihoods. Impact assessment studies on commodities such as coffee, cocoa, bananas, and cotton have been explored to find cost data and cost price calculations. Most studies do not use the total costs of production (variable and fixed) in their analysis. I chose the cases of cocoa bean production in Ghana and the Ivory Coast - the leading cocoa bean producing countries in the world - because these cases were outlined in studies that provided detailed cost data. The economics and sustainability of cocoa farming were studied in order to construct a general cost structure for cocoa bean production consisting of variable as well as fixed cost dimensions. It is suggested that, in addition to the total economic costs, a residual return for the owner/farmer is required to assure a farm's long term continuity. I also explored the farm economics theory in order to construct a general cost price structure for crop production. Integrated with the information on the economics of cocoa production was able to construct a standard cost price structure for cocoa bean production.

However, the literature review also revealed that conforming to the social sustainability dimension of Elkington's (1998) triple bottom line concept is a challenge, as the child labour in cocoa production and the hired labour working conditions do not conform to international labour standards. As this dissertation focuses on smallholder sourcing by F&A MNEs that complies with economic, social, and environmental sustainability in ways that improve smallholders' livelihoods, I have calculated the costs of not using child labour and paying minimum wage to hired labour and added those to the total (economic) costs of cocoa bean production. The sum of the economic and socioeconomic costs are the integral costs of production: the inclusive sourcing indicator (see table 1).

Table 1: The Inclusive Sourcing Indicator for improving smallholders' livelihoods

The elements of the inclusive sourcing indicator or integral costs of production	
Cost dimensions	Specification
The variable and fixed costs)	Variable costs: labour costs (paid and unpaid) + material costs Fixed Costs: land charge + costs of certification + costs of own capital
Costs of replacing child labour	Total working days (8 hours per working day) X minimum wage per hour accordance international standards
Costs of hired labour accordance international labour standards	Total workings day X (minimum wage accordance international standards – paid wages)
Residual return for the farmer/owner	p.m.
The integral costs = sum of cost dimensions 1 though 4	

The consideration being that to improve his livelihood, a smallholder needs to cover at least the integral costs through farm revenues (farm gate price). This consideration is limited

however, because in practice smallholder performance varies wildly due to things like agronomical conditions, farm size, and entrepreneurship, resulting in differences in productivity and product quality. The appliance of 'on average' instead of 'every smallholder' is a more dynamic threshold for smallholder inclusion in high value-adding supply chains from a viable business perspective, i.e. for building viable smallholder supply chains in an open market environment.

The limitation of the sourcing indicator is that F&A MNEs traditionally source from large traders and exporters (acting as turn-key suppliers), who generally deliver commodities - like sustainable certified/labelled cocoa beans - to the customer's (i.e. MNEs') specification. In addition, the extended local cocoa supply chain structure (see Figure 1) makes a transfer of price benefits directly down to the cocoa farmers in developing countries a challenging task. MNEs nevertheless need to get closer to the producers/farmers, using their dominant position in cocoa global supply chains, or by using current market based mechanisms based on certification schemes to make their inclusive commitment a reality. These sourcing challenges have not been studied extensively. The ultimate problem rests at the end of the cocoa value chain from bean to cup (see Figure 1), i.e. with the consumers who should be motivated to pay for the integral costs of cocoa beans. Studies have confirmed that, in general, only a quite limited percentage of consumers translates environmental and social concerns into buying behaviour. Therefore, reducing the information asymmetry vis-à-vis consumers by signalling the positive ethical quality of cocoa products - such as the improvement of farmers' livelihoods - seems critical for success. Other scholars have however argued that negative signalling of the low ethical quality of a product has a stronger effect on the adoption of ethical products. According to this view, the problem of consumer buying behaviour will be mitigated when MNE smallholder sourcing strategies for improving farmers' livelihoods, based on the integral price of cocoa beans, is mainstreaming.

3 General conclusions

The aim of this dissertation is to answer the main research question, how food and agribusiness multinational enterprises can change their sourcing strategies in order to take social responsibility for a sustainable and more equitable smallholder supply on a large scale, while retaining competitive advantage. As this research aims at constructing an inclusive sustainable sourcing model enabling access of smallholders to F&A MNE's supply chains, the potential number of included commercial oriented smallholders is about 40 percent (200 million) of the total number of the smallholders in the world (60 present are subsistence/non-commercial farmers).

The general conclusions of the research are:

1. The developed sustainable sourcing model is a suitable tool for the conceptualization of sourcing models in order to secure a sustainable and more equitable smallholder supply. This sourcing model however requires a close link with the smallholders through the application of a captive value chain governance structure. Therefore, currently widely applied sustainable certified sourcing strategies and models need to be adjusted/redefined.

2. The integral costs of high value-adding crop production, as defined in the Inclusive Sourcing Indicator, can be used to leverage value through a supply chain, in particular down to smallholders to improve their livelihoods, and to measure said improvement through strategic sourcing/purchasing. This indicator is a practical tool for the developed sustainable sourcing model as well as for conventional sourcing models based on certification schemes. It is recommended that, when doing studies on the impact of sourcing strategies on livelihood improvement of producers, it is best to include a break-even analysis based on a standard cost price calculation of production.

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Appendix 1

Topics of the semi structured interviews used in black soybean case in Java

1.ULI Procurement and Operation manager

Black soybean smallholder sourcing model

1. What are the business drivers to invest in small-scale paddy farmers for sustainable black soybean supply?
2. What is the role of Procurement and Operation in the black soybean supply program and in the Partnership?
3. Can you explain how the buying process works externally with partners (cooperatives and suppliers) and internally with Unilever Indonesia-CSR?
4. How is the black soybean supply chain governed?
5. What are the critical challenges to scale-up the black soybean supply program to meet the future growing demand of the sweet soy sauce businesses?

Performance of the black soybean supply program

1. Can you give a breakdown of the value added of black soybean from farmer cost price to cooperatives/traders' margin to the contract price?
2. How has the black soybean supply performed in the period 2007-2012?

2.ULI-CSR managers

ULI- CSR strategy

1. What is the aim of Unilever Indonesia-CSR and how is this linked to Unilever corporate CSR strategy?
2. What is the role of Unilever Indonesia-CSR in the black soybean supplier development?
3. Can you explain how the black soybean partnership model works with other partners of the partners?
4. How do Unilever Indonesia-CSR collaborate internally with Unilever Indonesia-Procurement?
5. What are the challenges to scale-up the black soybean supply program to meet the increasing demand of the sweet soy sauce businesses?
6. How is the future of the black soybean program?

Performance of the black soybean supply program

1. How has the black soybean supply program performed in the period 2007-2012?
What were the CSFs?
2. Can you explain how farmers benefit from the BSSP regarding improvement of the farm output and farming system? (0= does not benefit at all; 5=fully benefit)

3.Cooperatives

Intermediary strategy

1. What are the considerations of the cooperative to participate in the black soybean supply program?
2. What are the challenges and drivers to participate in the black soybean supply program ?
3. Are price and the conditions of the Memory of Understanding to grow soybean for farmers competitive compared to other crops?
4. What are the criteria to select farmers for the BSSP and what are the conditions for them to participate?
5. How do you govern the supply chain and at what costs?

6. Is there a prospective future for the black soybeans

Performance of the black soybean supply program

1. What are your experiences with the black soybean supply program? What are the benefits?
2. What were the CSFs?
3. Can you explain how farmers benefit from the program regarding improvement of farm output and the farming system?
4. Do you receive complains from farmers about price and conditions of the Program?
5. Will you continue and promote the black soybean supply program to farmers in order to expand black soybean production in the years to come and why?
6. What are the challenges and the CSFs to expand black soybean production?

4. Farmers

1. What are the main drivers, constraints and risks for you to participate in the black soybean program?
2. What kind of farm support do you get from whom and at what charge?
3. Are the conditions of the contract with your cooperative clear and which of these conditions is most difficult one to comply with?
4. What are the alternatives in case you don't agree with contract price?
5. Can you explain how you benefit from the black soybean supply program?
6. Will you expand your area to grow soybean in the years to come?

5. University of Gaja Mada (seed supplier)

1. What is the role of the university as black soybean seed supplier and how is this organized?
2. How did the black soybean supply program evolve in the past years (challenges and drivers, farmers benefits)?
3. How is the patenting of Malika (improved black soybean seed developed by the university)?
3. What are the experiences as contracting partner in the black soybean program ?
4. How are UGM prepared to grow with the black soybean business as a seed provider?

6. Regional commodity backed soybean suppliers/traders

1. How important is the supply of black soybean to Unilever Indonesia and what are the conditions?
2. How do you work with farmers to grow soybean for Unilever Indonesia?
3. What are the main challenges and drivers for participating in the soybean program?
4. Are you going to keep doing business with Unilever Indonesia.

Appendix 2

Overview of main certification schemes in coffee sector

Source: Kolk, A., (2013 pp. 328)

	Fairtrade	Organic	Rainforest Alliance	Utz Certified
Mission*	Ensure equitable trading arrangements for disadvantaged smallholders who are organized into co-operatives.	Create a verified agriculture system that produces food in harmony with nature, supports biodiversity and enhances soil health.	Integrate productive agriculture, biodiversity conservation and human development.	Implement a global decency standard for responsible coffee growing and sourcing.
History*	Began in 1970s in the Netherlands as Max Havelaar, now several national organizations under the umbrella of the Fairtrade Labelling Organisation (FLO). Coffee first labelled product in 1989.	Began in early 1970s as farming movement and developed into internationally recognized system.	Begun in 1992 by Rainforest Alliance and a coalition of Latin American NGOs. First coffee farm certification in 1996.	Founded in 1997 with criteria based on scientific fieldwork. Utz Kapeh Foundation started in 2002.
Commercial conditions**	Pre-financing and long-term relationship. Assurance of a Fairtrade premium, internalization of social and environmental costs. Contribution to balance demand and supply.	High assurance of demand, with a market price premium.	Good balance between production and demand. Price premium depends on market demand.	Strategic balance between supply and demand. Price premium depends on market demand.
Supply chain coverage and traceability**	Coverage focused at producers' level, trader standards applicable.	Separate criteria on processing and handling.	Coverage of standards focused at producers' level, transactions registered at electronic marketplace.	4 inspection levels (producer, certificate holder, nursery, storage); separate chain of custody code. High traceability, web based.
External control**	Certification centralized through FLO-Cert in Germany, based upon checklist of local inspectors.	Accreditation and certification, by private and governmental bodies.	Certification by Sustainable Agriculture Network (SAN) members.	Independent third-party control by approved bodies, local and international.
Multi-stakeholder participation**	Revision of governance structure, to balance stakeholder participation from producers' side. Difficult to enter for new producer groups.	Federation of 750 member organizations ranging from organic producers, retailers and NGOs to (large) companies with indirect influence on standards bodies.	Standards developed by environmental NGOs of the SAN network, together with local stakeholders and international experts.	Two-yearly evaluation of standards in multi-stakeholder consultation process. At local level there is a weak relationship with labour unions.
Consumer communication**	B2C concept with active communication.	B2C message by 95% organic.	2 types of B2C communication: (1) label 100% RA coffee; (2) label minimum 30–90% RA coffee with a seal indicating the exact percentage.	B2B communication. Assurance label used on pack when at least 90% is Utz certified.

Appendix 3

Overview cocoa F&A MNEs initiatives (source: adapted from Camargo and Nhantumbo 2016, p.77)

1. Mondelez: Cocoa Life program in Ghana, Ivory Coast, India, Indonesia, Dom. Republic and Brazil.

Its approach incorporates three main principles: holistic & farmer-centric; committed to partnerships; aligned with sourcing. It focuses on five key areas: farming, community, livelihoods, youth and environment.

2. Mars: Sustainable Cocoa Initiative

Global Mars is committed to buying 100 per cent certified cocoa by 2020. As of 2012, about 20 per cent of Mars cocoa was certified. Actions planned: a) Certifying the entire cocoa supply and encouraging others in the industry to commit to certification, to reach as many farmers as possible. b) Conducting breakthrough research to improve cocoa breeding, farming methods and protection against pests and disease. c) Investing in critical cocoa sourcing regions to give farmers the knowledge and technology they need to triple their yields.

3. Cargil: The Cargil Cocoa Promise program

Global The Cargill Cocoa Promise is a global commitment to ensure that farmers have the right support, education and tools to sustain the quality and reliability of their products. It also commits to working with its customers to increase awareness of the issues and demand for sustainable cocoa.

4. Hershey: Cocoa Sustainability Strategy in Ivory Coast and Ghana, with programmes also in Indonesia and Latin America.

Hershey's 21st Century Cocoa Sustainability Strategy seeks to modernise cocoa farming to increase farmer incomes, attract new farmers and improve cocoa growing communities. The strategy will also help accelerate Hershey's commitment to purchase 100 per cent certified cocoa by 2020 for all chocolate products around the world.

5. Ferrero: Cocoa Supply Chain

Ferrero reconfirms its goal to source 100 per cent sustainable cocoa before 2020 and, under its Code of Business Conduct, it highlights its strong determination to contribute to the elimination of child labour, starting with its worst forms, and of all forms of slavery, human trafficking, forced or compulsory, and prison labour.

6. Barry Callebaut: Sustainable Cocoa

Its aim is to increase productivity and improve the quality of cocoa. In order to achieve this, efforts start at the very beginning of the supply chain in the countries of origin. The company strives to create the best conditions for cocoa farming by improving farming practices, as well as farmer education and farmer health and has established clear guidelines for its suppliers.

Appendix 4

Integral costs structure of cocoa bean production in Hawaii (US\$ per acre, excluding harvesting costs).

Source: Fleming et al. (2009)

				Percentage of total costs
I Variable (growing) costs	Materials	Labour	Machinery	
1. Fertilization	1,064	532	200	
2. Irrigation (water)	490	399	0	
3. Pest and disease control*	0	0	0	
4. Weed control*	0	266	80	
5. Pruning	0	559	0	
6. Other costs	0	0	0	
Total	1,554	1,756	280	
I Total variable costs	3,590			83.75%
II. Fixed (ownership) costs				
1. Land charge	185			
2. Delivery to processor	0			
3. Risk management costs: insurances	196			
4. Management overhead: - office expense - professional service	100 200			
5. Orchid establishment: - establishment cost - annual replacement rate	1.40 14.00			
II. Total fixed costs	696.40			16.25%
III. Total cost of production: total variable and fixed costs	4,286.40			100%

*: Pests and disease control (including used of chemicals) may be necessary, especially for young trees, but it is not assumed to be an important factor in Hawaii by the authors

About the Author

In 1976, I graduated from Wageningen University and Research-centre with an engineering degree in Agricultural Sciences and Economics, majoring in Agricultural Marketing & Research, Development Economy, and Tropical Plant Breeding. I then began my career at the Republic of the Suriname Ministry of Agriculture, first as Director of Marketing from 1976 to 1978 and then as Director of Field & Extension Services from 1978 to 1980. After gaining this experience in the public sector, I decided to pursue a career in the private sector. So in 1981 I joined the co-operative Rabobank Group in the Netherlands in Utrecht where I held a variety of positions:

- Vice President, appointed by the Executive Board of the Rabobank Group (2000-2015)
- Senior Economist of the Rabobank Group (2005 - 2015)
- Principal Agricultural Strategic Expert and Intrapreneur (1981-2015)
- Member of the Agricultural Policy Committee of the Rabobank Group (1984-2004)
- Head of the Agricultural Research Team (2000-2004)
- Investment Manager at Rabobank Venture Funds, a division of Rabobank Nederland (1987-1993)

Throughout my career at the Rabobank Group, I have designed and carried out a series of innovative studies, including:

- Agricultural sector and commodity studies for the Rabobank
- IMF/World Bank studies on global food security and banking (2005, 2009, 2010 and 2012)
- A report on 'Financing of Dutch agriculture and horticulture'
- Foundation of the Biotech Venture Fund
- International business development F&A studies (USA, Asia and Eastern Europe)
- Reintroduction of potato option contracts on the Amsterdam Exchange
- Code of conduct for GMOs and Sustainable banking

My auxiliary activities include serving as a:

- Member of the Advisory Council of the 'Agricultural Economics Journal' of the Netherlands Agricultural Economics Institute and the Dutch Ministry of Economic Affairs, Agriculture, and Innovation (2000-2013)
- Member of the Board of the Wereldvoedselvraagstuk/FAO-Nederland Foundation (1997-2004)
- Member of the Supervisory Board of Sensoptic BV, Eurotrol BV, Medical Devices BV and Mono Clonal Anti-bodies BV (Groningen) (1987-1993)

Recent research reports and peer-reviewed publications on the topics of global food security and inclusive business

- Sustainability and security of the global food supply chain (2010)
- Framework for an inclusive food strategy. Co-operatives - key for smallholders inclusion into value chains (2012).
- Blok, V., A.R. Sjauw-Koen-Fa, and S.W.F. (Onno) Omta. Effective stakeholder involvement at the base of the Pyramid: The case of Rabobank. *International Food and Agribusiness Management Review*. Vol. 16, special Issue A, 2013. Issue 1, 2016. (as co-author)
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