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Integration, Industrial Linkages and Production Subcontracting : An Overview

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Abstract: The literature is replete with works on integration, industrial linkages and production subcontracting. This paper takes an overview of the literature on these all important aspects of the operations of industrial activities. Whereas, integration involves all forms of collaborative and co-operative ventures among industrial organizations over space, industrial linkages takes the form of purchases of inputs of goods or services from, or sales of output to another manufacturing firm which may include all forms of contacts and flows of information and/or materials between two or more individual firms which could either be vertical or horizontal in nature, and which may vary with the scale of operations and facilitated by certain basic factors. Production subcontracting pertains to the breaking down of production process into smaller units by firms which has become a major strategy of corporate organizations whereby part of a firm's production is handled by other independent firms in a chain of production

1. Introduction

There has been a significant shift from the traditional focus on Weberian and neo-classical location theory to an increasing emphasis on the geographical foundation of production systems and the relationships between business organizations and other capitalist structures, such as state and labour in industrial geography. Apart from the post-Fordist flexible specialization thesis, and the regulationist perspective, more recent works have focussed on the network analysis (see Yeung, 1994, for example). Indeed, Yeung (1994), notes that "not only does the excessive emphasis on an economistic interpretation of contemporary changes also tends to mask the central importance of culture and social relations in the capitalist formation given the post-Fotdist flexible specialization thesis and regulationist perspective. The paper thus takes a cursory look at the literature on networks of industrial production. The network of

industrial organisation especially is closely linked to integration, and industrial linkages and industrial production subcontracting.

Production subcontracting, the breaking down of the production process into smaller units by firms, is a major strategy of corporate organizations [Clutterbuck, 1985; Lash and Urry, 1987]. It is a production technique whereby part of a firm's production is handled by other independent firms. It is also a system in which firms perform different tasks in a chain of production. It is, thus, the de-concentration of production processes into smaller units over space. In developed market economies, such as the United States of America, the rise of production subcontracting is attributable to the performance problems caused by capital redundancy and labour militancy [Piore and Sabel, 1984; Cooke, 1988]. Some writers [e.g. Corbridge, 1986; Walker, 1988; Storper and Walker, 1989; Best, 1990], also attribute the rise of production subcontracting to the strategic responses of firms towards rapid market changes, increased international competition, and the corresponding development of new modes of corporate competition, which are based on interfirm consultative coordination and continuous improvement in the production process.

Production subcontracting provides firms the benefits of reduced investments risks, strengthens control over the labour process, and fosters response to technological and market changes [Holmes, 1986; Imrie, 1986; Donaghu and Barff, 1990]. In addition, it provides production systems increased viability for long-term growth and development [Sato, 1984; Saxenian, 1990], and promotes exchanges between firms in many forms [Contractor and Lorange, 1988]. Furthermore, it plays an important role in the restructuring of some industrial sectors both at the intranational and international levels. Perhaps, this explains why international subcontracting linked to the development of free trade areas and Export Processing Zones (EPZ) has become of particular interest to international agencies, such as United Nations Industrial Development Organization and the World Bank [UNIDO, 1974; UNTCD, 1975, 1979; Berthomeiu and Hanaut, 1980]. The development of production subcontracting is not confined to the developed market economies. A number of major developing market economies, such as Hong Kong, Taiwan and the People's Republic of China, have also experienced similar changes. These changes are attributable to the strategic needs of firms to expand production and/or to reduce cost pressures associated with labour shortages or labour cost [Chen, 1983; Federation of Hong

Kong Industries, 1990]. Apart from this introduction, the other aspects of the paper discuss integration and industrial linkages, and production subcontracting.

2. Integration and industrial linkage

The literature has shown that integration involves all forms of collaborative and co-operative ventures among industrial organizations over space. There are two forms of integration, namely vertical integration and horizontal integration. Vertical integration is "a process which refers to the extent to which successive stages in production and distribution are placed under a single firm shaped by internal economies of scope." [Lee 1994:292]. This involves the amalgamation of productive units at different stages of production. By contrast, horizontal integration is a production system whereby "firms producing related products (competitive, complementary or by-products) operate under central control" [Lee 1994:292]. This involves the firm moving into activities that are very closely related to its current activities. Vertical or horizontal integration may offer greater stability or growth of corporate profits and the spreading of risks [Dicken and Lloyd, 1990]. This is possible because not all activities in the firm will follow an identical cycle of demand. Integration, thus, involves the linkage of firms in a chain of production. In general terms, this is what is referred to as industrial linkage. Industrial linkage is a process whereby one manufacturing firm purchases inputs of good or services from, or sells output to, another manufacturing firm (Keeble, 1976) which includes "all forms of contacts and flows of information and/or materials between two or more individual firms" [Johnson, 1994:334]. This term is most widely used in industrial geography to indicate the interdependence among firms and its effects on locational choice.

There are three forms of linkages. These are backward, forward and sideways linkages. Whereas, backward linkage is a situation where a firm makes use of the products of some other firms as input in its own production process, forward linkage occurs when a given firm produces its products for use in the production process of other firms. Sideways linkage involves the information flows between firms at the same level of the production process. Linkage is possible over a wide range of distances. However, strong or complex linkage ties usually operate only over short distances. For instance, (Wood 1969:34) notes that "on a national scale, the systematic ties of a plant to others have locational significance. Plants located primarily in relation to raw materials or markets

form a small proportion of total industrial activity. On the local scale, connections to adjacent or nearby plants do exist, but such connections do not account for the concentration of heavy industrial areas". The foregoing suggests that linkage reflects a distance decay function. Linkage is possible over a wide range of distances. However, strong or complex linkage ties usually operate only over short distances. Linkage assumes that the process of manufacturing involves dynamic features, such as a variety of contacts changing over time, the need for rapid exchange in response to supply requirements, and the maintenance of speed and frequency of contacts.

Linkage is facilitated by certain basic factors. These include the importance of flows of commercial, technical, and administrative information into the links of communication-both internal and external between functional units of the firm's organisation [Hägerstrand 1964; Imrie, 1980; O'Farrel and Loughlin, 1980]. Exchange on levels of supply and demand, the optimum price levels, and the technical characteristics of products to be exchanged also facilitate industrial linkage [Klein *et al.* 1982]. The movement of goods between different firms at stages in the manufacturing process (the supply of machinery and equipment and ancillary parts and maintenance requirements) when supplied by separate firms; ties with other firms that aid in the selling and distribution of goods (e.g. packers, printers, wholesalers, agents and transport concerns); and ties with financial and advisory services (banks, insurance companies and stockbrokers) have also been emphasized as enhancing industrial linkage [Sargant 1961; Townroe 1969].

Inter-industry linkage may be facilitated by the existence of relatively well-developed infrastructure, such as highways, railroad lines and termini, airports, utilities, commercial facilities, research organizations; and many other services that might not exist or would be less well developed [Smith 1981; Scott and Bergman, 1995]. A city or region specializing in one industry will often have machine workers and repairers, suppliers of component, ancillary to main one and those producing goods and services for it. These services often express themselves directly, through the reduced cost of specific inputs. Certain materials and suppliers may be cheaper in larger cities than in small ones, by virtue of local production, or good transportation facilities and economies of scale can make power cheaper as the size of the local market increases. Furthermore, linkage may be facilitated by the existence of an industrial concentration which may contain a pool of labour with particular skills, or special

educational institutions to support industrial activities, both of which will reduce the cost of training workers.

3. Production subcontracting

The literature on production subcontracting has largely focused on the nature of production subcontracting; the basis for its existence; the temporal dynamics; and the locational structure. These themes have been approached from a transaction costs perspective as developed by Coase (1937), and later espoused by Williamson (1975; 1979; 1984; 1985); Scott (1983a; 1986; 1988a); and Storper and Scott (1990).

The transaction costs perspective posits that production subcontracting promotes locational agglomeration because external transaction costs between firms in the markets, including transportation and communication costs, increase with distance. The propensity to agglomerate (locationally) increases further either when transactions include small-scale, irregular, unstandardized, or contact-intensive activities that have high unit linkage costs, or when firms seek to reduce demand fluctuations by improving their customer base through locational clustering [Leung, 1993]. This locational tendency, according to Storper and Scott (1989:21) "is associated with a flexible regime of capital accumulation or mode of corporate organization characterized by intense external transactions between firms (external economies of scale) as a result of unstable market conditions." Flexible regime of accumulation encompasses new forms of production (including subcontracting) characterized by a well developed ability to shift promptly from one process and/or product arrangement to another. It is a mechanism for rapidly adjusting to changes in the market without harmful effects on the level of efficiency.

On the other hand, the locational dispersal of production occurs when the transactions involve bulky, stable, standardized, or easily manageable activities that have low unit linkage costs. These activities "contain primarily routine deskilled production processes and are dispersed to peripheral areas where labour or land costs are low" [Scott 1988a; 210]. This locational tendency, as stated by Storper and Scott (1989:22) is associated with a Fordist regime of capital accumulation typified by deepened internal transactions within firms (internal economies of scale) as a result of stable market circumstances." Consequent on this is the emergence of spatial and international division of labour, with the

centres dominating in unstandardized skilled labour and the hinterlands depending on routine unskilled activities [Scott and Storper, 1986].

Given the transaction costs perspective and the heavy reliance on cost, our knowledge of the major agent of capitalism, the firm, as it determines production subcontracting considerations has been 'masked'. Indeed, Yeung (1994:462) notes that not only does the main capitalist agency, the firm, disappear in the sea of structural current ... but the central importance of culture and social relations in the capitalist formation is also masked. A few recent works [see Leung, 1993; Jussaume Jr., 1995], are explicit on the importance of culture and social relations. Whereas the literature suggests that the locational structure is either agglomeration or dispersal into the hinterlands and across national boundaries, our knowledge of production subcontracting, especially in relation to pre-existing spatial structures, characteristics of specific places. Contemporary thinking in industrial geography places a lot of emphasis on the understanding of the networks of interfirm relationships. According to Dicken and Thrift (1992:286), "it is only through an analysis of the networks of interfirm relationships that the firm, as the basic element in the capitalist organization of production, can be resurrected. Through the networks of interfirm relationships one can probably overcome the problem created by the imposition of western-centric theories on to the economic reality in other parts of the world." An activity perspective has been suggested to explain the spatial organization of the networks of interfirm relationships [Christensen *et al*., 1990]. The choice of a network of relationships with its spatial pattern is argued to be more germane to the strategic positioning of the firm [Yeung, 1994].

Production subcontracting, the arrangement of production process wherein firms externalize their manufacturing activities to other independent firms is such that the contractor provides the orders and the subcontractor furnishes the work or services for the processing of materials or the production of parts, components, subassembly or assembly of products according to the production specifications and the marketing arrangements of the contractor [UNIDO, 1974; Leung, 1993]. Production subcontracting is thus a form of industrial linkage. Production subcontracting is classified based on the technical character of the subcontracted work, the durability and stability of the relationship between the contractor and the subcontractor; and the nature and form of business relationship between the contractors and the sub-contractor [Sharpston, 1975a&b]. It is further classified based on source of raw materials required for the subcontracted work [Taylor and

Thrift, 1975], and who takes the decision on the conception, design, and the production process [Chaillou, 1977]. Although Chaillou's (1977) identifies and describes seven distinct subcategories of subcontracting, for simplicity, he collapses them into three major categories. These are capacity subcontracting, specialization subcontracting, and supplier subcontracting.

Based on Chaillou's classification, subcontracting is further classified into industrial and commercial subcontracting. Industrial subcontracting involves a manufacturing process or the production of intermediate products. Commercial subcontracting pertains to finished commodities. Industrial subcontracting, the focus of this paper, is further classified into a number of types based on the need of the contracting firm. These are specialized, complementary, and cost-saving subcontracting [Watanable 1971, 1972, 1980; Leung, 1993].

Specialized subcontracting is due to inadequate technological know-how or equipment on the part of the contractor for some aspects of production. For instance, contractor 'A' in domestic and industrial plastic and rubber industry group, producing domestic coolers may not have the technological know-how or equipment for the production of some plastic components, such as the aluminium jar. If firm `B', the subcontractor, in basic metal, iron and fabricated metal products industry group produces the aluminium jar, such an arrangement is regarded as specialized subcontracting. Complementary subcontracting occurs as a result of inadequate capacity on the part of the contractor to meet delivery schedule. For instance, a textile factory faced with increased demand for its products, may subcontract some aspects of its production to another factory in the same line of activity. This aspect so subcontracted is meant to complement the production capacity of the contractor. The situation may well be that some aspects of the production process of firm 'C' (contractor) can be produced at a much lower cost by firm 'D' (subcontractor), if firm `D' now produces such aspects for firm `C', such an arrangement is generally classified as cost-saving subcontracting.

Another classification is that based on the types of subcontracting relationships. Four types of subcontracting relationships are usually identified. These are branch subcontractors, subsidiary subcontractors, independent subcontractors, and former - employee subcontractors [Lawson 1992; Leung, 1993]. Branch subcontractors are establishments fully owned and controlled by the contractor. Subsidiary subcontractors are wholly-owned by multi-national corporations, while independent subcontractors, apart from the subcontracting

arrangement, have no other form of relationship with the contractor hence the contractor and the subcontractor operate as equals. Former-employee subcontractors are those firms owned by entrepreneurs who have previously worked as employees of the contractors. They have acquired adequate knowledge of the operations of the contracting firms. They may or may not enjoy financial support of the contractor in order to establish or carry out their production activities (see Ajayi, Ajayi (1998, 2003 for further details.

Production subcontracting has been encouraged by at least two fundamental spatio-economic developments. These are post-Fordist flexible specialization of production, and the emergent 'marked' spatial division of labour. The post-Fordist flexible specialization of production came to replace the Fordist regime of capital accumulation by the end of the 1970's and more importantly by the early 1980's. The Fordist regime of accumulation refers to the era during which industrial production was characterized by widespread mass production of standardized goods using inflexible, dedicated machinery, and exploitation of internal scale economies. The post-Fordist flexible specialization is characterized by the application of production methods considered to be more flexible than those of the Fordist era. It involves greater inter-firm relations such as subcontracting, strategic alliances and just-in-time production and a closer integration of product development marketing and production [Storper and Scott, 1989; Gertler, 1994].

Several post-Fordist writers [Storper and Christopherson, 1987; Storper and Scott, 1989, 1992; Walker, 1989; Storper, 1990, 1991, 1992; Benko and Dunfold 1991; Martinelli and Schoenberger 1991; Ernste and Meier 1992, Rowley, 1996], have given accounts of the emergence of flexible specialization of production. At the intra-firm level, "production is characterised by flexible production: search for external economies of scale and scope, interconnected units of economic activities, reskilling of labour for their redeployabilty, and decentralised management involving greater degree of integration. Intra-firm relations are characterised by vertical integration of smaller and specialized firms, growth of subcontracting and substantial networks of firms" [Yeung 1994:463]. The spatial expression of flexible specialization changed from initial massive industrial agglomeration in the core to decentralization and increasing dispersal of production toward the periphery [Vernon 1966; Schoenberger, 1988; Swyngedouw. 1992; Echeverri-Carrol, 1996].

Spatial division of labour implies the specialization of certain districts in the production of some products, and certain parts of a product, that is, the way different tasks in production are allocated to particular groups of people in particular locations [Lenin, 1956; Schmidt-Renner, 1966; Burch-Hansen and Nielson, 1977; Massey, 1979, 1984; Storper and Walker, 1983a; Smith, 1989]. Spatial division of labour occurs first in locationally concentrated organizational form, with each of the plants in a corporation relatively self-reliant. The total labour process is performed *in situ* and corporate control decentralized to the individual plants. Second, where there is a cloning branch-plant spatial structure in which ownership and overall corporate control are concentrated at a single headquarters while separate divisions, responsible for product production, have administrative control only over the branch plant. Third, where some branch plants produce exclusively for assembly elsewhere, this represents a part-processing structure, as can be found in production subcontracting [Massey, 1979, 1984]. Three alternative sets of factors, that is, (i) industrial organizations and corporate strategy (ii) pre-existing characteristics of specific places, and (iii) the uniqueness of the labour factor, are emphasized as responsible for the continual structuring and restructuring of spatial division of labour [Storper and Walker, 1983b]. Spatial division of labour is a local variant of New International Division of Labour associated with internationalization of production and the spread of industrialization, especially in a number of rapidly growing newly industrializing countries. The literature on production subcontracting focuses on four major themes. These are (1) the nature of production subcontracting, (2) basis for production subcontracting, (3) the temporal dynamics of production subcontracting, and (4) the locational structure of subcontracting.

3.1 The nature of production subcontracting

The nature of production subcontracting pertains to the nature of work subcontracted, degree to which decisions about the conception, design, and specification of the subcontracted part, the design of labour process to produce part, and the actual production of the part resides with the subcontractor or with the contractor, and power relations. Houssiaux (1957); Sallex and Schlegal (1963); Watanable (1971, 1972, 1980); Sharpston (1975); Chaillou (1977); Friedman (1977); Holmes (1986); and United Nations Industrial Development Organization – UNIDO (1974) examine the nature of subcontracting relationships. The consensus of opinion is that there is always a problem of

drawing a distinction between a subcontract and a straight forward market transaction. Sallex and Schlegel (1963), argue that work done by a direct supplier of parts and components for a manufacturer should be classified technically as either a straight forward market transaction or as contracted out work, but not as subcontracted work. Friedman (1977:119), points out that "amongst suppliers to the automative industry, the term subcontracting is often used to refer to relations such as those which might be more narrowly defined as simply contracted out relations." Friedman uses the term subcontracting loosely to refer to situation when suppliers produce parts and components to specifications set out in advance by the manufacturers, whether materials are issued or not and whether the contract is directly with the large manufacturer, or through some intermediary contract with another supplier.

Chaillou (1977) opines that when all decisions are made by the contractor, one is faced with a situation of vertically integrated production. On the other hand, where the subcontractor makes all the decisions, the situation is that of an independent supplier. Although, Challiou (1977) identifies and describes seven distinct subcategories of subcontracting, for simplicity, he collapses them into three major categories. These are speciality subcontracting, complementary subcontracting, and supplier subcontracting. This forms the basis for subsequent classification among authors [see Watanable 1971, 1980; Sharpston, 1975a&b; Taylor and Thrift 1975; Leung, 1993].

Watanable (1971, 1980); Leung (1993), draw a distinction between different types of subcontracting based on whether the contractor is a wholesaler or retailer on the one hand or a manufacturer on the other. These authors label these two types of subcontracting as commercial and industrial subcontracting. Whereas, complementary subcontracting is common in Western European countries such as Italy and France, speciality subcontracting is the predominant form in the North America [Watanable 1971; Berger and Piore, 1980].

In terms of power relations, Watanable (1971), Friedman (1977), and Challiou (1977), note that subcontracting is characterised by unequal or assymetrical power relations between large and small firms. Rubery and Wilkinson (1981), Kaplinsky (1983), Holmes (1986), Imrie (1986), Echeverri-Carroll (1996) and Ajayi (2001, 2003), are of the view that subcontracting is characterized by a range of complex contracts and organized relations between firms which are not necessarily based on subservience of the subcontractor to the contractor. Holmes (1986), notes that a subcontracting firm has the capability to

innovate and produce, it also exercises a degree of relative autonomy and control through a number of formal and informal networks. These include the ability to own specific technologies and skills, and the ability to innovate in building a large volume of production. In addition, the subcontractor has volunteering involvement in a process which ultimately shapes the content of production.

3.2 The basis for production subcontracting

Various authors, among which are Friedman (1977), Berger and Piore (1980), Alonso (1983), Benaria and Roldan (1987), and Donaghu and Barff (1990), examine the structure and temporal stability of product markets as basis for production subcontracting. These authors suggest that the situation may arise where the contractor is engaged in manufacturing a product for which demand is uncertain or irregular due to cyclical or seasonal variations in demand for the product. Then production subcontracting becomes a means of production smoothing for the contracting firm. This enables the contracting firm to reduce per unit cost of production. Berger and Piore's (1980) study of the automobile industry in Italy shows that firms decompose the total demand for their products into a stable and an unstable component when faced with cyclical demand for their products. Such cyclical demand is determined by the demand at the bottom of the trough in the cyclical demand curve. Friedman (1977), notes that the automative industry is traditionally faced with a highly cyclical pattern of demand. Thus, the large automobile assembly firms develop in-house capacity to produce parts to meet stable component of demand and subcontract the unstable component to a variety of smaller parts producers.

Friedman (1977) has shown that during downturn in demand, the auto assemblers' avoid the costs and responsibility for idle specialized fixed capital and the lay-off of workers which are borne by the small subcontracting parts firm. Similar arrangements are noted in IBM, the North American electronics industry by Susman and Schutz (1983), and the Swedish car industry by Fredrickson and Lindmark (1979). Berger and Piore (1980), also note that firms use subcontracting where demand does not exist to permit the continuous mass production of a particular product, using capital intensive Fordist technique. In addition, these authors report that in the garment industry, the stable portion of demand is composed of such items as work clothes and jeans which are largely factory produced. The unstable component of demand such as quality ladies' and children's fashion ware, for which demand is both limited in scale and highly

volatile because of fashion changes, is unsuited to factory production and is largely contracted out. Scott (1982a), Sayer and Morgan (1983), show that the assembly and testing of unstandardized printed circuit boards is often subcontracted in the electronics industry. This is to facilitate the speed with which a new product moves from the design stage to production so as to ensure success in the market.

Production subcontracting according to Rubery and Wilkinson (1981), Scott (1983d), is also used in situations where a firm's production technology requires an efficient scale considerably greater than the firm's own requirements for the part, subassembly or process. Such parts tend to be separated from the main production process and put out to a subcontractor. The subcontractor, by working for a number of contractors, can achieve a larger and more efficient scale of operation than any individual contractor could have achieved for that particular process or part. In many instances, the subcontractor will utilize highly sophisticated production technology. Rubery and Wilkinson (1981), identify this form of subcontracting in the shoe industry.

The use of subcontractors when technology and labour organization are required, according to Holmes (1986), occurs when economies of scale can be attained at the level of individual machine rather than the factory, as in sewing in the garment industry. Such arrangement is found in the Japanese automotive industry by Sheard (1983), where the need to save capital on the part of the contractor encourages the development of specialization subcontracting.

Watanable (1971), Friedman (1977), Berger and Piore (1980), Rubery and Wilkinson (1981), Sabel (1981), and Scott (1983a), Lawson (1992), are explicit on three interrelated but distinct aspects of the structure and nature of labour supply conditions as they influence the extent to which subcontracting takes place in a particular situation. For instance, Rubery and Wilkinson (1981), Peattie (1982), Lawson (1992), show that subcontracting provides an important means of minimizing the costs of labour. This is because, it acts as both a mechanism for ensuring wage discipline and as a method for segmenting the labour force. Watanable (1971), Friedman (1977), Berger and Piore (1980), Rubery and Wilkinson (1981), Sabel (1981), and Scott (1983a), Lawson (1992), are explicit on three interrelated but distinct aspects of the structure and nature of labour supply conditions as they influence the extent to which subcontracting takes place in a particular situation. For instance, Rubery and Wilkinson (1981), Peattie (1982), Lawson (1992), show that subcontracting provides an important

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Goveneur (1983), Alonso (1983), Beneria and Roldan (1987), Friedman (1977), Portes and Sassen-Koob (1987), and Lawson (1992), note that subcontracting is used to reduce labour union formation, and especially to counter union encroachment on the prerogative of managing the labour process. This is against the background that it is easier for unions to organise worker's resistance in large firms than in small firms. This is the so - called "segmentation of the labour market". Segmentation of the labour market according to Friedman (1977:122), "can be both the medium for and the result of the struggle for control over the labour process". Johnson and Johnson (1983), report that subcontracting is also used to ensure an adequate supply of labour, especially if general or specific types of labour not normally available for direct wage labour are required.

Alonso (1985), Beneria and Roldan (1987), and Lawson (1992), however, criticize production subcontracting for creating unstable, often illegal work opportunities, low pay, and substandard working conditions. In Mexico for instance, where subcontracting to cheap, nonunionized women workers in illegal sweat shirt shop or their home, is common, Lawson (1992), finds out that subcontracting results in low wage rates since many garment workers are women who combine domestic responsibilities with industrial home work. The women have tangible constraints on the amount of product they can turn out in any period of time. In Brazil, Watanable (1983), and Jenkins (1987), note that subcontracting results in a weak fragmented labour movement, interdependent linkages with specialized components producers. These generate more highly skilled and more stable jobs in formal firms and hence subcontracting is very weak, and translates into less autonomy for the subcontracted firm in the organization of production.

3.3 The temporal dynamics of production subcontracting

Holmes (1986), remarks that although some subcontracting relationships do remain stable over relatively long periods of time, it is probably more correct to view such relationships as being more fluid and dynamic. This is because the level of subcontracting will ebb and flow with the rhythm of business cycles. In discussing subcontracting resulting from the need to segment labour in order to reimpose market discipline on wages, Scott (1983a:244), notes that"a strong

overall hypothesis that emerges is that subcontracting tends to decrease in times of economic improvement, when manufacturers can absorb some degree of internal wage drift, but that it increases again as economic conditions deteriorate and strong cost cutting measures become imperative".

In another vein, Friedman's (1977), analysis of capacity subcontracting indicates the reverse pattern, with subcontracting increasing during boom periods and declining during downturns in the economy. Beyond these relatively short-run cyclical variations in the level of subcontracting, Nelson (1975), Clawson (1980), and Litter (1982), show that there are no qualitative shifts in the scale and nature of subcontracting associated with shifts from one phase of capitalist accumulation to another. Holmes (1986:96), however, argues that this assumption "is highly speculative and that it needs much more detailed empirical investigation". Using a cross-sectoral data and conceptualized as a diffusion process, Ajayi (2002), has shown that the growth in the adoption of productionm subcontracting over time is highly significant.

3.4 The locational structure of production subcontracting

Scott (1983d, 1986, 1988b), Scott and Kwok (1988), show that because external transaction costs between firms in the market, including transportation and communication costs increase with distance, production subcontracting thus promotes agglomeration. The propensity to agglomerate (locationally) increases further when the transactions involve small-scale irregular, unstandardized, or contact-intensive activities that have high unit linkage cost, or when firms seek to reduce demand fluctuations by increasing their customer base through locational clustering. Sheard (1983), also reports this form of spatial agglomeration in the Japanese *Kanban* system. Conversely, Storper and Scott (1989), show that in situations of intense external transactions between firms (external economies of scale) as a result of unstable market conditions, locational dispersal of production occurs. This is especially so when the transactions involve bulky, stable, standardised, or easily manageable activities that have low unit linkage costs. These activities according to Storper and Scott (1989:210) "contain primarily routine deskilled production processes and are dispersed to peripheral areas where labour and land costs are low."

Beyond cost considerations, [Pfeffer and Salancik 1978; Egan and Mody 1982; Hakansson 1982; Rosson and Ford 1982; Johannisson 1987; Johnson and Mattsson 1987, Burt 1989; Leung, 1993; Christerson and Appelbaum, 1995],

show that locational dispersal in production subcontracting is motivated by pre-existing social relations. While Harper and Goodner (1990), Linge (1991), stress the importance of locational dispersal when industrial agglomerations experience labour shortages, Hansen (1991), notes that locational dispersal occurs when peripheral locales possess an entrepreneurial culture. Jones and North (1991), stress that locational dispersal occurs when regions or nations adopt certain domestic sourcing industrial policies. Locational dispersal is also likely to occur when firms implement inbound transportation planning, using specialist freight services and electronic shipment tracking systems (Ramsdale and Harvey, 1990) or when firms adopt specific purchasing management strategies (Ahmed et al. 1991; Porter, 1991; Bradley, 1991; 1992; Ettlinger, 1992). Indeed, Ajayi (1998, 2003) have shown that over the national scale, production subcontracting is concentrated in a few locations especially where there is concentration of industrial concerns.

4. Conclusion

This paper has taken an overview of the existing literature on integration, industrial linkages and production subcontracting. This paper has shown that whereas, integration involves all forms of collaborative and co-operative ventures among industrial organizations over space, industrial linkages takes the form of purchases of inputs of goods and services from, or sales of output to another manufacturing firms. This includes all forms of contacts and flows of information and/or materials between two or more individual firms. Production subcontracting pertains to the breaking down of production processes into smaller units by firms, and this has become a major strategy of corporate organizations. It is clearly evident that most researches on the networks of interfirm relationships and particularly production subcontracting have been conducted most especially in the western world. Beyond these however, there is still the need for further empirical researches especially on the organization of production subcontracting at both the local and regional levels especially as it pertains to the variations in the operations of multinational corporations especially in developing countries of the world and Africa in particular.

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