STRUCTURE, CONDUCT AND PERFORMANCE IN THE INTERNATIONAL CHAIN OF JEPARA-MADE FURNITURE

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Abstract

This study contributes to the ongoing discussion within public, private and non-governmental realms on the development opportunities of international supply chains. It does so through examining structure, conduct and performance at the level of individual supply chain members in developing countries. The international supply chain that is subject to analysis in this study is that of tropical hardwood furniture that is made in Jepara, a district on the North coast of Central Java, Indonesia, and sold in numerous markets in Europe, the United States, Australia, and others. The chain is strongly characterised by ‘1 tier’, - and ‘2 tier’-types of supply chains indicating participation of medium,- and small,-scale manufacturing enterprises in furniture export production. The upstream and downstream supply chain members are linked to each other by (sub)contract relationships.

Key words: international supply chains, structure – conduct – performance model, wood furniture industry.
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General problem and research questions

In the present world we see increasing outsourcing practices of companies in the United States, Europe and Japan to developing countries, referred to by some as the “next round of globalisation”. This study focuses on international supply chains that link manufacturers and exporters in developing countries with wholesalers and retailers in developed countries. A contribution is made to the ongoing discussion within public, private and non-governmental realms on the development opportunities of international supply chains. It does so through examining structure, conduct and performance at the level of individual supply chain members in developing countries. The structure – conduct – performance model has been conceived by S. Mason of Harvard during the 1930s and elaborated by numerous scholars, mainly in the field of industrial organisation (Scherer and Ross, 1990). By adopting it as a framework for the study of an international supply chain originating in a developing country, this

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1 This paper is based on the Master thesis of the author defended in June 2003 at Wageningen University and Research Centre, Wageningen, The Netherlands.
study also aims to contribute on an academic level to the extension of the model and to increasing its ‘dynamism’.

The international supply chain that is subject to analysis in this study is that of tropical hardwood furniture that is made in Jepara, a district on the North coast of Central Java, Indonesia, and sold in numerous markets in Europe, the United States, Australia, and others. The Jepara district has a centuries old tradition in woodcarving and since it’s products started to be exported in the mid 1980’s, it has grown to become a very significant wooden furniture export district in Indonesia. At the demand side of international wooden furniture chains the following supply chain member groups can be distinguished: specialised wholesalers, global retailers and one-store retailers. At the supply side of the international chain of Jepara-made furniture supply chain member groups include: small,- and medium-scale manufacturers, traders/brokers, and exporters. In 2000 the district included about 3400 furniture enterprises, scattered over 103 villages. About 360 of these were export companies, the rest were small,- and medium-scale manufacturing enterprises producing both for export, and domestic markets. Those producing for export markets maintained subcontract relationships with exporters, which in turn had contract relationships with foreign wholesalers and retailers. The primary research for this study was concentrated at the supply side of the chain in Jepara district. Analysis of the demand side of the supply chain was limited to secondary information sources.

The interest in structure relates to the recognition that the sourcing behaviour of downstream supply chain members influences the scope and spread of inter-firm division of works and inter-firm co-operation within a supply chain. The prospect for upstream supply chain members’ participation is therefore, among others, a function of the inherent capacity of these enterprises to accommodate the sourcing behaviour of downstream members. Consequently, the following research questions were posed:

1. What degrees of backward and forward integration prevail in the upstream and downstream linkages, respectively, that make up the international chain of Jepara-made furniture?
2. What are upstream and downstream supply chain members’ reasons behind the prevailing degrees of backward and forward integration?

The interest in conduct relates to the recognition that participation in international supply chains per se is no guarantee for the economic development of upstream supply chain members in developing countries. The net benefit they gain from participation depends on the way they are linked to downstream supply chain members: by market transactions or by contract relationships. If linked by contract relationships, the degree in which these are characterised by certain key relational variables (commitment, continuity, trust, power/dependence and conflict) further influences the performance outcomes of the relationship. Besides influencing the business performance levels of individual supply chain members, the degree of commitment, continuity, trust, power/dependency and conflict between up, - and downstream supply chain members also influences the performance outcome of the total supply chain. A third and fourth research question therefore read:

3. To what degree are the upstream and downstream linkages that make up the international chain of Jepara-made furniture characterised by commitment, continuity, trust, power/dependence and conflict?
4. What is the performance level of the international chain of Jepara-made furniture and its individual members?
Research context and methodology

The primary research for this study was conducted in co-operation with the Centre for Medium, - and Small-scale Enterprise Dynamics (Salatiga, Indonesia), which had received a contract research proposal from the International Labour Organisation (ILO) to conduct a profile of a sample of clusters in the wood furniture sector in Central Java. This contract research forms part of the ILO’s InFocus Programme on Boosting Employment through Small Enterprise Development (IFP/SEED). Out of the 13 furniture clusters surveyed for the ILO contract research, the data for the Jepara cluster were gathered by the author of this paper. Personal interviews with respondents were held on the basis of a structured questionnaire, filled in by the author. The total field research period lasted from March to July 2002.

For the selection of a sample of respondents on the supply side of the chain the “snowball sampling” method was used. First a group of eight export companies were selected, by means of purposive sampling. With regard to the two furniture lines produced and exported from Jepara: outdoor and indoor furniture, four exporters (half of the sample group) were involved in both lines. The other four only exported indoor furniture. Second, each of the eight exporters provided the names and addresses of one or two of their 1st tier suppliers who were involved in production of the exporter’ main selling products. If an exporter was selling and outsourcing two furniture lines, a distinction was made between suppliers producing the main selling indoor furniture piece, and those producing the main selling outdoor furniture piece. Contrary to exporters, suppliers typically produced only one furniture line. Through this method four ‘1st tier’ suppliers of outdoor furniture were selected and twelve ‘1st tier’ suppliers of indoor furniture. In total sixteen 1st tier suppliers were selected. Finally, those 1st tier suppliers who were outsourcing production, eight out of sixteen, in turn provided the names and addresses of their suppliers, the so-called ‘2nd tier’ suppliers (as seen from the perspective of the exporter). 2nd tier suppliers were also involved in the production of the particular exporter’s main selling products. Two 2nd tier suppliers of outdoor furniture and three 2nd tier suppliers of indoor furniture were selected. In total five 2nd tier suppliers were selected. The total sample included 29 enterprises.

Structure

This study adopts the definition of a supply chain that has been given by the editors of the Journal of Chain and Network Science: “A supply chain is a network of organisations that are involved through upstream and downstream linkages in different processes and activities that produce value in the form of products and services in the hands of the ultimate user” (Christopher 1998 in: Omta et al 2001:78).

The companies that are actively involved in the sequential processes and activities that produce a specific product or service are referred to as the “primary supply chain members”. At the supply side of the international chain of Jepara-made furniture these are the furniture exporters and manufacturers. In contrast, the “supporting members” of a supply chain are companies that simply provide resources, knowledge, utilities, or assets to the primary supply chain members. Here these include the general suppliers of: wood, sawmills, kiln-dry ovens, machinery, tools, brass fittings, textile, paint/lacquer, glass, packaging cardboard, etc. Other important

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2 The Journal on Chain and Network Science is published by the Department of Management Studies of Wageningen University and Research Centre. The editors are: Prof.Dr. S.W.F. Omta, Prof.Dr. G. Beers and Dr. J.H. Trienekens.
supporting supply chain members are freight forwarding and shipping companies, which undertake the transportation from Jepara to foreign export markets.

The primary supply chain members who are involved in the same process/activity compose one tier within the supply chain. The total number of tiers across the supply chain is termed the “vertical structure”. The “horizontal structure” refers to the number of supply chain members at each tier. The ranking of the tiers is subject to the particular company’s perspective that is selected to look at the supply chain, the so-called “focal company”. The “vertical position” refers to how far or near the focal company is to the initial source of supply and the ultimate customer (Stock and Lambert, 2001).

**Degree of backward integration**

The vertical structure of a supply chain is determined by the degree of backward and forward integration that prevail in the upstream and downstream linkages that make up the chain. The higher the degree of backward and forward integration the shorter the chain. On the contrary, the higher the degree of outsourcing of up, and downstream activities, the longer the chain. At the supply side of the international chain of Jepara-made furniture, the main upstream activity is the manufacturing of furniture. Table 1 shows the degrees in which exporters and their 1st tier suppliers manufactured furniture in-house or outsourced production.

**TABLE 1: Manufacturing of furniture – in-house versus outsourcing**

<table>
<thead>
<tr>
<th>Supply Chain Member Groups</th>
<th>No. of exporters</th>
<th>No. of 1st tier suppliers</th>
<th>No. of 2nd tier suppliers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total in sample group</td>
<td>8</td>
<td>16</td>
<td>5</td>
</tr>
<tr>
<td>Outdoor furniture</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Indoor furniture</td>
<td>1</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Predominant in-house</td>
<td>-</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>Predominant outsourcing</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>100% outsourcing</td>
<td>4</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>4</td>
<td>8</td>
<td>4</td>
</tr>
</tbody>
</table>

Of the four exporters of outdoor furniture, three outsourced all production and one manufactured all production in-house. For exporters who have mechanised production facilities for outdoor furniture in-house this furniture line is usually primary. The export of indoor furniture is for them only a means to offset seasonal demand for outdoor furniture in their export markets (mainly EU countries). Although the quality of outdoor furniture benefits greatly from mechanised production facilities, few exporters have the capital to invest in them. It’s mainly foreign-owned or Indonesian-foreign joint venture companies that have invested in mechanised production facilities. Of the eight exporters of indoor furniture, seven outsourced part or all of production. Contrary to outdoor furniture, the quality of indoor furniture has much less to benefit from mechanised production facilities. Much more important is the craftsmanship of individual carpenters and carvers. Skilled carpenters and carvers are not easy to find, which might explain why the vast majority of exporters relied on manufacturing workshops of skilled carpenters and carvers to conduct part or all of
production. The one exporter who manufactured all production in-house, received orders from his buyer for customised furniture. In this case outsourcing is less of an option, because the chance that these exclusive designs will become public is very big.

The vast majority of 1st tier suppliers, both those selling outdoor furniture as well as those selling indoor furniture, manufactured 65 to 100% of total production in-house. Only two 1st tier suppliers of indoor furniture outsourced all production. All 2nd tier suppliers, both those selling outdoor furniture as well as those selling indoor furniture, manufactured all production in-house. Although it is not unthinkable that 2nd tier suppliers in turn outsource part of production to other manufacturers, the 2nd tier suppliers that were selected for this survey indicated that they did not outsource production. They thus form the originating tier of the international chain of Jepara-made furniture under study here.

The data presented in Table 1 led to the identification of three main types of supply chains within the Jepara furniture export industry, according to the length of the supply chain. The export companies, who formed the starting point for the snowball sampling method, are addressed here as the focal companies, the “central nodes”, in the international chain of Jepara-made furniture. The export company’s perspective is thus selected to look at the supply chain and for the ranking of the tiers. In this regard, the following supply chain types were identified:

‘0 tier’ type: the exporter manufactured all furniture in-house
‘1 tier’ type: the exporter outsourced part or all of production to 1st tier suppliers
‘2 tier’ type: 1st tier suppliers in turn outsourced part or all of production to 2nd tier suppliers

Within these supply chain types, a distinction can be made according to furniture line. Within the sample of respondents from the three supply chain member groups, eighteen different supply chains could be counted. A supply chain was defined as an exchange with a single supplier for a single furniture piece. The distribution of supply chains according to type and furniture line is presented in Table 2 below.

<table>
<thead>
<tr>
<th>Supply chain type</th>
<th>Number of supply chains</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Outdoor furniture</td>
</tr>
<tr>
<td>‘0 tier’ type</td>
<td>1</td>
</tr>
<tr>
<td>‘1 tier’ type</td>
<td>1</td>
</tr>
<tr>
<td>‘2 tier’ type</td>
<td>3</td>
</tr>
</tbody>
</table>

Those exporters and 1st tier suppliers who indicated to outsource part or all of production all maintained contract relationships with their suppliers. In fact the term “subcontract” relationships should be used here, since this implies an “original contract” further downstream between the exporter and his foreign buyer that underlies the specifications of the subcontract with suppliers. Of all eight exporters who outsourced part or all of production four of them once in a while bought furniture from suppliers without previously specified orders, resembling what in theory are called “market transactions”. In the Jepara furniture industry this involved buying “off-the-shelf” inventory or “left-overs” from orders of other buyers. Of the eight 1st tier

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3 It should be noted however that (sub)contract relationships do not imply formal (sub)contracts, they might also be informal. The type of (sub)contracts used is an indicator of the degree of commitment between two parties.
suppliers who subcontracted part or all of production only one had bought furniture without previously specified orders.

Degree of forward integration

The main downstream activity at the supply side of the international chain of Jepara-made furniture is the marketing of furniture to buyers. The degree of forward integration in this regard is best indicated by the ‘ownership’ and ‘status’ of the buyer’s company. Five types of buyers were identified: foreign retail, foreign wholesale, foreign or foreign-Indonesian export, Indonesian export and Indonesian manufacturing. The vast majority of exporters marketed their products to foreign wholesalers. Assuming that wholesalers in turn sold on to retailers implied another three tiers in the total supply chain, including the final consumer. 1st tier and 2nd tier suppliers were not involved in direct marketing to foreign buyers. The majority of 1st tier suppliers typically marketed their products to Indonesian owned export companies, among which the exporters in the sample group. Two 1st tier suppliers (almost) exclusively and two partly marketed their products to foreign and foreign-Indonesian export companies. Foreign and foreign-Indonesian export companies are often more knowledgeable and closer to foreign customers. Therefore, 1st tier suppliers who marketed to foreign and foreign-Indonesian export companies can be said to have been more forward integrated than their colleagues who only marketed to Indonesian export companies. In turn, 1st tiers suppliers who marketed to Indonesian export companies were more vertically integrated forward than 2nd tier suppliers who all marketed to Indonesian manufacturing companies, amongst which the 1st tier suppliers in the sample group.

With regard to the design function, the second downstream activity, it was found that furniture designs of all three supply chain member groups originated in foreign export markets of Jepara furniture. In the fulfilment of order processing, warehousing and making furniture ready for export (quality control, finishing and packaging), the role of exporters was found to be crucial in the functioning of the supply chain. In case 1st tier suppliers would want to integrate forward, it is highly questionable whether they could perform these supply chain activities equally well.

Respondents of the three supply chain member groups all produced on the basis of (sub)contract relationships with their buyers. None of the respondents produced furniture for stock to sell to ‘one-time buyers’, resembling what in theory are called “market transactions”. Depending on the current degree of forward integration, for an export company further forward integration would involve direct marketing to foreign retailers, or the acquisition or set up of a wholesale company in one of the export markets. For a 1st tier supplier further forward integration would involve becoming an exporter and direct marketing to foreign wholesale companies. In order to do this, a supplier would first have to obtain an export license, which is not easy in the Indonesian bureaucratic system. For a 2nd tier supplier further forward integration would involve becoming a 1st tier supplier and direct marketing to Indonesian or foreign owned export companies.

Underlying reasons

Having gained a reasonable overview of the degrees of backward and forward integration that prevailed in the upstream and downstream linkages within the

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4 In case the respondent was an exporter the contract with his buyer was referred to as the “original contract”, contracts between 1st tier suppliers and exporters and those between 2nd tier suppliers and 1st tier suppliers were referred to as “subcontracts”.

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international chain of Jepara-made furniture, the study continued to look at the underlying reasons of the three supply chain member groups for their current (at the time of the survey) degrees of backward and forward integration.

Regarding the degree of backward integration in furniture manufacturing, minimising the potential of opportunistic behaviour of suppliers in circumstances of small numbers bargaining or information failure favoured subcontracting to suppliers with whom relationships existed over market transactions. Flexibility in handling fluctuations in order size favoured a move away from subcontract relationships towards market transactions. Efficiency gains favoured subcontract relationships over backward integration. For 1st tier suppliers faster order cycle time and risk-sharing were equally important as efficiency gains. Reasons to favour backward integration over subcontract relationships were based on unsatisfactory behaviour of suppliers that affected the effectiveness of the chain, in terms of quality, continuity and delivery time.

Also with regard to the degree of forward integration in furniture marketing, minimising the potential of opportunistic behaviour of buyers in circumstances of small numbers bargaining or information failure favoured producing and selling on the basis of (sub)contract relationships with buyers over market transactions. For 1st tier suppliers, efficiency gains were equally important. Efficiency gains combined with lack of own resources and access to markets favoured (sub)contract relationships over forward integration. However, awareness of supply chain members of the fact that higher prices were paid further downstream, favoured forward integration.

**Conduct**

Conduct refers to the degree in which the upstream and downstream linkages that make up the supply chain are characterised by certain key relational variables. The starting point here is that upstream and downstream linkages between supply chain members neither resemble pure market transactions nor are integrated within one company. The degree in which a particular contract relationship is characterised by certain key relational variables determines where is to be placed on the continuum of market transactions on the one extreme and vertical integration on the other. The key relational variables identified here are: 1- commitment, 2- continuity, 3- trust, 4- power/dependence, and 5- conflict. For this study an attempt was made to measure the key relational variables in the (sub)contract relationships between the members of the international chain of Jepara-made furniture. Diagram 1 below lists the key relational variables derived from literature and the indicators selected by the author.
Diagram 1: Indicators of key relational variables

<table>
<thead>
<tr>
<th>Key relational variables</th>
<th>Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commitment</td>
<td>Exclusivity, Type of (sub)contract, Terms of payment</td>
</tr>
<tr>
<td>Continuity</td>
<td>Length of relationship (years)</td>
</tr>
<tr>
<td></td>
<td>Evolution Index: contract volume, order frequency, scope of products ordered, rejection rate</td>
</tr>
<tr>
<td>Trust</td>
<td>Indicators specified by respondents themselves</td>
</tr>
<tr>
<td></td>
<td>Assistance Index: establishment, fixed capital, working capital, training</td>
</tr>
<tr>
<td>Power/dependence</td>
<td>Proportion of annual sales (outsourced) provided by a single ‘fixed’ supplier/the main buyer (%)</td>
</tr>
<tr>
<td>Conflict</td>
<td>Conflict Index: product quality, on-time delivery, price, payment, communication</td>
</tr>
</tbody>
</table>

**Commitment**

Within a particular subcontract relationship the perception that a respondent has of his suppliers’ commitment to him depends, among others, on the actions suppliers take to tie themselves to the respondent’s enterprise. One of these actions is the degree of exclusivity that suppliers provide to the particular respondent for the production of the specific product ordered by the respondent. In turn, commitment of the respondent to his suppliers is indicated by the type of contract and terms of payment given to his suppliers. Similarly, commitment of the respondent to his main buyer is indicated by the actions the respondent takes to tie himself to his main buyer's company. One of these actions is the degree of exclusivity that the respondent provides to his main buyer for the production of a specific product ordered by the buyer. In turn, the type of contract and terms of payment received by the respondent indicates commitment of the respondent’s main buyer to him.

In the international chain of Jepara-made furniture contract relationships between exporters and their main foreign buyer all exhibited relatively high degree of commitment. Degree of commitment was found the main distinguishing factor between ‘fixed’ and ‘variable’ suppliers (this terminology was used by respondents). Contract relationships between exporters and ‘fixed’ (1st tier) suppliers exhibited a relatively high degree of commitment: ‘fixed’ suppliers produced exclusively for the respective exporter, were given short-term formal contracts or guaranteed orders, and received down payments or weekly cash on delivery. Contract relationships between exporters and ‘variable’ 1st tier suppliers were exhibited a relatively low degree of commitment: they did not produce exclusively for the respective exporter, were given short-term formal contracts, guaranteed orders, but also non-guaranteed orders, and were paid cash on delivery. The selected 1st tier suppliers only had ‘fixed’ 2nd tier suppliers, the contract relationships between 1st tier suppliers and ‘fixed’ 2nd tier suppliers exhibited a relatively high degree of commitment.

**Continuity**

Continuity is regarded as the minimal condition for building commitment (Coughlan et al, 2001). Expectations of continuity depend on the length of the relationship, as well as on the evolution of the relationship during the years regarding contract volume, order frequency, scope of products ordered, and rejection rate. Although the relationships between respondents and their ‘fixed’ suppliers were found to have a reasonable duration (between four and six years on average), the evolution of these
relationships during the past five years (or since the start of the relationships) was found to be almost stagnant. This might give reason to worry about the future evolution of the relationships. In this respect it should be noted that the evolution of a relationship does not only depend on the ‘willingness’ of the buyer to increase contract volume, order frequency, and the number of product items ordered, but also on the capacity of the supplier to produce the demanded quantity and variety at preset quality standards. It was found that the length of the relationship with the main buyer had a positive effect on the length of relationships with ‘fixed’ suppliers. Moreover the longer the relationships with the main buyer and ‘fixed’ suppliers, the more positive the evolution of those relationships, as was indicated by the positive and significant outcomes of Spearman correlation tests.

Trust
Although trust is crucial for building and maintaining committed relationships, it is an ‘intangible’ variable, difficult to quantify. Trust can be defined as: “a state of mind or an expectation held by one trading partner about another that the other behaves or responds in a predictable and mutually acceptable manner” (Sako, 1992, in: Supratikno, 1998:42). In an attempt to assess trust within the relationships between members of the international chain of Jepara-made furniture, the questionnaire included ‘open answer’ questions on the degree of trust with suppliers/buyers and the determinants/indicators of this trust. The distinction between determinants and indicators of trust is difficult, since trust is both a precondition and an outcome of a relationship. The most frequent mentioned determinant/indicator of trust in relationships with the main buyer and ‘fixed’ suppliers was continuity of the relationship (length and evolution). Further, building and maintaining trust was found to be dependent on both economic and non-economic satisfaction, such as the absence of conflict and information sharing.

Power/dependence
Power has been regarded by many, including the author of this paper, as the mirror image of dependence. Assessing power in the relationship between a respondent and his suppliers/buyers is therefore equal to assessing the dependence between these supply chain members. Because of the use of “snowball sampling”, a particular supply chain relationship was examined from both buyer and supplier sides, allowing for analysis of the degree of interdependence between supply chain members. In the international chain of Jepara-made furniture, upstream supply chain members were found to be more dependent on their downstream supply chain partners than the other way around. The relationships between exporters and their ‘fixed’ and ‘variable’ (1st tier) suppliers and those between 1st tier suppliers and their ‘fixed’ (2nd tier) suppliers were both characterised by “dependence asymmetry” or “power imbalance”. Spearman correlation tests between ‘dependence on single ‘fixed’ suppliers/the main buyer and ‘evolution index’ with ‘fixed’ suppliers/the main buyer turned out negative and significant.

Conflict
Conflict arises when the behaviour of one supply chain member is in opposition to its supply chain counterpart. Conflict issues between members of the international chain of Jepara-made furniture included: product quality, on-time delivery, price,
payment and communication. The majority of (sub)contract relationships between supply chain members were characterised by low level of conflict.

Performance

The discussion on the performance of a supply chain takes place at two levels of analysis: the total supply chain and the individual supply chain member. Further, the discussion is centred around the three dimensions of performance: effectiveness, efficiency and equity. Although a detailed assessment of the effectiveness of the total supply chain wasn’t possible within the limits of this study, analysis of data on efficiency levels led to the conclusion that all supply chain members operated relatively efficient (contribution ratio per furniture piece between 15 and 38 percent). The most important findings of this study however, concern the relation between structure and performance. The question asked is whether the hypothesis that structure and performance are related according to the structure – conduct – performance model was supported by the data of the selected supply chain members. In this respect it was found that for exporters, efficiency levels, as indicated by contribution ratio per furniture piece, were not influenced by the type of supply chain used for the production of a particular furniture piece. However, for 1st tier suppliers of outdoor furniture contribution ratios were on average higher when they manufactured furniture in-house (‘1 tier’-type supply chain). Within the ‘2 tier’-type supply chain the contribution ratios of 1st tier and 2nd tier suppliers were on average about equal.

The third dimension of performance is equity, the equal distribution of contributions across the supply chain. The equity principle of Coughlan et al indicates that: “Compensation in the channel system should be given on the basis of the degree of participation in the marketing flows and the value created by this participation. That is, compensation should mirror the normative contribution shares for each channel member” (Coughlan et al, 2001:98). The so called “normative contribution shares” are indicated by the shares of total supply chain costs bore by each supply chain member, which are calculated from the Efficiency Template. The efficiency template describes (1) the share of each supply chain activity to total supply chain costs, (2) the share of supply chain activity costs bore by each supply chain member. Multiplying these two figures and adding them up leads to the share of total supply chain costs bore by each supply chain member. Comparing this last figure with the share of total contribution margin per furniture piece gained by each supply chain member, insight is achieved into whether each supply chain member is being ‘fairly’ compensated for the performance of these supply chain activities.

In the international chain of Jepara-made furniture equity levels, indicated by the degree of resemblance between the share of total contribution margin and the share of total supply chain costs per supply chain member group, were higher in the ‘1 tier’, - than in the ‘2 tier’-type supply chain. Although it wasn’t possible to conclude anything on the causality of the relation, it might be concluded here that the shorter the length of the supply chain (its vertical structure), the higher the efficiency levels of its individual members and the equity within the total chain.

Relation conduct – performance

Another relation hypothesised in the structure – conduct – performance model and tested for the international chain of Jepara-made furniture, concerns that between

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5 In the definition of Coughlan et al (2001:98) “normative contribution shares” is exchanged with “normative profit shares”.

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Conduct and performance. The following findings indeed supported the theoretical model. ‘Length of relationship’ and ‘evolution index’, the indicators of continuity, on the one hand and ‘contribution ratio per furniture piece’, ‘annual sales volume’ and ‘annual revenues’, indicators of efficiency, on the other were found to be positively correlated. ‘Dependence’ on single ‘fixed’ suppliers/the main buyer on the one hand and ‘annual sales volume’ and ‘annual revenues’, on the other were found to be negatively correlated. ‘Conflict index’, an indicator of conflict, and ‘contribution ratio per furniture piece’ were also found to be negatively correlated. Although it wasn’t possible to conclude anything on the causality of the associations, it was thought that for most supply chain members relational variables and efficiency levels were interrelated.

Association between key relational variables and equity levels could not be tested. However, analysis of the distribution of relationships exhibiting relatively high or low commitment over the ‘1 tier’- and ‘2 tier’-types supply chains and equity levels within each type of supply chain, led to the identification of a possible positive relation between commitment and equity. Furthermore, reference to earlier findings on power imbalance/dependence asymmetry lead to the identification of a possible negative relation between power imbalance/dependence asymmetry and equity.

Conclusions

The supply side of the international chain of Jepara-made furniture was strongly characterised by ‘1 tier’, - and ‘2 tier’-types of supply chains indicating participation of medium,- and small-scale manufacturing enterprises in export production. The low prevalence of ‘0 tier’-type supply chains could be attributed to the use of purposive sampling for the selection of export companies, seven out of eight were Indonesian-owned. Among foreign and foreign-Indonesian joint venture export companies, especially those involved in outdoor furniture, higher prevalence of ‘0 tier’-type supply chains was assumed. The fact that there was no strong prevalence of any one of the three types of supply chains within the sample is thought to be an indicator of the ‘flexible’ nature of the Jepara furniture export industry. The same exporter and 1st tier supplier could be part of ‘1 tier’, - and ‘2 tier’-types of supply chains for the production of the same furniture piece, depending on the production capacity and/or variety capability of the 1st tier supplier at the time of order placing.

The (dis)advantages of building and maintaining (sub)contract relationships with buyers and suppliers specified by respondents of the three supply chain member groups indicate that the international chain of Jepara-made furniture will in all likelihood remain strongly characterised by (sub)contract relationships. Efficiency gains combined with lack of resources make it unlikely that any of the three supply chain member groups will ‘massively’ integrate backward or forward, shortening the length of the international chain of Jepara-made furniture. Nor is it likely that supply chain members will ‘massively’ move towards market transactions. The need to minimise the potential of opportunistic behaviour of buyers/suppliers in circumstances of small numbers bargaining and/or information failure that are characteristic of the international chain of Jepara-made furniture, favours the building and maintaining of contract relationships with both buyers and suppliers.

The more contract relationships with buyers and suppliers are characterised by commitment, continuity, trust, power balance/interdependence and absence of conflict, the higher the advantages over market transactions and the closer the supply chain members tend to be towards vertical integration without having to
assume its burdens. Although commitment is thought to enhance performance, the recommendation to increase commitment between all exporters and suppliers in the Jepara furniture industry would not be sensible. The large group of so called ‘variable’ suppliers that exporters place orders with in case their so called ‘fixed’ suppliers lack the capacity or variety, enhances the flexibility of the industry.

The international chain of Jepara-made furniture was found to be strongly characterised by “power imbalances” or “dependence asymmetries” between its downstream and upstream members. This was found to be negatively associated with both the efficiency levels of the relatively more dependent upstream members as well as with equity levels within the chain. Although all supply chain members operated quite efficiently, equity levels were relatively low, especially within the ‘2 tier’-type of supply chains. The author adopts the view that the best way for a supplier to reduce its dependence on a buyer is to raise the dependence of the buyer on him. This would involve offering greater utility and making oneself more ‘unusual’.

Assistance flowing from downstream to upstream supply chain members can contribute to the capacity building of the latter. Training on quality standards for export markets would be a useful form of assistance to furniture exporters and manufacturers in Jepara that is currently (at the time of the survey) very minimal. Taking into account the potential benefit of increased product quality for the downstream members providing the training and judging from the relatively high levels of trust between downstream and upstream members, increasing the intensity and types of assistance would seem a likely development. However, lack of financial means might form an obstacle for downstream members to provide assistance. This in turn depends on access to financial markets, both formal and informal, e.g. in the form of credit from buyers.

Even if finance does not form an obstacle, increasing the knowledge of upstream supply chain members regarding foreign quality standards is seen by many downstream supply chain members as a potential threat to their own channel power and corollary distributional outcomes. This is related to the degree of competitiveness within the industry and the level of foreign demand. Jepara government data show a strong decrease in export value from US$200m in 2000 to less than US$60m in 2002. It is suggested that the strong decrease was caused not so much by a decrease in foreign demand for Indonesian wooden furniture, but by a moving away of foreign buyers from Jepara to other districts in Central Java producing furniture for export (CEMSED, 2002). This development requires some strong countermeasures by the Jepara furniture export industry, among others the improvement and consistency of product quality at all tiers in the chain.

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6 Source: Kantor Deperindag Kabupaten Jepara, 2003

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