Global Sourcing and Technological Benefits
Pre-conditions for four Philippine apparel firms to derive technological benefits from MNEs global sourcing linkages

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Abstract

This paper examines the potential – and the actual process - for developing country firms to achieve technological benefits from Multinational Enterprises' (MNEs') global sourcing linkages. It aims to provide insights into the developing country firms' interaction with their buyers and the effect of this interaction on the firms' business relations. Furthermore, it aims to present knowledge applicable for the developing country firms' particular context, opportunities and restraints that enable them to exploit the potential of these global sourcing linkages.

Developing country firms are exemplified by Philippine apparel manufacturers. The Philippine apparel industry is the second largest contributor to the Philippine economy. However, it faces a strong challenge to survive after the phase out of the Multi Fibre Agreement due to the lack of global competitiveness and the severe backwardness of the Philippine textile industry. In the Philippine apparel industry, the firms cannot collaborate on developing new items whereas in Taiwan, for instance, the textile mills study new fabrics and thus support the apparel industry.

The whole Philippine apparel export industry grew largely as a result of MNEs' sourcing linkages given that the country does not have the ample capital resources and the appropriate infrastructure to develop much of the technology needed by the country's industries. Thus, it is clear that one of the options for strengthening the capabilities of the country's apparel industry to absorb, adapt, improve and/or develop the technological profile to be internationally competitive vis-à-vis the rest of the world will derive from global sourcing linkages. The analysis is based on four case companies constituting four examples of the Philippine apparel manufacturers supplying to multinational enterprises.

This paper stresses the dynamism of the interaction between host country and foreign firms' respective ownership advantages. This approach is built upon the definition of technology as the entire complex of technological assets and human skills needed to set up and operate industries efficiently over time. Technology embraces the firms' technological assets of productive, organisational and managerial facilities as well as the knowledge to use, combine and develop these assets. The assessment is delimited to cover the four case companies' ownership advantages together with essential characteristics of the foreign sourcing linkages; the strength of the ownership advantages and the complementarities of the firms' respective advantages. In addition, the analysis of the characteristics of the sourcing linkages embraces assessments of internalisation advantages, size of the technology gap, and technology transfer.

Keywords: Global sourcing; business relations, inter-firm learning; absorptive capacity; technological benefits

Introduction

Increased globalisation and technological developments during the 1980s and 1990s have caused increased inter-firm collaboration in terms of strategic alliances, networking, and joint ventures. From a developing country perspective, these new ways of inter-firm collaboration holds the potential to spur development in developing countries – but they also hold the risk of the contrary, namely the risk of limiting, or even hindering, development.

Despite of the risks of the opposite, global inter-firm collaboration as a source of development in developing countries is highly interesting. In developing countries, markets for knowledge and technology are often highly dysfunctional at the same time as capital for Research and Development (R&D) is limited. Therefore, lack of capital and technology is a severe impediment to growth and development. Global inter-firm collaboration is a possible source to technology and capital because the majority of the world's R&D is done by MNEs, and because the majority of capital and technology inflows into developing countries are private rather than from government to government.

Therefore this research sets to examine the potential – and the actual process - for developing country firms to achieve technological benefits from MNEs' global sourcing linkages. Developing country firms are exemplified by Philippine apparel manufacturers. Apparel is a typical industrial activity for export oriented industrialisation. Apparel is a huge global industry, embracing world exports worth US$ 165.5 billion, and its influential presence is felt almost all over the world in one way or the other.

The Philippine apparel industry is the second largest contributor to the Philippine economy. However, it faces a strong challenge to survive after the phase out of the Multi Fibre Agreement. For that reason, the aim of the research is highly relevant to the particular situation of the Philippine apparel industry.

Methodology

This section offers an overview of the research goals, the content, and the context of the research project.

Research goal

The research was carried out from March to May 2002. The research project aimed at examining the potential, and the actual process, for developing country firms to achieve technological benefits from MNEs' global sourcing linkages from the perspective of the developing country firm. This broad objective was operationalised through two research questions:

1. Which pre-conditions are necessary for the developing country supplier to derive technological benefits from MNEs' global sourcing linkages?

2. How can the developing country supplier absorb technological benefits from MNEs' global sourcing linkages?

The research questions have important implications for the research design and methods as both the theoretical and the empirical research attempts to find answers to the research proposition. The theory is used as a template with which to compare the empirical results of the case study. Thus, the case companies provide an empirically based reflection. The first research question examines the preconditions for technological benefits to be derived from sourcing linkages; the second previews the actual process of achievement of technological benefits from MNEs' global sourcing linkages. The two research questions are formulated in terms of "how" and "which" rather than "who", "what" or "where". This clearly demands a methodological approach mainly exploratory rather than descriptive.

Yin (1994) distinguishes between single-case and multiple-case designs. The two distinctions refer to the number of cases that are studied. As the aim of the research is to examine how host country firms benefit from MNEs' vertical, backward linkages and to investigate how firms' respective ownership advantages interact and affect their resource structures, it is not enough to study the case of one single company to attain the goal of the research. Thus, it is suitable to conduct a multiple-case study.

The multi-case study is approached using the qualitative research method. The qualitative approach increases the understanding of the cases studied since it can penetrate deeper into each case. This is due to the fact that the qualitative approach uses a smaller number of respondents, which facilitates more in-depth understanding. Adopting a qualitative research has had an important impact on the understanding and the explanation of the central research questions with as little disruption of the natural setting as possible.

Content and context of the research

The focus of interest of this research is inter-firm collaboration as a source of development for host countries, exemplified by the Philippines' apparel export industry. Markets for knowledge and technology are often highly dysfunctional in developing countries at the same time as capital for Research and Development (R&D) is limited. Therefore, lack of capital and technology is a severe impediment to growth and development. Inter-firm collaboration is a possible source to technology and capital because the majority of the world's R&D is done by MNEs, and because the majority of capital and technology inflows into developing countries are private rather than from government to government.

Given that the Philippines do not have the ample capital resources and the appropriate infrastructure to develop much of the technology needed by the country's industries, the whole Philippine apparel export industry grew largely as a result of MNEs' sourcing linkages. Thus, it is clear that one of the options for strengthening the capabilities of the country's apparel industry is to improve and develop the technological profile to become internationally competitive by absorbing and adapting externalities from global sourcing linkages. The analysis is based on four case companies constituting four examples of the Philippine apparel manufacturers supplying to multinational enterprises.

The framework of analysis was mainly based on the ownership and internalisation advantages of developing country firms and on the interaction between MNEs and developing country firms. The interest stresses the dynamism of the interaction between host country and foreign firms' respective ownership advantages. The basic argument is that the technology of firms and locations is in a process of constant and cumulative change. The generation of ownership advantages, i.e. innovation, is necessary for competitive success and, with it, survival. The relative strength of the ownership advantages of each firm determines the rate of growth vis-à-vis the competitors as well as the firm's attitude towards cooperative arrangements with other firms.

Internalisation advantages are greater where the participants begin with strong ownership advantages. Both horizontally and vertically integrated networks can be internalised markets, and their expansion is motivated by complementary ownership advantages of the participants. While acknowledging that externalities can be the effect of direct as well as indirect interaction between foreign and host country firms, the research focuses on externalities deriving from direct interaction. The idea is that in direct interaction the purposeful transfer of ownership advantages may occur, wherein transnational inter-firm linkages facilitate the diffusion of technology and other resources. Transnational inter-firm linkages can be conceived of as cross-border learning curves in which the developing country actors can acquire technology and knowledge from the more advanced foreign actors. There is a mutual influence between the firm's capabilities and the externalities potentially deriving from the transnational inter-firm linkages. Therefore, firms' capabilities and externalities from inter-firm action develop in self-reinforcing circles. These circles can be virtuous or vicious. Consequently, strong ownership advantages are a precondition as well as a driver for positive externalities to be derived from transnational inter-firm linkages.

Thus, the focus of the research was on the examination of the conditions that spur economic growth and how it happens with the interest to stress the dynamism of the interaction between the Philippines' apparel export firms and MNEs' respective ownership advantages. Thus we approached the externalities phenomenon by using the evolutionary theory of technological accumulation. The premise is that technology can be defined as the entire complex of technological assets and human skills (entrepreneurial, managerial and technical) needed to set up and operate industries efficiently over time. Technology embraces the firms' technological assets of productive, organisational and managerial facilities as well as the knowledge to use, combine and develop these assets. Furthermore, technology is central to the issue of international competitiveness as growth in productivity does not only stem from improved allocation of resources but is also shaped by the firm's capability to absorb, adapt, assimilate, and improve and/or develop technology that is appropriate to the changing circumstances of business.

Data collection

The research conducted case studies based on a small sample size with in-depth interviews, for which a qualitative study was suitable. The data collection was extensive within the chosen area and was both objective and subjective in nature. The main source for finding companies was the Garment and Textile Export Board (GTEB).[1] However; Snowballing technique[2] was also used as we have interviewed the respective chairpersons of the three major business associations within the Apparel sector and asked for referrals, prior to the selection of the possible companies for case research.

There were two main criteria for choosing firms to the case study. First, the company should be a successful apparel exporter to make it possible to examine how firms' respective ownership advantages interact, and how these interactions affect host country firms' resource structure. The first criterion was easy to find as GTEB have listed the top apparel exporters, and the recommendation of the respective chairpersons of the various business associations have made it easier to have a quality of sampling. The second criterion seemed to be the most challenging task of the research as the company should be willing to collaborate in the concept of openness. We defined the concept of openness using two layers of commitment. First, was the firm in general willing to participate in the case research? Second, has the firm positively collaborated in the initial process of the field research showing willingness of knowledge sharing?

Based on the first criterion, there were eight possible case companies, which were later narrowed down to four case companies. The number of companies was assumed to be sufficient for a multiple case study to be able to attain the aim of the research. In addition, the chosen four companies was a good representative sample of successful apparel firms in the Philippines as they were taken from the list of top exporters provided by GTEB.

In-depth face-to-face interviews with open-ended questions were conducted with the duration of 1 ½ to 2 hours for each session. The interviewees were Vice Presidents, Administration Managers, Production Managers, and Human Resource Managers, each having some responsibility for or experience in developing buyer relationships and / or international markets and / or improvement of production processes. The interviews were designed and conducted with the aim of exploring and gaining insight into the host country firms' interaction with their buyers and the effect of this interaction on the firms' business relations. The issues explored in these interviews included:

- competitive setting
- core technological assets and knowledge
- transnational inter-firm linkage
- technological benefits.

These issues were seen as important considerations in determining how host country firms benefit from MNEs' vertical, backward linkages as well as to investigate how firms' respective ownership advantages interact, and how this interaction affect host country firms' resource structure. Same questions were asked to the different respondents of the case companies in order for the sampling to be compared and contrasted. The data used for the industry background were mostly secondary data found in books, articles, and on the Internet. Additional information was also collected during interviews and personal observations. Since one of the authors is Filipina, her experiences also contribute to the data. The data used to describe the case companies were both internal, secondary data[3] and primary data[4] collected through interviews with employees in the companies. Case company

[1] The Garment and Textile Export Board (GTEB) is an attached agency of the Department of Trade and Industry (DTI). GTEB was created under Executive Order 537 dated May, 24 1979 to assume the functions, powers and resources of the Garments and Textile Export Board created under Presidential Decree No.1440 dated June 10, 1978 (see www.gteb.org.ph)
[2] Meaning that we start out by asking one contact, who we then asked to recommend somebody else, leading us to the next interviewed person.
[3] Internal secondary data is what is available within the organization like annual reports.

descriptions were sent to the respective case companies to get the information confirmed. All interviews were conducted in English. As all the respondents spoke the language fluently, there should be no or minor mistakes made due to the language.

Data Analysis

An important characteristic of this research is that it was based on words rather than numbers. Each individual case study was treated as a comprehensive case in and of itself; wherein convergent evidence was sought regarding the facts and conclusions for the case. Once the analysis of each case was completed, the next stage, the cross-case analysis begins. In the analysis, the different case companies were compared, and we tried to find patterns between them. Coupled with within-case analysis, cross-case analysis looked beyond initial impressions and was directed towards the search for common patterns among the cases studied. It involved three basic steps

1. searching for similarities amongst the four cases analysed
2. evaluating whether such similarities were causally relevant to the phenomenon under study
3. and formulating general explanations on the basis of the similarities found.

Moreover, this research want to explore if the existing theoretical concepts adopted in the initial stage of the research is suitable to the current situation of the case companies to derive recommendation. This led into theoretical modification and examination of the gaps of the research and made additional queries for the project.

Theoretical Framework

This research hypothesized that given the right conditions, technological benefits can be derived from MNEs' global sourcing linkages, and these technological benefits can spur economic development in developing country firms. It further argued that foreign economic activity provides development opportunities, *if* the domestic industrial sector has the capacity to absorb externalities coming from inter-firm cooperation.

Theoretically, the framework of analysis rests on the broad foundation of Dunning's eclectic paradigm, the OLI paradigm. Thus, the research builds on theories about Foreign Direct Investments (FDI) although global sourcing, strictly speaking, is not FDI. This is for two reasons. First, as the 1980s and 1990s characterised increases in cooperative ventures, the lines between vertical and horizontal business networks have blurred. Second, theory on the externality effects of MNEs' global sourcing in developing countries is still limited. The theories about FDI and global sourcing find common ground on the idea that the availability of foreign capital and technology is an important mean for economic catch-up. Two main branches can be distinguished when discussing externality effects induced by foreign economic activity[5]. The first branch assumes a simple cause and effect, an idea implicit in the Washington consensus[6]. The other branch, the perspective of this article, notes that FDI does not automatically cause increased competitiveness, capacity, and economic growth[7].

[4] Primary data is all kind of information gathered specifically for the research in question.
[5] By "foreign economic activity" refers to FDI and global sourcing.
[6] The view is that markets for knowledge are efficient and thus foreign economic activity is the same as technology imports which will generate positive externalities to domestic firms. Technology is taken to be freely available to all countries and to all firms. Economic entities settle on appropriate levels of capital/labour intensity in line with the factor price ratios which are determined by the relative endowments of physical capital and labour. As the factor price ratio changes it is costless to shift techniques. Technology lags are admitted, but it is presumed that gaining mastery of a known technology is easy, costless and instantaneous. Firm-specific learning and technological development paths are not at issue, and therefore assimilation and adaptation of technology from developed country innovators can easily recover developing host country firms' technology lags. (Lall, 1990)
[7] This is illustrated by certain Asian countries, among them the Philippines, which have followed a passive-FDI dependent strategy to upgrade their industrial development – and failed. Saeger (Saeger, 1997 in Narula & Dunning, 2000) notes that trade liberalisation has had a deindustrialisation effect on the South, and Narula and Dunning estimate that one of the primary effects of globalisation has been a reconfiguration of countries into three groups: The least developed countries which have "fallen behind", the catching up developing countries, and the developed countries. (Narula & Dunning, 2000)

Dunning's ideas about ownership advantages and internalisation advantages were combined with the theory of technological accumulation in order to direct focus to the individual firm and to apply a dynamic, evolutionary approach to the externality phenomenon. The basic argument of the technological accumulation theory is that the technology of firms and locations is in a *process of constant and cumulative change.* The ideas of technological accumulation are incompatible with the standard neoclassical theory of international trade and investment[8]. While technological accumulation theory assumes that technological spread and innovation only occur given certain conditions, neoclassical theory of international trade and investment assumes that technology is everywhere the same and all firms have access to the same technology. Also, while technological accumulation theory assumes that competition is influenced by the mobility of resources and the creation of quasi-monopolistic positions such as the creation of a new technology ahead of the field, the market power theory assumes that competition is influenced by the number of firms within an industry. The technological accumulation theory implicitly assumes that the conditions for technology creation and its effective and efficient use in production are the driving forces underlying the growth of international production. (Cantwell, 1989)

When referring to ownership advantages, this research refers to the firms' technological ownership advantages. Ownership advantages should be thought of as oligopolistic, as firms accumulate differentiated, but overlapping, technologies. Individual firms have certain specific advantages based on their previous technological development path. The generation of ownership advantages, i.e. innovation, is necessary for competitive success and, with it, survival. The failure to accumulate technology drives the firm out of business. The relative strength of the ownership advantages of each firm determines the rate of growth vis-à-vis the competitors as well as the firm's attitude towards cooperative arrangements with other firms. Internalisation advantages refer to the internalisation of markets in order to minimise transaction costs[9]. When the transaction costs of an administered exchange are lower than those of a market exchange, the market is internalised and thereby the collective efficiency of the group is increased. Both horizontally and vertically integrated networks can be internalised markets, and their expansion is motivated by complementary ownership advantages of the participants. The international coordination of activity is supportive of ownership advantages, neither a substitute for them nor a sufficient condition for their generation. The market power theory of the firm is at odds with the internalisation theory. Whereas the market power theory suggests that the growth of the firm is the essential cause of market imperfections and market failure, the internalisation theory, suggests that firms grow by displacing imperfect markets. *"While particular ownership advantages and the internalisation advantages of appropriating rents are attributed to structural market failure, collective ownership advantages and the internalisation advantages of coordinating the use of complementary assets are said to be due to transactional market failure."* (Cantwell, 1989: 198)

Quasi-internalisation[10]", refers to the grey zone area in which the distinction between markets and hierarchies, i.e. between inter- and intra-firm linkages, is blurred. "Quasi-internalisation" refers to non-equity relationships which involve the diffusion and/or transfer of firm-specific assets, resources, and knowledge. This type of inter-firm cooperation is "quasi-internalised" because firms' ownership advantages are extended beyond the boundaries of equity. (Scott-Kennel, JIBS, 2002) Quasi-internalisation and commitment of the participants in the subcontracting linkage go hand in hand,

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[8] Hymer showed that the orthodox theory of international trade and capital movements did not explain the foreign operations of MNEs. It failed especially explaining the two-way flows of FDI between countries, in particular between countries with similar factor proportions. Likewise, the internalisation theory of the firm advanced by Coase criticise neoclassical economics. Coase's analysis is, like the neoclassical theory of trade and investment, based on exchange between individuals or groups of individuals. But, contrary to neoclassical theory, Coase introduces the transaction costs of exchange. Given Hymer's and Coase's criticisms of the neoclassical theory, and given that the view - that technological development and upgrading is central to growth - has not changed in more than 200 years (Narula, mimeo), we find the technological accumulation theory valid for approaching the externalities phenomenon. The ideas of technological accumulation are relevant in the context of various approaches to MNC activity (Cantwell, 1989).

[9] Coase introduced the transaction cost into theory about exchange between individuals or groups of individuals.

[10] The concept of "quasi-internalisation" is derived from the OLI paradigm's concept of "internalisation". "Internalisation" and "quasi-internalisation" are similar in that they both refer to the diffusion and/or transfer of ownership advantages to displace imperfect markets and/or strengthen ownership advantages. "Internalisation" and "quasi-internalisation" differ in that "quasi-internalisation" refers to non-equity based interaction whereas "internalisation", originally, referred to equity based interaction. The key to determine the share of market based transaction relative to quasi-internalised interaction in a sourcing linkage is the degree and extent of inter-firm interaction in terms of diffusion and/or transfer of firm-specific assets, resources, and knowledge, and in terms of the time perspective (long-term vs. short-term time perspective, which, in turn, causes stability vs. instability in the linkage).

because quasi-internalisation implies sharing of firm specific ownership advantages. This, in turn, involves cost and effort of the buyer as well as the supplier; and the higher the costs and the greater the effort the more increases the commitment of the participants. (Mortimore, 2001) *"There is a progressive interaction between the growth of international networks and the strength of ownership advantages"* (Cantwell, 1989: 211). Theory on internalisation must be applied with reservation on quasi-internalisation because ownership and equity boundaries may influence resource allocation, behaviour, and interaction in the network. Based on the idea of "quasi-internalisation", the research argument is that inter-firm cooperation can be motivated by market-based, price-driven transactions or, conversely, by quasi-internalised, design-driven transactions. Within this continuum, and based on MNEs' motive for outsourcing, four types of subcontracting linkages was identified. (Altenburg, 2000) Figure 1 illustrates this continuum.

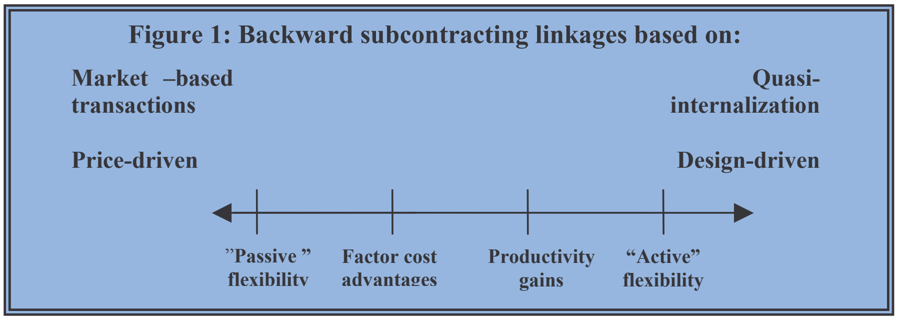


Figure 1: Backward subcontracting linkages based on:

Clearly, vertical backward linkages take multiple characters far beyond the four stereotypes referred to here. The higher the degree of quasi-internalisation the more stable is the backward inter-firm linkage, and the larger is the potential for the supplier to achieve technological benefits. This was supported by Mortimore who asserts that the potential for positive externalities rises with the increase in commitment to long-term relationships and the increased specialisation or customisation of inputs supplied.

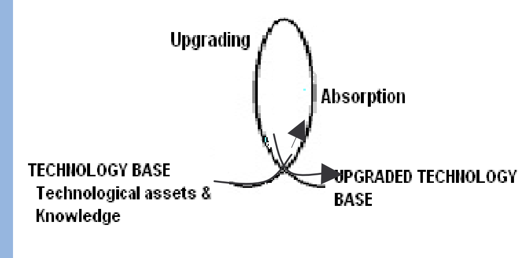
Various studies have been conducted on the externality effect of FDI in the host country. Different studies indicate different effects of FDI. Whereas some studies show efficiency gains as a result of technological externalities from MNEs to host country firms, other studies suggest that the effects of FDI are not always beneficial for local firms. This hints at the nature of externalities, namely that they are not automatic, (Narula, 2002) as well as it suggests that the effects of FDI are affected by various economic and technological factors. *"…it is difficult to paint an unambiguous picture as to how MNEs transfer technology through FDI and how this technology contributes to productivity growth in the host economy."* (Narula 2002, p.56) Only little is known about factors driving externalities in inter-firm linkages. (Smarzynska, 2002)

The research approach to the externality phenomenon is dynamic and evolutionary, in line with the technological accumulation theory. As firms accumulate differentiated but overlapping technologies, firms seek to build business networks in which the participating firms can combine complementary ownership advantages which in turn strengthen the competitive position of the participating firms and the network as a whole. The presumption that ownership advantages can be combined rests on the idea of mobility of resources. It is in the combination of the complementary ownership advantages that externalities, in the shape of technological benefits, arise. Technology was defined as technological assets and knowledge, and technological benefits were defined as direct or indirect effects of the interactions of firms' respective ownership advantages. Two features are particularly important to the idea of externalities derived from inter-firm cooperation, namely the firms' inter-organisational learning and absorptive capacity.

Most accounts on organisational learning focus on learning *within* organisations, and inter-firm learning has received much less attention. The few studies covering external learning either deal with diffusion of information in a highly general way, or they focus only on strategic alliances and learning in relation to R & D activities. Customer-supplier networks have received hardly any in-depth exploration at all. Yet, the synchronisation of processes between customer and supplier firms and the accompanying scrutiny of supplier firms clearly make rapid, intensive information exchange one of the distinguishing features of networks and have strong implications for organisational learning. Firms' organisational learning now receives more external stimuli than it used to, and has become more intermittent, and occurs at an accelerated pace. Furthermore, knowledge shared is not merely operational knowledge but frequently also conceptual knowledge. It is not without difficulties to apply theory of organisational learning on the issue of inter-organisational learning. To put it roughly, theory of organisational learning focus on learning from the individual to the organisation. Theory of inter-organisational learning focuses on learning from organisation to organisation. Current literature seems to be short of theory on inter-organisational learning in customer-supplier networks. Thus, the research applies theory of organisational learning combined with the idea of absorptive capacity. When applying theory of organisational learning on the analysis of inter-organisational learning, the concept of absorptive capacity is imperative because it stresses the absorption of externally developed knowledge.

Learning is a value creating activity which upgrades the firm's technology base. It is an enduring process which can be pictured as a loop[11] in which learning is stimulated by internal efforts to absorb and upgrade externally derived, as well as internally created, technology. This is illustrated in figure 2.

Figure 2 Learning Loop



The loop takes point of departure in the firm's technology base. This is consistent with the idea of ownership advantages as asserted by technological accumulation theory[12]. A *competitive* technology base is, for two reasons, the premise for the learning processes spurred by technological benefits from transnational inter-firm linkages. First, for the transnational inter-firm linkage to be established and further developed, and second, for the firm to be capable of absorbing the backlog of technology as well as upgrading it and innovate. Therefore, there is no getting round investments in research and development (R&D), because R&D develops the firm's ability to exploit knowledge from the environment as well as, obviously, it generates innovations. (Cohen & Levinthal, 1989) Building on the knowledge base, the firm spurs the learning processes by exploiting the backlog of knowledge developed elsewhere; i.e. the firm exploits the technology gap by absorbing knowledge derived from the technology gap. The knowledge base develops throughout the loop, i.e. it develops in the absorption of externally developed knowledge as well as in the upgrading processes. The knowledge created then becomes part of the firm's ownership advantages and the basis for a new cycle of knowledge creation.

The absorptive capacity enables the firm to acknowledge and imitate the backlog of knowledge in the inter-firm linkage. Absorptive capacity is the ability and motivation of a firm to recognise the value of externally developed technology together with the ability and motivation to acquire, assimilate, transform, and exploit this new technology to commercial ends. The ability of a firm to share knowledge and learning with another firm in external interfaces, along with the ability to continue this learning in internal interfaces is how firms can derive externalities from MNEs' global sourcing linkages. The idea of absorptive capacity is vital because it determines the extent to which extramural knowledge is utilised or, conversely, constrained. Theories about absorptive capacity reveal that the idea is applied at macro as well as micro levels of analysis. Here, we apply the concept at the micro level, primarily drawing on the works of Cohen & Levinthal (1990), Van den Bosch, Frans A.J, Volberda, Henrik W. & Raymond Van Wilk (2003), Zahra & George (2000, 2002), and Minbaeva, Pedersen, Björkman, Fey & Park (2003). While perceiving of absorptive capacity as a technological capability which makes inter-firm learning possible, simultaneously we assert that absorptive capacity itself is constituted by learning processes. Underlying this perspective is the assumption that learning

[11] Learning loops can be either single or double. Single loops are "…instrumental learning that changes strategies of action or assumptions underlying strategies in ways that leave the values of a theory of action unchanged." (Argyris and Schön, 1996: 20) Single-loop learning modifies strategies and assumptions to keep organisational performance within the range set by existing organisational values and norms; the values and norms remain unchanged. Single loop-learning is sufficient where error correction can proceed by changing organisational strategies within a constant frame of values and norms for performance. It is to do better what they already know how to do. Double loops are "… learning that results in a change in the values of theory-in-use, as well as in its strategies and assumptions. The double loop refers to the two feedback loops that connect the observed effects of action with strategies and values served by strategies. Strategies and assumptions may change concurrently with, or as a consequence of, change in values." (Argyris and Schön, 1996: 21) When the correction of errors requires inquiry through which organisational values and norms are modified, double-loop learning occurs.

[12] The creation and accumulation of technology and capital by firms, i.e. creation and accumulation of ownership advantages, are the necessary conditions for establishing and preserving production.

and absorptive capacity co-evolve with each influencing the other. We stress that the achievement of technological benefits via inter-firm cooperation is a process of inter-organisational learning in which the participating firms must take on proactive roles. This research draws on theories of organisational learning, primarily inspired by Van den Bosch, Volberda, & de Boer (1999), and Lane, Koka & Pathak, (2002). Although many of the basic concepts of organisational learning theory are applicable to learning within supplier networks, organisational learning theory needs to be amended to accommodate the special features and requirements of supplier networks

Background

Philippine Ownership and Production Structure

The apparel industry in this research refers to the manufacturing of wearing apparel and clothing accessories except footwear, by knitting, crocheting, embroidery and sewing. The ownership structure of the Philippine apparel manufacturers is characterised by two main features. First, the majority of apparel exporters are 100% foreign-owned or foreign affiliated, and second, the manufacturing firms are concentrated in the hands of a few firms. Figure 3 represents the current configuration of the productive chain of the Philippine apparel export industry. The input-output structure shows a discontinuity and unbalancing in the chaining of the production process.

The primary production input, i.e. raw materials, is mostly imported, and it comprises 70 percent of the total cost of production (National Statistical Office, 1991). Gross value added accounts for 32 percent of the total, of which 10.8 percent is labour cost and only 1 percent of which is electricity and 0.4 percent is financial services. With this situation, many apparel exporters get their raw materials on consignment basis from their foreign buyers. Under the scheme, the foreign buyer provides the needed raw materials. This assures the buyer that the garments are made of good materials and that the price is competitive. On the part of the Philippine apparel manufacturer, the set up minimizes the risk of order cancellations and spares the firms of the efforts to raise working capital to finance raw material requirements. The apparel exports are under subcontracting arrangements[13]. It became one of the Philippines' most important manufacturing sectors in terms of exports, value added and employment; but since 1995 the performance of export and output growth has been on the downtrend. Yet the industry is still the second highest top dollar earner. However, the present arrangement impedes the Philippine apparel firms of upgrading as they are simply doing assembly wherein the buyer dictates the price of the products being produced. Furthermore, it reduces the local content of the finished good to mere labour. With the labour as the only local content, the industry's net exports are therefore minimized, and the buyers are more footloose.

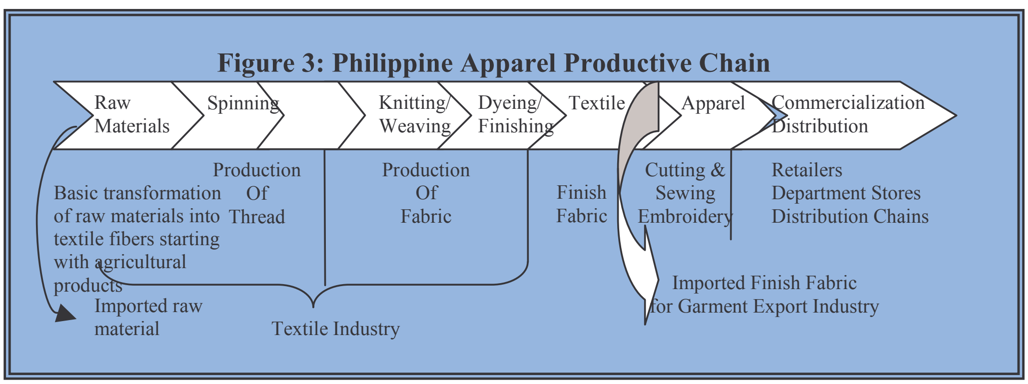


Figure 3: Philippine Apparel Productive Chain

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[13] It is defined within the industry as "exports manufactured from consigned imported raw materials" or "exports manufactured on consignment basis"13 (see Austria, 1994).

The Case Study

Company Profiles

The four case companies are situated within the area of Metro Manila and nearby provinces. The case study included the four case companies as well as their affiliates and their respective subcontractors. The case companies represented a cross-section of suppliers in the Philippine apparel industry and are involved in a range of apparel manufacturing activities (Corporate wear, jersey clothing, fine suiting cloth, quality ladies, men's and childrenswear). Three companies, are foreign owned enterprises, while one company is 100% Filipino owned. The case companies are of different sizes in terms of sales, employees, assets, and industry experience. In terms of assets, the firms' capitalizations range from less than Php 4 million to more than Php 15 million. The number of employee's ranges from 300 to 2500 with the sales revenue ranging from 6 million to 56 million per FOB[14] performance per firm in 2001 (GTEB). All the companies do simple cut-make-and trim production.

Company A Profile
Interviewees: Production Manager and Administration Manager

Company A is a 100% Taiwanese owned company, established in the Philippines in 1990 through Greenfield investment. The Philippines was the first country in which the parent company, established a production unit outside Taiwan. The Philippine group employs roughly 1300-2500 workers. The number depends on orders received, and therefore it is constantly fluctuating. Company A has two affiliates, which were set up to maximize the quota allocation in the country. Notably, the affiliates are acquisitions from a Filipino/Chinese owner that had a license as "Bonded Warehouse Manufacturing"[15] In addition, it has 6 non exclusive subcontractors which are utilized if there are overcapacity problems in production for the three factories. The Philippine factories serve as the main production unit, having 42% of the total production with a target to increase to 50%. Other activities such as purchasing, research and development, and marketing are controlled by the parent company in Taiwan. Company A's main products are ladies and men's casual wear with focus on mass volume and simple design, avoiding the high end market. The parent company is a full package manufacturer focusing on the middle to low price segment of the apparel market, and it solely produces for the US market. The major buyers of the company are GAP International, Wal-mart, JC Penny and May Department, Kohl's Dept Stores and Federated Stores.

Company B Profile
Interviewee: Vice President, Head of Operations

Company B was established as a green field investment and is 100% Taiwanese owned. The Philippine group employs approximately 2000 workers and has 2 affiliates; established for quota allocation purposes. In addition it has four exclusive and 2-3 non-exclusive subcontractors, depending on the orders and the capacity of the company and the exclusive subcontractors. The parent company is a full package manufacturer focusing on the high to middle price segment of the apparel market. The parent company foresees that after the MFA phase-out, the production unit in the Philippines cannot be competitive mainly due to labour cost, productivity, bureaucracy and corruption problems. Therefore, Company B will close the Philippine production and transfer it to Vietnam. Company B's main products are raincoats for men and ladies, and ladies' blazers, suits, skirts, pants, and dresses with focus on branded manufacturers and high end retailers and produces solely for the

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[14] FOB. A shipping term which indicates that the supplier pays the shipping costs (and usually also the insurance costs) from the point of manufacture to a specified destination, at which point the buyer takes responsibility (http://www.investorwords.com/cgi-bin/getword.cgi?2087)

[15] The reason for the company is that, as a 100% exporter, they buy 100% duty free import of textiles. However, you need a licence to be able to import duty and tax freely but the process to apply for this licence in different government departments takes time and effort, and the speed of processing the application is slow due to bureaucracy and corruption in the government. Therefore it is easier to buy the license, and that was what the company did when they bought the affiliate company. This license system of importing 100% duty and tax freely exists everywhere in Asia.

US market. The main customers are Ralph Lauren, Jones of New York, Calvin Klein, London Fog, Ann Klein, Casual Corner, Tommy Hillfinger and May Department. The activities of the Philippine group are limited to production, and the remaining activities are handled by the parent company in Taiwan.

Company C Profile
Interviewee: Vice President, Head of Operations

Company C was established as a green field investment in 1987. It is 100% Korean owned, but all investments are concentrated in the Philippines. The company employs around 600 workers and has 2 affiliates mainly established due to quota allocation purposes. The company has 2-3 non-exclusive subcontractors which, however, are only rarely utilized by the company. More often, the company itself also accepts subcontracting work from other companies during the lean production months of February and March. Company C is doing both sourcing of materials and production of apparel. It is not a full package manufacturer, and designs are handled by the buyers. The company's main product lines are ladies blazer, suits, skirts pants and dresses with focus on branded manufacturers and high end retailers. US buyers comprise 80%, and 20% are European buyers. Company C and its two sister companies are primarily doing cut, make and trim production for Marks & Spencer, Ralph Lauren, Jones Apparel, Lauren Taylor, Casual Corner, and Ann Taylor.

Company D Profile
Interviewee: Vice President, Head of Operations

Company D is 100% Filipino owned green field investment established in 1974. It was among the first local exporters, and the main products are knitted sweaters primarily for children's wear. The Manila-based company employs 300-350 employees; however, the number of employees varies in relation to the season of the company's production process. In the peak production months, May-July, the number of employees almost doubles. Company D has about 5 Embroidery subcontractors both for Hand and Machine embroidery work. The company is doing both sourcing of materials and production of apparel. Company C is not a full package manufacturer and designs are either handled by the buyers or by the Company's Design team based in the UK. In recent years, however, the company has tried to initiate collaboration on design development by hiring local Manila-based designers. This strategy has been implemented in relation to the European buyers to enhance the value-added of the company's activities. 75% of the buyers are European retailers, and 25% are US retailers. The main buyer is Marks and Spencer of UK. In 1990, Company D established a UK office that serves as a liaison arm to improve communication between Marks and Spencer and the company.

Findings

The following section provides the analysis of the ownership advantages (which are delimited to embrace only technology) and the characteristics of the sourcing linkages of the case companies. Table 1 summarizes the analysis of ownership advantages which embraces assessments of the strength of the ownership advantages and of the complementarities of the firms' respective advantages.

Table 1		Company A	Company B	Company C	Company D
Strength of O-advantages	Core technological assets	**Production Technologies** – Progressive Bundle System – **Communication Technologies** – EDI – ERP	**Production Technologies** – Progressive Bundle System **Communication Technologies** – EDI – ASN (Advanced Shipping Network software)	**Production Technologies** – Combination of Progressive Bundle System and Modular System **Communication Technologies** – EDI	**Production Technologies** – Combination of Progressive Bundle System and quick response unit **Communication Technologies** – EDI
	Core Knowledge	**Dynamic, proactive approach:** – Core knowledge is knowledge creating activities – Shares knowledge with the parent company – Buyers requirements direct knowledge creation **Focus areas:** – Production processes; time & cost management – Patterns – Quality – Merchandising – Human resources – Subcontractor management – Value adding services **Knowledge workers:** – Technicians – Top-down approach	– Buyers' requirements direct knowledge creation – Knowledge creation is a continuous process **Focus Areas:** – Product development – Subcontractor management – Market research – Training **Knowledge workers** – Technicians – Top-down approach	– Company owner and buyers' requirements direct knowledge creation – Knowledge creation is a continuous process **Management approaches:** – Total Quality Management – Scientific Management **Focus areas:** – Productivity – Quality – Delivery – Cost **Knowledge workers** – Innovation Committee: Industrial Engineers – The workers – Top-down & Bottom-up approach	**Focus Areas:** – Training – Quality – Productivity – Subcontractor Management – Design input capability **Knowledge Workers:** – English Consultant → increase productivity – UK office design and trend inputs for the company to better collaborate with buyers
Complementarities of O-advantages	Complementarities of the Ph. firm	**Company A provides the buyer with:** – Middle-end apparels – Increasing quality at decreasing prices – Voluminous and fast production – Export quota – Fast & clear communication – Commitment – Design inputs	**Company B provides the buyer with:** – High quality – Reliability and integrity Future services include – Door-to-door service – Landed Duty Paid	**Company C provides the buyer with:** – Quality – Productivity – Reliability – Trust	**Company D provides the buyer with:** – Low prices – High quality – Shorter lead-times – Flexibility – Design inputs **Company D provides Marks & Spencer** – A special buyer linkage – UK office to facilitate and improve communication – Continuous upgrading of production unit
	Complementarities to the buyer of the buyer to the Ph. firm	– Orders – The linkage is one-directional, based on buyer requirements – Communication technologies	– Orders – The linkage is one-directional, based on buyer requirements – The buyers sources the fabrics – Communication technologies	– Orders – Sourcing raw materials & other production inputs	– Orders **Marks & Spencer** – Long-term commitment: Assured orders as long as Company D continuously upgrades

Having analyzed the case companies' ownership advantages, Table 2 provides the assessment of three latter conditions; internalization advantages of the sourcing linkage, the technology gap, and the technology transfer.

Table 2	Company A	Company B	Company C	Company D
Quasi-Internalisation	– Although collaboration on design, the linkages are primarily price-driven as parent company controls collaboration with the buyers. – Commits to its buyers, but is not necessarily corresponded ~ the relations are very unstable as the buyers always have the last claim	– Price-driven, market-based transactions – No quasi-internalisation as parent company control the collaboration with buyers on design and sourcing of production inputs and the company only serve as a production plant primarily due reduce transaction cost	– Price-driven, market-based transactions – No quasi-internalisation as mainly serve as subcontractors to manufacturers in Korea – Long term commitment & stability	– US buyer linkages are price-driven – M&S linkage shows trends of development toward quasi-internalisation – Long term relationships driven by design, quality, service, & price
Size of Technology Gap	– Small – Close to the technological frontier in terms of technological assets and knowledge of manufacturing – The tech. gap exists in terms of knowledge of research, design, sales, and marketing.	– Small – Close to the technological frontier in terms of technological assets and knowledge of manufacturing – The tech. gap exists in terms of knowledge of sourcing of fabrics & accessories, fashion trends, technological developments; knowledge of research, design, sales, and marketing	– Small – Close to the technological frontier – The tech. gap exists in terms of lack of knowledge of cultivating special buyer linkages & in terms of sewers' attitude	– Small – Close to the technological frontier – "Mental" technology gap relative to British production and business methods
Technology Transfer	No direct technology transfer Buyer Requirements push Company A to upgrade Sharing of knowledge about design	No direct technology transfer Buyer Requirements push Company B to upgrade Assist at sourcing raw materials	No direct technology transfer Buyer Requirements push Company C to upgrade Assist at sourcing raw materials	No direct technology transfer from US buyers Direct knowledge transfer from M&S: The ideas of Total Quality Management and design collaboration Marks & Spencer's requirements followed by the assurance of orders pushed Company D to upgrade and enabled investments in technology Marks & Spencer is a ticket to new customers; is a reputation background

The conditions under which the four case companies have derived the technological benefits share common features. In all four cases, the technological benefits have been derived from linkages based on strong ownership advantages. This corresponds to the theoretical reasoning that the international coordination of activity is supportive of ownership advantages, neither a substitute for them nor a sufficient condition for their generation. In addition, the firms' ownership advantages in terms of production and communication technologies complement each other.

Observations of the case companies confirm that the more advanced technology the firm owns, the higher the potential for becoming a highly ranked supplier receiving larger orders. The observations do not, though, confirm that the more advanced technology the firm owns the more technical assistance and know-how the firms will receive. The technology gaps are small in terms of technological assets and knowledge about production. As the technological benefits achieved precisely are within the area of production technology, this hints towards the argument that technological benefits increase with the increase of the technological capabilities of the firms. Conversely, there is a large lag of strategic knowledge about design, sales, and marketing. As all the buyers are practicing lean retailing, they capitalise on this type of knowledge, and so it is not in their interest to share it.

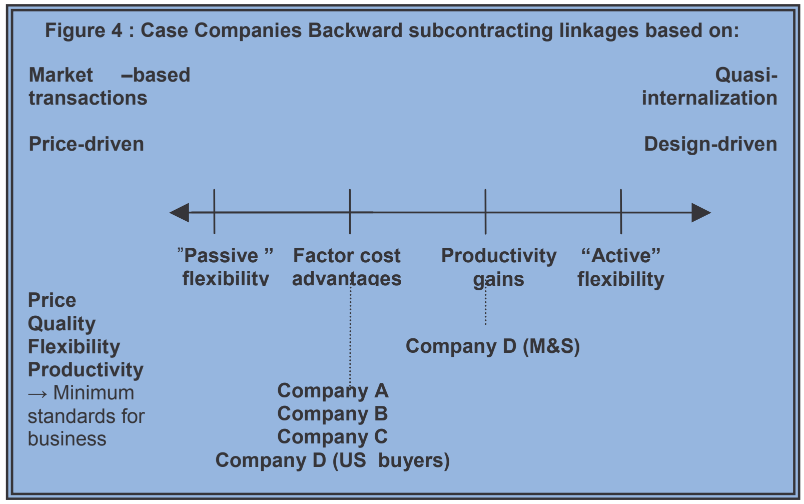

Figure 4 : Case Companies Backward subcontracting linkages based on:

The buyer linkages of the four companies differ in the degree of quasi-internalisation. The degree of quasi-internalisation is estimated by the degree of collaboration on design and by the degree of other collaborative interaction between the manufacturers and the buyers. While acknowledging that the subcontracting linkage continuum is stereotypical, the analysis was based on the comparison of the degree of quasi-internalisation in the case companies' buyer linkages on this continuum. This is to create a simple, tentative idea of the firm's buyer linkages relative to each other. This is illustrated in figure 4. Based on the idea of the continuum, the expectation is to observe a higher degree of technological benefits the further towards quasi-internalisation, i.e. the further towards the right, the firm is situated.

The manufacturers' ownership advantages are the precondition for quasi-internalisation, and ownership advantages and internalisation advantages have a tendency to become inseparable as internalisation complements ownership advantages. Based on the observations of the four companies, the assessment of their buyer linkages are characterised by a combination of traditional arm's-length transactions and quasi-internalisation in which the arm's-length transactions are predominant. The buyers' incentives to maintain market-based sourcing linkages are due to two main motives. First, it is a buyer's market in which competition among the manufacturers is very fierce. Second, the buyers do not achieve additional advantages by sharing their core competitive advantages, i.e. the strategic knowledge about the combination of high-value research, design, sales, marketing, and financial services. On the other hand, rapid changes in production technologies, the fierce competition among the buyers themselves, and their strategies of lean retailing have made it necessary to make more frequent modifications of inputs at all stages of production. This, in turn, makes it desirable to base sourcing on long-term consultative linkages. As more effective supply chain management becomes essential to competitiveness, MNEs seek broader, more efficient, and more responsive supplier networks, which motivates buyers to pursue quasi-internalisation in terms of production technology. As the observation in the case companies, the stability inherent in long-term sourcing linkages provides better opportunities for the manufacturers to make technological investments. Although we have assessed that the case companies have similar degrees of arm's length and quasi-internalised transactions in their buyer linkages, obviously the four companies still deviate from each other. Company D and its buyer linkages to Marks & Spencer distinguish from the rest of the case companies in that it is characterised by a higher degree of quasi-internalisation by having derived direct technological benefits in the form of knowledge about Total Quality Management.

As buyers' requirements continuously become higher and more sophisticated, the case companies correspondingly develop their ownership advantages. Thus we see the progressive interaction between the MNEs' sourcing linkages and the strength of the manufacturers' ownership advantages. Here it is vital to note that it is the manufacturers' capabilities which determine their ability to meet buyers' requirements and to strategise in a long-term perspective together with the stability of the linkage which provides the manufacturers with orders, and with them, capital and stability for long-term investments.

The case companies are not getting any form of direct support by the buyers. Therefore, the observations of the case companies support the theoretical reasoning that the firms' capabilities and the technological benefits derived from the sourcing linkages develop in self-reinforcing circles. Strong ownership advantages are a precondition as well as a driver for technological benefits to be derived from the sourcing linkages. The example of Company D and its linkage to Marks & Spencer was the clearest of the four case companies. Although the research cannot derive generalisations from only four case studies out of which only one had experienced direct technology transfer, it was interesting to note that this one company was situated most to the right of the continuum.

Although, in terms of indirect benefits it seems that quasi-internalisation was not highly important, the example of Company D seems to indicate that the degree of quasi-internalisation may be an influencing factor on manufacturers' derivation of direct technological benefits from their buyer linkages. The technological benefits and the conditions under which they have been derived in the four case studies are summarized in table 3. Based on theoretical reflection, the conditions under which the developing country supplier can derive technological benefits from MNEs' global sourcing linkages are summarised in table 4. When the observations of the case companies hints to a conjunction of conditions, it is marked with a √. When the observations of the case companies hints to a deviation of conditions, it is marked with a %. When it is impossible to hint at either a conjunction or a deviation of conditions based on the empirical material of this study, the condition is not marked.

Table 3	Technological benefits	Conditions
SIMILARITIES	Indirect Benefits: – Orders obtained – Requirements imposed – Long-term character of the sourcing linkage	– Strong ownership advantages – Small technology gap in terms of technological assets and knowledge about production. – Large technology gap in terms of strategic knowledge about design, sales, and marketing. All the buyers are practicing lean retailing, i.e. all the buyers capitalise on information
DIFFERENCES	Direct Benefits: – Sharing of knowledge about sourcing of raw materials (Company B & C) – Knowledge transfer of the ideas of Total Quality Management (Company D)	– Degree of quasi-internalisation

Table 4: Cross-section analysis of Ownership Advantages of the Case Companies

Influencing factors		Pre-Conditions for derivation of technological benefits
Ownership advantages		⇒ √ Strong competitive ownership advantages of both supplier and buyer ⇒ √ Strong ownership advantages are a precondition for the establishment of transnational sourcing linkages as well as a driver for derivation of technological benefits from these linkages. ⇒ √ Firms' capabilities and technological benefits develop in self-reinforcing circles. Obviously, positive circles are a precondition for technological benefits to be derived from the linkages.
Complementarities of Ownershipadvantages/ degree of interdependency of the actors		⇒ √ The higher the degree of complementarities of o-advantages the higher the potential for derivation of technological advantages from the transnational inter-firm linkage ⇒ The higher the degree of interdependency the higher the degree of interaction and the higher the degree of potential for derivation of technological benefits. ⇒ √ The higher the technological capability needed the higher the potential for developing the technological assets ⇒ √ - %The more advanced technology the higher the potential for becoming a highly ranked supplier receiving larger & higher value-added orders along with greater technical assistance and know-how
Transnational inter-firm linkage:		
Interaction of firms' respective ownership advantages	Quasi-Internalisation	⇒ √ High degree of quasi-internalisation relative to the degree of market based transactions ⇒ √ The higher the degree of quasi-internalisation the higher the potential for derivation of technological benefits ⇒ % By and large, quasi-internalised sourcing linkages are design-driven
	Size of technology gap	⇒ The potential for derivation of technological benefits follows the development of firms' absorptive capacity in an inverted u-shaped curve
	Technology transfer	⇒ MNCs' incentives to increase technology transfer arise when the investment can be expected to optimise the return in a reasonable period of time ⇒ √ Technology transfer is restricted to situations where it is necessary ⇒ The higher the degree of host country innovation, and with it the higher the degree of organisational capabilities, the higher the potential for technology to be transferred ⇒ √ The less risky the conditions and the older the technology the higher the potential for technology to be transferred

In the context of achievement of technological benefits from MNEs' sourcing linkages, two features are particularly important to the idea of quasi-internalisation, namely the firms' ownership advantages, particularly the firms' absorptive capacity, and the firms' interaction, i.e. inter-organisational learning. Absorptive capacity and inter-firm learning in Company A was not analyzed as it is the parent company which collaborates with the buyers. Therefore, Company A does not collaborate directly with the buyers, and the contact person did not have any knowledge about the issue. In addition, Company B and Company C did not attempt to develop special buyer linkages; nor did they strategise to spur innovation through their buyer linkages. Consequently, the idea of absorptive capacity and inter-firm learning in buyer relations is unfamiliar to them, and it had caused them difficulties answering the questions. This, in turn, caused the data to be of limited extent. Given these problems of research, the following section does not attempt to provide any in-depth analysis of absorptive capacity and inter-firm learning. Rather, the provision of information about the case companies' absorptive capacity and inter-firm learning attempts to preview the companies' interaction with their buyers and the effect of this interaction on the companies' ownership advantages. i.e. it is an attempt to preview details to the idea of quasi-internalised inter-action in the sourcing linkage.

Broadly, the firms' technology bases and their upgrading efforts were similar. In terms of *motivation*, all three case companies were highly motivated to innovate and to learn. However, Company D distinguished itself from Company B and Company C by consciously seeking – and thus being motivated to derive - technological benefits from its buyer linkages and derive technological benefits.

In terms of *absorptive capacity*, Company D was also noticeable due to its experiences with reaping technological benefits and its ability to understand and evaluate the importance of externally developed knowledge. Company D predicted more accurately the nature and commercial potential of this knowledge. While Company B and Company C represented a somewhat conversed scenario in which technological opportunities inherent in the absorption of externally developed knowledge were not always warranted. The lack of a clear expectation formation prevents the firms to predict accurately the potential of deriving knowledge from the buyer linkages. In a similar line, Company D's aspiration level for learning from its buyers was higher than the levels of Company B and Company C. This transpired in Company D's more proactive attitude towards its buyers which reached beyond the buyer requirements. Conversely, Company B and Company C were more reactive towards their buyers, searching for new alternatives in terms of learning and innovation as a response to their buyers' requirements. As regards Company B, it transpired that the dynamic knowledge capabilities which enable firms to continuously handle changes in the environment through learning were limited. This transpires as the company opts to transfer production to Vietnam (and thus "stay" in a type of environment which it is used to) instead of maintaining production in the Philippines and learn to cope with the changes there.

All three companies have centralised interface functions with their buyers. Few individuals assume "gate keeping" roles because the expertise of most of the individuals within the organisation, e.g. the sewers, differs considerable from that of the buyers. Unfortunately, the data gathered was too limited to provide further analysis of the effects of this; i.e. it is impossible for the research to hint at how the roles develop or impede the individual capabilities and how they develop or impede links across the mosaic of such individual capabilities. Thus the research cannot hint at the effect of the links in the firms' interfaces across and within subunits of the organisation.

The three companies have different perceptions of the opportunities for *inter-firm learning* in MNEs' sourcing linkages. Company B did not, consciously, recognise any interaction with the buyers and would argue that inter-firm learning did not take place. The company did, though, recognise that the buyers' requirements pushed it to learn and to innovate. Company C was also reluctant to recognise inter-firm learning in MNEs' sourcing linkages in that the Vice president and head of operations stressed that in his 25 years in the business he had never experienced buyers contribute directly to the company's upgrading. Simultaneously, though, he acknowledged that Company C had "learnt to learn" from its buyers. Company D, once again differentiated itself from the two other companies; it recognised that it had "learnt to learn" from its buyers, and it stressed that its very technology base was inspired by the buyers. The firm had made intentional efforts to acquire technological benefits from its buyer linkages, and the efforts have been successfully achieved. Finally, concerning *knowledge creation,* Company D was distinguishable as all four knowledge creation processes, i.e. the processes of socialisation, combination, externalisation, and internalisation seem to take place internally in the organisation. In Company B and Company C, there was a lack of conscious efforts to spur the creation of implicit knowledge. The case companies' technology base, upgrading efforts, motivation, absorptive capacity, and inter-firm learning is summarised in table 5.

Table 5		Company B	Company C	Company D
Technology Base	Technological Assets	**Production Technologies** – Progressive Bundle System **Communication Technologies** – EDI – ASN (Advanced Shipping Network software)	**Production Technologies** – The manual bundle system – The modular system **Communication Technologies** – EDI	**Production Technologies** – The progressive bundle system **Communication Technologies** – EDI
	Knowledge	**Focus Areas:** – Product development – Quality – Subcontractor management – Market research – Training – Knowledge creation is a daily, continuous process – Training	**Focus Areas:** – Total Quality Management – Scientific Management	– **Focus Areas:** – Training – Quality – Productivity – Subcontractor management
Upgrading & R&D efforts		– Buyers' requirements direct knowledge creation – Yearly investments in machine inventory – Manufacturers of machine inventory hold in-house training & familiarisation – Chinese technicians ensure successful & optimal daily operations	– Innovation is achieve through the Innovation Committee – The vice president, head of operations 25 years of experience, he has never seen any buyers contribute directly to the manufacturers upgrading	– Company D consciously seeks technological benefits from its buyer relations
Motivation		– Highly motivated to upgrade technology base as innovation is perceived to be key to survival – No attempts to develop special buyer linkages; nor any strategies to spur innovation through the buyer linkages	– Main motivation: To be ahead of the competitors – Motivated to absorb technological benefits from buyer relations – No attempts to develop special buyer linkages; nor any strategies to spur innovation through the buyer linkages	– Highly motivated to derive technological benefits from the buyer linkages – The technological benefits from the buyer linkages have a positive effect on the firm's performance, they improve the company image, and they enhance the company's core competencies. – Not all linkages and requirements are worth doing
Absorptive Capacity		– Mixture of generalist & specialist roles – Two types of technical staff: 1. Sample Development Staff – interact in external interfaces 2. Internal Technicians – supervise production – Technical Staff & Plant managers are encouraged to share knowledge	– Specialist roles of sewers – Technological benefits from interfaces with the buyers are transferred into the organisation through the Innovation Committee	– Multi-skilled sewers – Staff of specialised technologists interacts both in internal and external interfaces of the firm & ensures that the various techniques are properly implemented. – Individuals are encouraged to share knowledge and to learn from each other. – Both formal and informal links are established across subunits of the organisation. – Most of the time, the transmission of externally derived knowledge into the internal organisation succeeds.
Inter-firm Learning		– Company B does not recognise any interaction with the buyers in external interfaces	– Company C recognises that it has "learnt to learn" from its buyers – Company C communicates with its buyers through EDI, e-mail, and the internet website. – The interaction and communication with the buyer is centralised.	– Company D recognises that it has "learnt to learn" from its buyers – The firm has experience and has made an effort to acquire technological benefits from its buyer relationships. The technology base is inspired by the buyers. – All links established to external interaction with the buyer are formal and professionally executed, and they are facilitated by electronic communication.
Knowledge Creation		– Diversity of knowledge base is limited → restrains absorption of externally developed knowledge – Company B is blindsided from initiating inter-firm learning in its buyer linkages – Channels for absorption of knowledge in external interfaces & diffuse it in internal interfaces are established – Lack of conscious efforts to spur the creation of implicit knowledge	– The technology base relates primarily to the ideas of Total Quality Management and Scientific Management which restrains the focus of knowledge to embrace primarily explicit knowledge of production. – Ideas for improvements are welcomed from the industrial engineers as well as from the sewers. – Knowledge created is limited to embrace explicit, technical knowledge. – Lack of conscious efforts to spur the creation of implicit knowledge	– Diversity of knowledge base → enhances the ability to recognise the relevance of externally developed knowledge. – Basis for inter-firm learning, i.e. a solid, diverse knowledge base together with motivation, is present. – Several knowledge creation capabilities similar to the characteristics of absorptive capacity – Internally, externally derived knowledge is integrated into Company D's knowledge base by the means of all four knowledge creation processes, i.e. the processes of socialisation, combination, externalisation, and internalisation.

Conclusion

The research attempts to contribute to the understanding that inter-firm interaction is essential for the achievement of technological benefits. The empiricisms show that ownership advantages are of vital importance for the firm to be capable of deriving technological benefits from MNEs' global sourcing linkages. It hints to the importance of quasi-internalisation as a precondition for host country firms to derive technological benefits from MNEs' global sourcing linkages. Also, the empiricisms hint to the suggestion that the degree of quasi-internalisation seems to influence which type of technological benefits the host country firm can achieve.

In the context of achievement of technological benefits from MNEs' sourcing linkages, two features are particularly important to the idea of quasi-internalisation, namely the firms' ownership advantages, particularly the firms' absorptive capacity, and the firms' interaction, i.e. inter-organisational learning.

The research objective was to preview insights into the developing country companies' interaction with their buyers and the effect of this interaction on the companies' businesses, i.e. to preview *how* developing country manufacturers can derive technological benefits from MNEs' global sourcing linkages. A continuum symbolised the share of market-based transactions relative to quasi-internalised interaction, and it suggested that the development of the sourcing linkage is influenced by price and design. Definitely, this continuum is somewhat simple, and the idea needs to be developed. However, in order to develop the continuum, first, the concept of quasi-internalisation needs to be further developed. Also, it needs to be examined if price and quality are really as important for the development of sourcing linkages as theory suggests. The study of the four Philippine apparel manufacturers hints to technology as an increasingly important influence which is making the two factors of price and quality too simplistic. In the apparel industry, it is not only a matter of price which bases market-based sourcing linkages but also quality, flexibility, and productivity. And as for quasi-internalised interaction, one case company (Company D) shows that it is not simply design that is driving the quasi-internalisation but also the firm's own initiatives to develop the linkage.

The examination of absorptive capacity added an influence on the development of the sourcing linkages. In addition, empiricisms shows that the achievement of technological benefits was closely related to the firms' ownership advantages, which the research, have delimited to embrace technological capabilities. One such technological capability is absorptive capacity. Absorptive capacity is a constituent of the process of inter-firm learning as well as it itself is constituted by various learning processes. Therefore, the case study provides a preview on the process of learning from MNEs' global sourcing linkages. As the empirical data is of limited extent, the research did not attempt to provide any in-depth analysis of absorptive capacity and inter-firm learning. Rather, the provision of information about the case companies' absorptive capacity and inter-firm learning attempts to preview the companies' interaction with their buyers and the effect of this interaction on the companies' ownership advantages. I.e. it is an attempt to preview possible further research of the idea of quasi-internalised inter-action in the sourcing linkage.

It is clear that the conceptualisation of quasi-internalisation is still too simple and the empiricisms are far too limited for the research to draw any firm conclusions. The core conclusion we can derive from the preview into the idea of quasi-internalisation is that inter-firm interaction is essential for the achievement of technological benefits. A fundamental assumption underlying this idea is that a firm is unable to assimilate externally available technological assets and knowledge passively. The idea is still vague in terms of theoretical conceptualisation, and it is definitely open for further elaboration, both empirically and theoretically. The IMP interaction model serves as possible important approach to the further development of the idea of quasi-internalisation and the sourcing linkage continuum. When all's said and done, economic activity is human activity. Therefore, to develop the concept of quasi-internalisation it may be very rewarding to analyse ideas of shared spaces and how they are influenced by the closeness of people, trust, power, and control…

The core conclusion that inter-firms interaction is essential for the achievement of technological benefits has one important influence on the conceptualisation of quasi-internalisation: Whereas internalisation, originally, was a matter of diffusion and/or transfer of ownership advantages based on *equity*, this research suggests that quasi-internalisation is a matter of diffusion and/or transfer of ownership advantages based on *collaborative interaction.* Although the original theory about internalisation emphasised equity, it does not deny interaction. Obviously, equity is not present in inter-firm sourcing linkages – and therefore the focus is on interaction. This change of focus may cause the reaction that this research have misunderstood the idea of internalisation. On the contrary, this research argues that the concepts of internalisation and quasi-internalisation share the idea of diffusion of ownership advantages – and that is precisely the core of the matter when examining the technological benefits from sourcing linkages. I.e., quasi-internalisation has the very important connotation of diffusion and/or transfer of ownership advantages through inter-firm collaborative interaction, which – at the end of the day – is what the achievement of technological benefits from global sourcing linkages is all about.

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