

(Published in
Asia-Pacific Development Journal, vol. 9, no. 1, June 2002, pp. 65-87)

**SME SUBCONTRACTING AS BRIDGEHEAD TO COMPETITIVENESS:
AN ASSESSMENT OF SUPPLY-SIDE CAPABILITIES AND DEMAND-SIDE
REQUIREMENTS**

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SUMMARY

The current business environment is typified by fierce global competition and rivalries, more sophisticated and ever-changing final markets, and profound transformations in production technologies and supply organizations. Inter-firm subcontracting offers a ready short cut to enhancing productivity and other non-price determinants of domestic and international competitiveness. However, a more objective and systematic approach is needed to induce an on-going convergence of supply-side capabilities and demand-side prerequisites from the partner firms. A framework of 78 guidelines and parameters is proposed to assess and benchmark the capabilities and competitiveness of small and medium-sized enterprises (SMEs). Subcontracting preconditions from transnational corporations (TNCs) and large enterprises (LEs), 14 in number but involving 36 mostly composite variables, are derived from a large number of case studies. The survey and matching-up processes can additionally help relieve the chronic and acute shortage of data and information on SMEs, long a grievous constraint on policy efforts to foster SME sector development itself.

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INTRODUCTION

SMEs are, and will remain, the economic backbone of most developing countries in the foreseeable future.¹ Indeed, the promotion of SME development and competitiveness is a major area of policy attention within the Association of South East Asian Nations (ASEAN). Inter-firm networking is accorded a high priority under the envisaged regional co-operation and integration efforts, especially with SMEs acting as suppliers and subcontractors to LEs and TNCs both within and outside the grouping (ASEAN Secretariat 2000: 55). Concurrently, SME development issues are also under policy focus among the 21 developing and developed countries, spanning four continents, of Asia-Pacific Economic Co-operation (APEC) membership.² Generally, however, the SME sector has not developed, or fostered to grow, in an effective, speedy, innovative and/or sustained basis in many parts of the developing world, including within ASEAN.³

¹ SMEs are an important source of social and regional stability in terms of overall job creation and employment opportunities for women, and for those with limited skills and capital in particular. They can be found across domestic regions and in peri-urban areas, including many locations disadvantaged by access or poverty. The promotion of SME efficiency and dynamism can thus yield increasing social and economic returns in virtually all economies. Indeed, the threshold of tiger capitalism” of a conglomerate nature may have been reached along with the 1997/98 economic crisis among most of the first- and second-generation “miracle economies” in Asia. The crisis itself has induced a redirection of policies and institutions to focus on the basics or the fundamentals. As such, SMEs are bound to feature more prominently in the subsequent patterns of economic growth and restructuring with the coming years of the new millennium likely to be a decade of small and medium-scale firms (Lam 1999).

² Established in 1989, the first APEC SME Ministerial meeting was held in Osaka, Japan, in 1994 and the APEC Ad Hoc Policy Level Group was first convened in Adelaide, Australia, in the following year. This Group was then converted into a permanent Working Group in 2000. However, SME issues are also considered by other APEC Working Groups as they are of a cross-cutting nature sectorally.

³ Typically, the industrial structure remains characteristically “hollow” or “missing” in the middle -- reflecting the absence of a dynamic core of medium-size firms which constitute at present only a very tiny segment of the SME sector itself. On the other hand, this hollowness also mirrors the lack of dense networks or nexus of dynamic linkages and, by implication, of complementarities and collective

Against the above backdrop, this paper puts forward a modest and practical framework with four elements. Firstly, in terms of approach, it concerns the promotion of inter-firm networking with SME serving as subcontractors or suppliers to TNCs or LEs as partners.⁴ Secondly, the target beneficiaries are SMEs with the required capabilities and competitiveness regardless of the sectors or industries of their operation. Thirdly, a total of 78 parameters and guidelines are proposed for an objective and systematic assessment of SME capabilities and competitiveness on the supply side. As a by-product, the process will also reveals specific, but commonly shared, areas of need for capacity building and upgrading of the SMEs concerned. Lastly, 14 demand-side prerequisites, many of a composite nature, from TNCs and LEs are distilled from a large number of detailed case studies, of very recent vintage, on subcontracting in Asia.

The following discussion will first provide a rationale for the approach as noted above. It then specifies the range of parameters, benchmarks, guidelines and criteria which constitute the assessment framework of SME capabilities and competitiveness on the supply side as well as of TNC and LE requirements on the demand side. A number of suggestions for follow-up work and applications are mooted in the concluding section of the paper.

efficiencies between SMEs and LEs, conglomerates of businesses, or TNCs and their joint ventures and corporate affiliates (Altenburg 1999, and UNCTAD 1988: 15-20).

⁴ Supply and subcontracting are used interchangeably in this paper, whether or not they are driven by equity and other investments from TNCs and their local partners. Thus, the relationships so formed can be at arm's length but they should be durable, other things being equal, and not be of a one-off nature as in the purchase of ready-made products and widely available services off the supply shelves or the providers.

I. RATIONALE

Subcontracting and supply relationships with TNCs or LEs have come under renewed attention for several reasons.⁵ They are one of the few most important short cuts to leapfrog over the “traditional” barriers and constraints on SMEs and their domestic and external competitiveness.⁶ Other impulses for inter-firm linkages involving SMEs include the fiercer competition from global and regional producers, the rapid advances in information and communications technologies (ICTs) plus the consequent and profound transformations in industrial organization, and the increasingly demanding and ever changing final markets. But how do we limit and sustain the scope of promotion and intervention in the long run?

A. Imperatives in targeting

Focus and selection are inevitable as, firstly, government has limited financial, human, managerial, and administrative resources in support of SME sector development. What is more, popular aspirations and demands for improved public facilities and services are on the rise in an environment of dwindling resources at the disposal of a “leaner and meaner” government or a down-sized public sector virtually

⁵ Part two of UNCTAD (2001: 129-208) is devoted to a detailed examination of cross-border linkages among firms, both domestic and TNCs. See also UNCTAD (2000), Altenburg (1999), Gereffi (1999), Grunsvan (1999), Humphrey (1998) and Milton-Smith (1998).

⁶ Generally, subcontracting and other collaborative supply relationships would help shorten the period for capacity building and on-going learning needed by SMEs to come up with the required product quality and design, and delivery timeliness plus their on-going innovation and differentiation. All those are among the major bridgeheads to the competitiveness of firms, whether at the domestic or global levels. On the other hand, the TNCs and LEs can often be a valuable source of capital, quality collateral (in the form secure production subcontracts given to their SME partners), and modern technologies. Equally important, market access, and marketing and distribution expertise are on tap to SMEs through such inter-firm linkages. Indeed, the ready availability of capital, technology and markets has long been among the several insurmountable constraints and barriers facing most SMEs. For details as regards a variety of barriers and constraints on SME development, including a many on the policy side, see Wattanaputtipaisan and Lam (2001), Tambunan (2000),

across the developing world. On the other hand, there are simply millions and millions of SMEs -- especially in such larger economies as China, Indonesia, Philippines, Thailand and Viet Nam. As an approximate indication of magnitude, they are likely to be in the range of 8-15 million in number (including the so-called micro enterprises in both the rural and urban areas).⁷

Secondly, there are huge differences in the capabilities and competitiveness within the SME sector itself. Firms in the top layers of efficiency, innovation and growth-oriented entrepreneurship constitute a tiny minority, easily one per cent or less. Clearly, only a very small proportion of SMEs is viable as suppliers, or can be assisted to become and remain viable as subcontractors, to TNCs and LEs. Thus, by focusing on this limited segment of SMEs, the chances of success are much greater in creating and nurturing a small but efficient and innovative core of successful SMEs. Over time, this core may gain a sufficient mass, or may replicate and multiply across industries and sectors -- therefore raising the level of competitiveness and dynamism of all domestic enterprises as a whole. Indeed, it is not well appreciated that competitiveness embodies continuous upgrading both at the firm's level and system-

UNCTAD (2000), APEC (1998), International Labour Office or ILO (1997: 5-37), Ng *et al.* (1996), Pangestu (1996), and Hill (1995).

⁷ Indeed, the terms SMEs have not been consistently or uniformly defined even among various industries and institutions within a large number of countries. Meanwhile, up-to-date and consistent data and information are lacking regarding such basic parameters as the number of SMEs and their sectoral/industrial distribution; the composition their activities, inputs, and turnovers; the contribution of their activities to income and employment generation, and exports; and the domestic and external linkages they have with suppliers and customers as well as with technology and productivity-enhancing institutions etc. The shortage is both acute and chronic across virtually the developing region, including economies in transition. See Hall (2001: 18-23), Regnier (2000: 35-37), ILO (1997: 36-37), Hill (1995), and APEC (1994a and 1994b).

wide. It is as strong and durable as the weakest link along the value chain, one which stretches across various economic sectors and institutions, too.⁸

B. Competitive impulses

A key factor in maintaining market shares or gaining new markets relates to innovation-led and learning-driven improvements and differentiation in product and process plus other non-price attributes. Firstly, most SMEs have to face fiercer competition at the global and regional levels – a trend emanating from the increasing liberalization of trade, investment and other financial flows mediated via the World Trade Organization (WTO), and through such regional and subregional arrangements as the ASEAN Free Trade Area (AFTA) and related APEC initiatives. As such, the distinction between local and imported goods and services is becoming blurry (or less clear-cut) but a premium can still be earned with better, differentiated and niche-based products and services.

Meanwhile, consumer choices and market preferences have become more demanding, more sophisticated and constantly changing. This is a transformation both facilitated and fostered by the speedy progress in ICTs and, on the other hand, by more fundamental forces and attitudes of a non-economic nature as well. Such parameters as quality, reliability, health and safety, social equity in production and marketing, and environmental compatibility of products and processes are now major determinants of demands for goods or services, whether final or intermediate. So are other elements of competitive advantage including shorter product cycles and smaller production batches, more frequent design changes, mass customization, just-in-time sourcing, and exacting timeliness in delivery.

⁸ There is a large amount of literature on the concept and application of “systemic competitiveness”. See, for example, Esser *et al.* (1999: 62-85) and Altenburg *et al.* (1998) and the extensive references cited by them. See also Porter, Sachs and McArthur (2001: 17-23).

Secondly, a driving force behind the above market trends is the proliferation of complex networks of international production (NIP), which breaks down the value chain into discrete functions and activities. These are then located wherever inputs and supplies can be produced or outsourced most competitively and timely; where they can improve or upgrade the NIP-based or related access to resources, capabilities, and knowledge and innovations; or where they can help penetrate important and growing markets, market segments, and market niches. There is, indeed, an on-going shift from large-scale vertical integration of hierarchies (of the Fordish and Taylorish varieties) to flatter horizontal production networks, involving smaller enterprises but interlinked nevertheless by on-line and real-time interaction between (alternatively) customers/producers. Lean stocking and production, and just-in-time delivery are thus an impulse for as well as a result of inter-firm collaboration for enhanced collective productivity at various parts of the value chain within and/or across border (Meyer-Stamer 1995: 143-146).

In these contexts, the proliferation of NIP opens up new possibilities and great opportunities for subcontracting. In fact, the competitive stakes have expanded significantly to encompass complex, high-value products and services with their attendant generation of income, employment, and knowledge-driven and innovation-led proprietary advantages (more later). Outsourcing may now range from original equipment manufacturing, complete-package production, product design and engineering, research and development (R&D), to various other high-end support services. On the flipside, however, enterprises and industries outside the NIP circuit are likely to reach a plateau in productivity and competitiveness; in the worse-case scenario, they may encounter diminishing returns and stalled growth with the corresponding adverse impact on employment, investment, business confidence and innovation (Porter, Sachs and McArthur 2001: 17).

II. SUPPLY-SIDE ASSESSMENT FRAMEWORK

A. Nature of competitiveness

Capabilities, just like a rich base of physical resource endowments, are not sufficient to guarantee present or to sustain future competitiveness.⁹ There are deeper factors and forces at work in transforming capabilities into comparative and competitive advantage.¹⁰ Competitiveness is not a static concept (Porter, Sachs and McArthur 2001: 16-19). It is the result of learning, upgrading, differentiation and innovation processes for continuous productivity enhancement as firms adjust competitively to an environment of constant change but still of ever-fierce competition and rivalries. These processes are inevitable: simple, initial price advantage will be exhausted or eroded over time by the rising costs of labour and land, widening infrastructure shortages, more intensifying competition, and the increasing fragmentation and sophistication of final markets. Playing a key role in sustaining competitive advantage are learning and innovation which, in turn, can be much further leveraged by inter-firm linkages -- among other internationalization and re-engineering efforts ranging from mergers and acquisitions, being part of clusters

⁹ In business management terminologies, competitiveness at the national level is normally understood as the extent to which the domestic environment in its totality is conducive to entrepreneurship and business activities. Industry-level competitiveness refers to the extent to which an industry or sector has the potential for growth and/or to generate an attractive return to direct and/or other forms of investment. Meanwhile, firm-level competitiveness is the effectiveness in the production and delivery of goods and services at lower costs than those of competitors, or at a price premium because of superior or differentiated quality, design and delivery (Kay 2002:10).

¹⁰ These including not least the availability of socio-cultural capital (such as work ethics, trust, moral norms, ethnic- or community-based networks etc.), the supply and affordability of economic and social infrastructure and services, the quality of domestic policies and institutions, the extent of development-oriented governance, a culture or tradition of entrepreneurship and innovation, research and development institutions and facilities, and the auspiciousness of external conditions and circumstances. Some of these components, in particular development-oriented governance, have posed contentious issues both before and after the publication of a study by the World Bank (1993) on the East Asian (economic) miracle.

and networks of collaborative firms, to the formation of specific (and time bound) strategic alliances and technology partnerships.

Competitiveness has a foundation in microeconomics, whether or not it is measured and benchmarked at the industry, sectoral or national level (Meyer-Stamer 1995: 143-146; and Porter, Sachs and McArthur, 2001: 21). In this context, the issues of and the strategies for promoting national competitiveness have attracted world-wide attention – especially from those in business, government and, lesserly, the academia. Among the most well-known cases in point are the current and growth competitiveness indices (or CCI and GCI) and the world competitiveness index, as reported annually by the World Economic Forum (WEF) and the International Institute for Management Development (IMD) respectively. Comparatively, however, the measured and benchmarked base of competitiveness at the firm's and, to a lesser extent, at the industry's level are much fewer and far in-between -- at least as far as published or publicly available publications and reports are concerned. Even rarer are those periodically carried out for or on behalf of SMEs – for obvious reasons of huge size, unavailable data, and substantial transaction costs involved.

As can be expected, the celebrated diamond of competitiveness conceived by Porter (1990) serves to underpin the CCI (known simply as the Competitiveness Index before the 2000 Report), hence its emphasis on the importance of advanced strategies and superior coordination at the corporate level behind the shifting patterns of corporate competitive advantage.¹¹ However, these integral components of

¹¹ Namely (the sophistication of supply) factor inputs and conditions; (the demanding nature of) demand conditions; (the availability of innovative and complex) related and support industry; and (the presence of advanced and superior) corporate strategy, structure and rivalry. Government and chance (resource endowments) do have an impact and influence on various interactions among the four angles. Porter's diamond of competitiveness captures much of the dynamism and non-linear relationships and uncertainties of significance to business executives and management practitioners (Lall, 2001: 1510; and Momaya, 2001: 49-52 and 128)

competitiveness are more typical of firms operating in the OECD business environment. Such an environment is far from similar to that in which SMEs operate in this part of the developing world. In addition, the business challenges to and the perceptions of OECD-type executives are certainly far from comparable to those of SME entrepreneurs (more below). There is as well a need to minimize the volume of data required at the initial stages or periods of any sample exercise – a pragmatic consideration given the chronic and acute lack of data and information on SMEs, as noted previously.

Comparatively, the 78 guidelines and parameters constituting the supply-side assessment framework are reasonably comprehensive in scope and self-evident in content. They do not pretend to be exhaustive or exclusive, however. As with any statistical sampling exercise, there is certainly room for both revision and fine-tuning over time. Indeed, even such renown and widely accepted indicators as, for example, the two WEF global competitiveness indices (CCI and GCI) are shown to be far from totally solid and vigorous in terms of both the underpinning theory and applied methodology.¹² In addition, there is a host of complex issues which had to be resolved and practical compromises, adopted in compiling the CCI and GCI (Porter, Sachs and Macarthur 2001; and Lall 2001).

B. Assessment guidelines and parameters

A change in perceptions and practices, indicated earlier, is implicit in the efficiency-oriented (rather than poverty-alleviation) approach to foster SME subcontracting. The framework and modality to benchmark SME capabilities and competitiveness, as suggested below, involves another mindset change, namely the

¹² Lall (2001: 1509-12 and 1515-19) provides a detailed assessment of related theoretical and methodological issues and problems associated with the WEF CCI and GCI; the latter was introduced in its present form from the 2000 report. See also several pertinent references cited in Lall's article.

need “to get our hands dirty”. The persisting lack of up-to-date statistics and comparable information on SMEs, and their various price and non-price attributes, is simply grievous among many developing countries, most of those in Asia included (ILO 1997: 36-37). This is a surprising weakness because of the critical role of data and information for rational policy making and monitoring and, on the other hand, in view of the recognized importance of SMEs among all the major stakeholders.¹³

The framework detailed below can be regarded as a first step on the long road ahead. Its objectives are threefold. One is to indicate with considerable robustness the potential readiness as subcontractors and suppliers to TNCs and LEs among the SMEs under consideration. Two concerns a precise identification of the main weaknesses and constraints for remedial support and assistance from government as a major stakeholder and, on the other hand, from TNCs and LEs as potential clients and customers of the sampled SMEs. Three relates to a comparative monitoring and benchmarking of the evolution of SME capabilities and competitiveness within the industries concerned (both inside and across borders) at specific periods over time.

The guidelines and parameters in this framework are compiled with four major points of reference. Firstly, there are the CCI and GCI, and their constituent executive survey questionnaires, from WEF. Secondly, there is the topology of subcontracting relationships extracted from a large number of recent case studies (as presented in section III below). Thirdly, there are major issues encountered in fostering SME sector development as recently discussed in Wattanapruttipaisan and Lam (2001: 19-26), Regnier (2000: 150-165), Tambunan (2000: 167-180) and Altenburg (1999: 30-38). The fourth reference point are various SMEs-related surveys, both shorter in length and more limited in scope, available in Hall (2001:

¹³ Such as those involved in the promotion of SME development directly in government and the civil society movement, or indirectly through research within the

115-122), Momaya (2001: 142-152), Tambunan (2000: 95-109), and UNCTAD (1998: 188-195).

The 78 guidelines and parameters of SMEs capabilities and competitiveness are conceptually grouped under 7 headings. The overall environment in which the (sampled) SMEs operate, categorized as “Nature and readiness of firm”, is approximated in 12 questions. “Entrepreneurial characteristics” (13 questions) are the driving force of firms, whether they are LEs or SMEs. The 10 questions each in “Capabilities” and “Competitiveness” are indicative, by and large, of the initial conditions and circumstances of the SMEs concerned. The category “Production organization”, with 11 questions, is a proxy of the potential for productivity upgrading and competitive growth through innovation-led, learning-based and investment-driven transformation of the activities of the pertinent SMEs. In a way, it mirrors the newly introduced GCI while the groupings on “Capabilities” and “Competitiveness” are an approximation of the CCI. There are 11 questions each in “Finance” and “Human resource development” (HRD) although the importance of the later grouping in facilitating integration into NIP has tended to be taken for granted.

Table 1. Guidelines and Parameters on Supply Side Capabilities and Competitiveness of SMEs

A. Nature and Readiness of Firms

1. How old is the firm or how long has it been in the business?
2. Does the firm have any affiliate or subsidiary business(es) – backward, forward or lateral.
3. Has the firm ever served as a subcontractor to business or government? If yes, when or why the subcontracting relationship stop?
4. Does the firm try to get any supply subcontract from private business? If so, since what year or for how long has it been trying?
5. Has the firm tendered for government supply contracts? If so, since what year or for how long has it been trying?
6. Does the firm have a strategic, growth- and outward-oriented outlook?
7. Does the firm have a customer-driven approach, with regular feedback from customers and clients?
8. Does the firm pay much emphasis to after-sale services?
9. Does the firm provide warranties on its products and services?
10. Can the firm afford to meet the large volume of order or business as a subcontractor?
11. Is the firm dependent on a principal family member, and run entirely by family members in senior positions?
12. Does the firm have government support/subsidy, or participate in any government training or business support services?

B. Entrepreneurial Characteristics

1. Is the owner/manager forward or outward looking, having a vision and highly innovative?
2. Is the owner/manager committed or eager to improve and upgrade operations on an on-going basis to meet the international standards required?
3. Does the owner/manager take various initiatives to network and seek business opportunities?
4. Is the owner/manager a risk taker and how are risks managed?
5. Does the owner/manager insist on efficiency, timeliness and quality in stocking, production and delivery?
6. Is the owner/manager persistent to overcome difficulties in business upgrading, expansion or diversification?
7. Does the owner/manager commit to the work contract and deliver on time regardless of the profit margin or other constraints?
8. Does the owner/manager set the firm's goals and objectives in a forward looking and challenging manner?
9. Does the owner/manager have systemic planning and monitoring of results and outcomes?

10. Does the owner/manager invest in ICTs-based systems for information gathering and dissemination?
11. Does the owner/manager try to network with TNCs, LEs and other SMEs?
12. Is the owner/manager independent and self-confident?
13. Does the owner/manager have good negotiating skills and experiences?

C. Capabilities

1. Is the firm's business growing in the past 3 years?
2. How much is the monthly/quarterly/annual turnover of the firm's business?
3. What are the firm's most important products or services, and what are their monthly/quarterly/annual turnovers?
4. Does the firm have the scope and capabilities for moving up the value-added chain?
5. Does the firm have low and stagnant (or rising) market share?
6. Does the firm have good quality control and assurance systems, or pay emphasis on quality?
7. Does the firm seek to improve and upgrade technologies, and is access to information on technologies and the financing of techno-upgrading a problem?
8. Does the firm value research and development (R&D), and how much is its spending on R&D (in the past three, two or one year)?
9. Does the firm try to network with R&D and productivity-enhancing institutions and centers?
10. Has the firm received any business advisory and support services, or information on them, from government or trade associations?

D. Competitiveness:

1. Do the firm's products have a competitive advantage in price?
2. Do the firm's products have a competitive advantage in location (close to markets and supply sources etc.)?
3. Do the firm's products have a competitive advantage in quality?
4. Do the firm's products have a competitive advantage in reliability and after-sales service?
5. Do the firm's products have a competitive advantage in terms of health and safety?
6. Do the firm's products have a competitive advantage in timely delivery?
7. Do the firm's products and processes have a competitive advantage in terms of environment friendliness or compatibility?
8. Do the firm's products have a competitive advantage in terms of social equity concerns?
9. Does the firm try to create its own brand name, or have recognizable or differentiated products?
10. Does the firm produce or try to produce "niche" goods and services?

E. Production organization

1. Does the firm have the production capacity to diversify and/or meet the changing needs of its clients or customers?
2. Does the firm apply the just-in-time stocking and delivery systems?
3. Does the firm apply total quality management-- e.g. quality improvement, quality assurance and quality cost control?
4. Is the firm concerned with safety measures?
5. Does the firm have production activities based on new/modern technologies?
6. Does the firm have or try to receive certification under ISO 9000 (quality) and/or 14000 (environment) series?
7. Is the firm aware of, or interested in, joining international production/supply systems or chains?
8. Is the firm constrained by intellectual property right (IPR) issues in obtaining inputs, and in product development and commercialization?
9. Is the firm making IPR royalty and licensing payments for processes and other technologies used in production and marketing?
10. Are these IPR payments a heavy burden on the firm's cash flows, and what are the alternative options?
11. Does the firm have modern, ICTs-based stocking, production, delivery and marketing systems?

F. Finance:

1. Was the firm's start-up capital provided by banks or from the informal market?
2. Is the firm's working capital coming from banks or from the informal market?
3. Are the current financing practices and requirements from banks a major constraint on the firm's financing needs?
4. Does the firm have low and erratic profits, or have sustained profitability?
5. Is the firm's market capitalization or asset value on a rising trend?
6. Does the firm accept payments after delivery of products or services, or provide credit to customers and clients?
7. Does the firm have enough capital or quality collateral for the expansion of its business?
8. Does the firm have proper accounting records, and other financial documentation using standardized reporting formats and mechanisms?
9. Does the firm present reliable and transparent financial information?
10. Does the firm have a proper bankable business plan with reasonable details for borrowing or financing purposes from bank and other institutions?
11. Does the firm have alternative, non-formal sources of financing (besides the banks), and are they reliable in times of need?

G. Human resource development

1. Does the firm have training courses and facilities for on-going improvements or upgrading of its employees' skill base?
2. Is the firm prepared to give time off for workers to attend short training courses (3 to 5 days) sponsored by government or other bodies?
3. Does the firm have appropriate HRD systems and modalities in term of performance appraisal?
4. Does the firm have appropriate HRD systems and modalities in term of career development?
5. Does the firm have appropriate HRD systems and modalities in term of building effective teamwork?
6. Does the firm have appropriate HRD systems and modalities in term of ensuring flatter and more flexible management structure?
7. Does the firm have an active participation of its employees -- including in making suggestions for improvements in production, quality control and marketing?
8. Is it difficult for the firm to keep its skilled workers, or to recruit new skilled workers?
9. Does the firm lay-off workers in times of difficulties?
10. Does the firm try to become a learning organization over time?
11. Does the firm value or participate in inter-firm networking for enhanced capacity building and HRD?

In its current form, the assessment framework provides objective and comparable data and information on supply-side capabilities and competitiveness among the sampled SMEs, regardless of the industries or sectors they may be operating in. The questions used in the framework are for direct interviews although they can be easily adapted or modified as statements for other evaluation approaches or purposes at the enterprise level. More importantly, they are substantively direct and self-evident for the practical purposes at hand. Complex questions, especially those involving weighty judgments and lengthy multiple choices, will encounter resistance from respondents, create confusion in direct interviews, and yield a very low reply rate in mail surveys. Typically, such a rate is below 15 per cent despite

second-wave mailing of questionnaires, and follow-up reminders by telephone and other means.¹⁴

Approximately 22 per cent of the guidelines and parameters (17 out of 78) are largely quantitative in content. In comparison, the 1999 CCI comprised 173 variables with about 38 of them (or 22 per cent, too) being quantitative in nature (Lall 2001: 1516). A more difficult issue is the assignment of a point scoring system for the questions, and of relative weights for the 7 groupings under the framework. Initially, a rating scale of 1 to 5 (top score) is proposed for the answers to the 78 questions.¹⁵ A relative weight of 20 percentage points is assigned to entrepreneurship, and of 15 per cent each to production organization and finance -- given the importance of these variables in SME start ups, upgrading and diversification. The four remaining categories will each have a relative weight of 12.5 percentage points. In comparison, the CCI uses a rating scale 1 to 7 while the distribution of relative weights among the 8 groupings is relatively narrower in the range of 11.1 to 16.7 percentage points each for six of them (with the remaining two given 5.5 points each). The supplementary ninth category on business operations and strategy (involving 13 variables) is not given any relative weight.

It should also be noted that the policy and institutional environment does not constitute a separate subgroup in the assessment framework as it does in the WEF

¹⁴ See Momaya (2001: 68), Regnier (2000: 105-106) and Tambunan (2000: 96). Notably in particular, chapter III (pp. 35-65) of UNCTAD (1998: 186-187) was based on results from a response rate of less than 10 per cent (78 replies from FDI receiving firms and 86 from investing enterprises).

¹⁵ Quantitative answers will have to be viewed against the relevant quantitative benchmarks for rating purposes. As appropriate, these yardsticks will have to be derived from the available data (e.g., the invested capital or sales revenue as reported by the sampled SMEs can be compared to the levels of investment or business turnovers as officially specified per the corresponding class or category of SMEs concerned). In the absence of such data, they will have to be rated against appropriate proxies (such as the average levels of investment or business turnovers of SMEs in

indices. Matters concerning policy, institution, technology and infrastructure are addressed directly under the pertinent categories or groupings on SME capabilities or competitiveness (see footnote 18 below). In addition, framework questions are deliberately simple and direct; the responding SMEs are not required to provide an informed judgment or answers to issues which are complex, weighty and relatively generalized (less situation-specific). The executive respondents to the WEF, for example, are posed with such questions as “What is your country’s position in technology relative to world leaders?”, “Are government programmes successful in promoting the use of ICT?”, “Is the judiciary independent from the government and/or parties to the dispute” and “How common are bribes paid in (various circumstances)?” (Mcarthur and Sachs 2001: 40 and 46). Clearly, a well informed assessment or fully candid answer are unlikely to be forthcoming from the typical SME entrepreneurs and managers in many developing countries, those in Asia included,

III. DEMAND-SIDE REQUIREMENTS AND PRECONDITIONS

The impulses and imperatives for SME subcontracting have to be matched up against the practices and preferences of TNC and LE partners; convergence cannot be expected as a matter of course. The topology presented below highlights the different stages and the key parameters in the formation and deepening of subcontracting and supply relationships. It is distilled from a large number of recent case studies covering many SMEs and other business concerns operating in, among others, China and India, in such middle-income countries as Malaysia and Thailand, in high-income Singapore and Republic of Korea, and in Viet Nam which is an economy in market-based transition. The activities involved include agriculture and agro-processing (e.g.,

similar or related industries, or of other SMEs in the same industries involved in the sample survey)

coffee, cocoa, chili, tomatoes, potatoes, vegetables etc.), standard-technology production both as out-sourced inputs and full-packages supplied under brand names (such as textiles and garments, packing materials, plastic products, detergent paste, electrical goods, jewelries etc.), and sophisticated manufacturing (including machine tools, parts and components for motor vehicles, telecommunication equipment, consumer electronics products etc.). The TNC and LE partners are well known globally in their own areas of operations such as, to note just a few, Nestle, Unilever, Pepsi Foods, Christian Dior, J C Penney, Toyota Motor, Volkswagen, Intel, Hewlett Packard and Motorola.¹⁶

A. Topology of subcontracting relationships

One, TNCs and LEs have their own agenda and interests which may not be the same as those of their potential SME suppliers or subcontractors. They tend to invest in building up SMEs capabilities and competitiveness only when the investment can be expected to yield an attractive return within a reasonable period, or can help their strategic efforts in diversification and differentiation -- in products and product range, supply sources, and market locations and segments. On the other hand, however, successful subcontracting relationships have often culminated in the sourcing of 75-100 per cent of the local subcontractors' output. Among the notable examples in this regard are Nestle in China (local packaging materials), Unilever in Viet Nam (detergent paste), several lines of processed foodstuffs in India, first-ranked hardware supplies to Intel Malaysia, and Toyota Motor Thailand (parts and components).

¹⁶ There is a very large number of SMEs subcontractors and suppliers involved -- particularly in contract farming, textiles and apparel manufactures, consumer electronics hardware production, and the production of automotive parts and components. For sources, see Momaya (2001), UNCTAD (2001 and 2000), Regnier (2000), Tambunan (2000), Altenburg (1999), Altenburg *et al.* (1998) and UNCTAD (1998).

Two, most potential SME subcontractors initially do not have the minimum base of skills and know-hows required to absorb new and innovative technologies and management practices. Meanwhile, self-improvement and self-upgrading are severely constrained by inefficient and inadequate infrastructure, limited information and contacts, plus insufficient financing resources. Thus, TNCs and LEs may find it too costly, time consuming or risky to bring these SMEs up to the expected standards and criteria. In this connection, the key role of government facilitation is well illustrated by many successful examples of support to and upgrading of local SME as subcontractors to, among others, Hewlett Packard in Singapore (under the Local Industry Upgrading Programme), Intel in Malaysia (under the “Pioneer” scheme and Vendor Development Programme), and Motorola in China (in collaboration with the State Development and Planning Commission).¹⁷ Such public sector assistance is normally mediated through the provision of (additional) incentives and assistance (both tax and non-tax measures). These can be counter-balanced to a considerable extent by (implicit or explicit) performance requirements on TNCs or LEs – including those concerning the provision of human resource training, and technology transfers and adaptation – which are, in any case, not incompatible to the WTO Agreement on Trade Related Investment Measures (TRIMs).¹⁸

Three, an important counterpoint to public-sector incentives discussed above comes from a variety of support measures extended to their local SME suppliers by TNCs and LEs themselves. They are more likely to initiate inter-firm linkages when

¹⁷ In particular, Motorola has been operating in China since 1987 and it is one of the largest foreign investors there (with some US\$ 3.4 billion in sunk investment). Local procurement is expected to be worth more than US\$ 1.5 billion, and the number of local suppliers, more than 1,000 by the end of 2001 (UNCTAD 2001: 150).

¹⁸ In this connection, some of the “best practices” in, and proven applications of, assistance and support from both business and government can be identified as examples for possible replication. They are currently the subject of a separate (but

the technological and managerial gaps between them and their local SME subcontractors can be bridged through capacity building. It is the technology and human resource factors that determine the initial patterns of subcontracting relationships which, basically and typically, involve less complex production processes and relatively low product quality, provided that the SMEs concerned can meet minimum social security and labour standards. Loan guarantees, capital in cash and kind (superior inputs, machinery, better organization of work flows etc.), and various types of training and skill upgrading are often made available by TNCs and LEs to their SME partners not just for business start-ups and/or skill development; such assistance is also provided to facilitate the subsequent technological upgrading and scale expansion of the SMEs concerned, to mutual benefit. Indeed, capacity building and other support services from TNCs and LEs are critical in certain industries, and in economies at lower levels of development or in the process of market-based transition.¹⁹

Four, trade and investment liberalization and the consequent proliferation of NIP have widened greatly the window of opportunities for local SMEs virtually across the globe; but they have raised steeply the stakes for them as well (Altenburg 1999: 30-32). TNCs, LEs and their SME partners have to manage the intensifying

parallel) research effort, with special emphasis on the promotion of inter-firm subcontracting, being undertaken by the author.

¹⁹ This applies particularly to contract farming where the transnational food processors have extensive access to research-based improved, hybrid and genetically modified seeds and plant varieties. Machinery and equipment, and even capital are often made available to SME subcontractors and suppliers in economies of low-income or in market-based transition due to the acute shortages of foreign exchange and financing resources for enterprises, and/or the small size of the private sector itself. Moreover, the one-way provision of better and more innovative technologies is virtually the norm in subcontracting relationships involving complex manufacturing operations and transformation of inputs. LG Electronics in India, for example, make use of advanced and systematic techniques and approaches for technology transfers and information dissemination to linked enterprises there. For specific details, see

competition from many more players and other enterprise networks (including NIP), the unrelenting march of technological progress, plus the greater sophistication of consumer demand. A deepening of increasingly complex relationships over time will be necessary. But the associated transfer of ever more advanced knowledge and technologies from TNCs and LEs, and the very close interactive feedback (on line and in real time) with their SME partners cannot be expected as a matter of course. Such deepening is positively and greatly influenced by forward-looking entrepreneurship and continuous supply-side upgrading on the part of SME subcontractors concerned. The former includes business visions and the growth- or export-orientation of firms while their technological and skills base, and facilities for on-going learning are important parameters in the latter.

Five, there is thus a continuous process of “creative destruction” with less efficient and less nimble suppliers being squeezed out and replaced by other local subcontractors, by new comers or other TNCs, or by imports themselves. In addition, many existing inter-firm relationships have been broken up, or have been transformed through concentration and consolidation among local subcontractors to achieve better collective efficiency. Indeed, the local partners of TNCs and LEs will have come increasingly closer to international standards and norms as regards quality and design, price and delivery scheduling. As such, key and reputable SMEs tend to get larger volumes of order as well as purchases involving much higher value-added products. Many of them have successfully graduated through this learning process from fourth-tier through to first-rank suppliers, to full-package and original equipment producers, and to innovative and specialist subcontractors. The knowledge and expertise so gained, in fact, have enabled a large number of them – from China, Malaysia,

Singapore and Thailand, for example -- to become business conglomerates and (third-world) TNCs in their own right via the successful externalization of their learning-based and then research-driven proprietary and other advantages.²⁰

Six, over-dependence on one or a few large TNCs or export-oriented LEs has serious downside risks to SMEs suppliers in a global economic downturn such as the current one in 2001/02, especially for the electronics industry. The management of subcontracting relationships is important in this context. Intel Malaysia, for example, has assisted subcontractors to expand as regional and global suppliers but the company normally does not aim to purchase more than one fifth of their suppliers' output volume at this expanded stage. On the other hand, long-cemented and dependable subcontracting relationships will create the mutual trust and confidence, and inter-personal networks needed for assistance and survival. In particular, bridging foreign exchange and other support measures were extended by TNCs to a large number (but obviously not all) of SMEs subcontractors in difficulty during the 1997/98 East Asian economic crisis. Such assistance contributed to their speedy recovery and bouncing back during the crisis aftermath.²¹

²⁰ See the references cited in the previous footnote for details concerning specific cases of the successful graduation of many SMEs into first-rank suppliers and their transformation into transnational businesses. This is a process which can take several decades but many of these home-grown TNCs from East and South-East Asia are now well known regionally and, in lesser number, globally as well.

²¹ From the available (but far from complete) data, the number of SMEs within the APEC region was growing at an (unweighted average) rate much slower, 2.6 per cent, than that of gross domestic product (GDP), 4.5 per cent between the beginning and the late 1990s. On the other hand, job creation within the SME sector was rising faster (at almost 3 per cent) than total employment growth (just under 2 per cent). However, both the number of SMEs and SME sector employment were expanding faster than GDP and total employment growth respectively during 1997-1999. See Hall (2001: 12-13), UNCTAD (2001: 146-149), and Regnier (2000: 149).

B. Subcontracting preconditions and other requirements

The topological of various stages and key parameters in subcontracting relationships, discussed above, serves to underpin the 14 demand-side preconditions (involving 36 variables with many of a composite nature) presented in table 2 below. It is well known that TNC and LE requirements are very stringent from the point of view of most SMEs. Indeed, such non-price attributes of competitiveness as design and quality, reliability, health and safety, and after-sales service have become greatly important at a deeper or more complex stage of subcontracting, even if the subcontracting relationship itself was initially founded on cost advantage. At the same time, such business practices as offering product warranties, extending credit for delivered products, and the attachment of stringent penalty clauses for under-performance to purchase contracts are not traditionally adopted or totally expected by most SMEs in developing countries (Momoya 2000: 160-161, and Altenburg 1999: 32-34). Mindset changes are needed in this micro-level context, too.

Table 2. Some Major Prerequisites for SME Subcontractors

1. Subcontractors must accept and comply by pre-specified standards and guidelines concerning (a) quality, (b) cost and (c) delivery.
2. Subcontractors must develop methodologies and apply means to ensure continuous improvements in (a) quality, (b) cost and (c) delivery.
3. Subcontractors must adopt just-in-time delivery systems and scheduling
4. Subcontractors must maintain adequate inventories, and their warehousing, at their own costs.
5. Subcontractors must extend credit, and accept payment after use or after delivery
6. Subcontractors must accept total responsibilities for parts, components, and products, including the provision of back-up and after-sales services.
7. Subcontractors must accept penalties for non-performance and under-performance -- such as in cases of product rejections and defects, and delays in delivery.
8. Subcontractors must accept regular checking and periodic audits of their:
 - (a) internal organization – including production lot size, set-up time and through-put time, and production lead time
 - (b) conditions of the work place and machinery

- (c) schedules of maintenance, repair and replacement for buildings, machinery and equipment
 - (d) lay-outs of factory and work flows -- ranging from floor painting and colour coding, idle machinery time, to cleaning and recycling of waste and surplus materials etc.
 - (e) management of technical resources, R&D facilities, sourcing and inputs etc
 - (f) product defect, rework or repair, and reject ratios
 - (g) warranty repair costs (in terms of gross sales etc.)
 - (h) evaluations by customers and clients
 - (i) human resource development policies and practices, and facilities for on-going learning and training;
 - (j) industrial and worker relations, including amenities for workers and support for their social welfare
9. Subcontractors must resolve without undue delay detected problems (found in number 8) and, as far as practicable, ensure their continuous improvements over time
 10. Subcontractors must set up ICT systems for real-time, on-line interaction with customers and clients backwards and forwards so as to be more in tune, and to move nimbly, with changing market and business conditions.
 11. Subcontractors must be speedy in incorporating new and innovative suggestions, ideas and techniques into their own product and service lines.
 12. Subcontractors must develop joint programmes for R&D – including in the concept and design stages for new products, in engineering and improving the design and quality of current products, and in their testing and test marketing.
 13. Subcontractors must minimize the time and cost in incorporating basic results from joint R&D, and in improving or differentiating the existing elements of their production and delivery processes into new and/or additional sources of value
 14. Subcontractors must apply the same principles and requirements to their (secondary) suppliers of products and providers of services.

Nevertheless, the case studies cited above also indicate that the exacting subcontracting environment from TNCs and LEs is, to a considerable extent, offset by a wide range of support provided to their SME suppliers and subcontractors. Such assistance is specifically targeted and is largely one-way in nature initially; it is also not limited to just business start-ups and technological capacity building as discussed previously (see also footnotes 20 and 21 above). Some selectivity is normally involved, however. Members of the Toyota Co-operation Club in Thailand, for

example, must have a minimum level of annual sales to Toyota Motor Thailand (TMT) of US\$ 120,000 for the past three years.²² There is also some flexibility at the initial stages in subcontracting relationships. SMEs can deliver in smaller quantities in meeting contract requirements as facilities and processes for production, servicing and delivery are being geared up. In addition, local sales of surplus or second-quality output (but not under brand names) are possible to enable SMEs take advantage of economies of scale and scope.

On the other hand, however, there is little room for compromise on quality. Indeed, certification under the International Organization for Standardization (ISO) 9000 series of standards apparently is expected and is thus no longer an option for suppliers and subcontractors to TNCs and export-driven LEs, especially in cases of ISO 9001 and 9002. Waste and costs will be minimized while quality uniformity ensured if the correct steps and operations are carried out or performed at the right time or right stage within the enterprise (hence the ISO-related questions in the supply-side assessment framework).²³ Also to be expected at the more advanced or deeper stage of relationship is the greater reliance by TNCs and LEs on their SME partners to carry out more sophisticated operations as well as to assume certain R&D functions. In the process, specialist knowledge is gained and expertise developed by the SMEs concerned; these proprietary advantages and achievements cannot be

²² However, club members are provided with advice and training in a large number of areas – including in quality assurance Kaizen steps (steady improvements), cost kaizen processes, and quality control circle activities. They are also encouraged to improve, on a voluntary basis (Jishiuken), the quality, cost and timeliness in delivery of their products or services as well as to learn from each other and to co-operate among themselves. There were some 2,100 suppliers and subcontractors as of January 2001, and TMT plans to source 100 per cent locally by 2003 (UNCTAD 2001: 146-147).

²³ The two are identical except for the exclusion of the design element from ISO 9002. The certification and compliance process can be both complex and time consuming; ISO 9001, for example, covers 20 separate system elements relating to design, development, production, installation and servicing.

substituted easily or effectively by TNC and LE partners with their in-house resources. A two-way, more even relationship is thus formed – one which is often referred to as “strategic alliances” in joint R&D, and in load and risk shedding and sharing along the value chain.²⁴

CONCLUDING REMARKS

To reiterate, a major effort has to be made by government and other stakeholders to build up and maintain an inventory of comprehensive, comparable and up-to-date statistics and information on SMEs for better policy design and evaluation. The assessment framework suggested above is a tentative step in this regard. Initially, coverage can be focused on officially registered SMEs which are likely to be among the top layers of capabilities and competitiveness in their respective industries and sectors. As such, they are also the primary beneficiaries of assistance from government plus TNCs and LEs in the formation and deepening of future linkages. This provides the necessary inducement for motivated co-operation and response.

The sample of SMEs can be limited to 100-200 in each industrial activity of priority importance for national development or of prospective innovative growth, with extensive forward and backward linkages, or of significant interests to TNCs and LEs. Mailed survey questionnaires are to be followed up with supplementary, face-to-face interviews. Given a coverage of 20 production activities at the initial stages of operation, the sample will comprise around 2000-4,000 respondent SMEs in size. For comparison, the 1999 CCI was largely based on about 4022 responses to the WEF Executive Opinion Survey from 59 countries. The number of countries was increased

²⁴ UNCTAD (2000: 85-97 and 1995: 156-161) provides a large number of examples of technological alliances and other partnerships between TNCs and developing countries' enterprises many of which are not local (joint venture) partners or equity-based affiliates.

to 75 from the 2001 Survey onwards, involving more than 4600 respondents (Lall 2001: 1515; and Porter, Sachs and McArthur 2001: 16-17).

Assessment results can be used to benchmark the relative capabilities and competitiveness of the sampled SMEs in specific industries. They will also reveal in a systematic way various areas of shared weaknesses and deficiencies on the supply side – thus providing a more precise and concrete picture of remedial needs for capacity building and other purposes. Equally important, the benchmarked SME capabilities and competitiveness can then be matched up against the requirements from TNCs and LEs, also presented earlier. This is to assess the extent of convergence and, by implication, the follow-up capacity building and other support services required in the formation of initial subcontracting relationships. Alternatively and as appropriate, the database can be disseminated in a multi-media format within the domestic enterprise sector to promote inter-firm linkages and other collaborative supply arrangements. Indeed, collective efficiency can be considerably enhanced through competitive rivalries among networks or clusters of co-operating firms.

Segments of the database can also be made available to TNCs and LEs looking for local suppliers in a business-like and systematic way, and not in an ad hoc or haphazard manner as has often been the case. In particular, a major drawback in business matching events and trade fairs is the lack of crucial and solid information as regards the current and potential capabilities of the producers or suppliers of the exhibited goods and services. This weakness has subsequently been responsible in a large part for the low rates of follow-up success relative to the signed memoranda of understanding on possible outsourcing and subcontracting. Indeed, a product or service may appear competitive on display but there is no guarantee that the needed supplies can be increased cost effectively while their quality and reliability remaining

uniform. In addition, the indispensable improvements in their design, quality and delivery may not be effected efficiently and flexibly over time.

In the above contexts, there is thus a solid justification for the implementation of a small-scale pilot project for testing purposes. Coverage is selectively limited to a small number of SMEs (say between 50-100 in each member of ASEAN), and to a small number (say 5) of production activities in such important industries as agro-processing, wood and metal working, and standard-technology manufacturing. Thus, the sample size will range from 2,500 to 5,000 responses. Specifically, project objectives are designed, firstly, to field-test and refine the parameters and guidelines on supply-side capabilities and competitiveness of SMEs; secondly, to develop methodologies, both qualitative and quantitative, for the training of interviewers and for the rating and benchmarking of feedback and results from sampled surveys and direct interviews; and thirdly, to set up workable systems for the formatting, storage and retrieval of data and information so collected.

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