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Guide to Supplier Development

For programmes to be implemented by industrial subcontracting and partnership exchanges (SPXs)

UNITED NATIONS INDUSTRIAL DEVELOPPEMENT ORGANIZATION

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Guide to Supplier Development

For programmes to be implemented by industrial subcontracting and partnership exchanges (SPXs)

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Introduction

Growing competition within the global economy has for many years been forcing enterprises to reduce their costs. However, traditional approaches have been limited to eliminating wastage within an enterprise. Another way has now opened up, through outsourcing. Cooperation with subcontractors can make them more efficient and thus enable goods to be purchased at lower prices.

Nevertheless, for their cooperation to be effective, suppliers and subcontractors have to address specific problems relating to their sectors of activity, special fields and working practices. UNIDO has accordingly prepared the present *Guide to Supplier Development* in order that subcontracting firms, through the advice and services provided by industrial subcontracting and partnership exchanges (SPXs), can improve their skills, capacities and, primarily, their competitiveness.

It is useful to distinguish between "supplier" and "subcontractor". While the former is a provider of products or services available in the market to an extensive clientele in large quantities, the latter is a provider of tailored products or services not normally available in the market to one customer in small quantities. Supply involves sales contracts whereas subcontracting involves manufacturing contracts. Since, with regard to the topic now being discussed, the programme covers suppliers as well as subcontractors, both terms will be used indiscriminately.

Compliance with the UNIDO code of conduct[1] and observance of the principles of good practice set out in it are essential for the purposes of such a programme. To achieve a high level of supplier development, the partnership idea has to be fully accepted both by the subcontractors and by the procuring (or contracting) enterprises, and it is thus necessary for enterprises to operate in a climate of equity and mutual trust, with a knowledge of and respect for each other's rights and obligations.

Supplier development is a broad concept aimed at strengthening the performance of subcontracting firms not only by enabling them to acquire the skills and capacities required of them by the main contracting (or client) enterprise but also by raising their awareness and assisting them in reducing their costs. The present *Guide* will thus define the necessary assistance to be provided to subcontracting firms in regard to cost control, pricing policy, technological improvements, quality management, certification, internal enterprise organization, logistics and the environment.

The preparation of the *Guide* has to a large extent been based on the experience of SPXs that have already promoted supplier development through the implementation of programmes. These are primarily the SPXs in Argentina, Chile, Costa Rica, Colombia, India, Morocco, Mexico, Paraguay, Slovakia, Sri Lanka, Turkey and Uruguay.[2] Programmes planned or carried out by those SPXs in some cases relate to specific problems or sectors and in other cases are general in scope.

The SPXs proposed and established by UNIDO have sometimes had over 20 years' experience in the area of advice and services provided to enterprises that use subcontracting arrangements. The supplier development programme should, once a certain stage of maturity is reached, become a goal that is incorporated in the tasks of the SPXs, which are thus perceived as actual centres for the development of enterprise

[1]See the *Code of Conduct for Industrial Subcontracting Supply and Partnership Relations*, UNIDO, Vienna, 1999.

[2]The directory prepared by UNIDO can be found at the following Internet address: http://www.unido.org/doc/371461.htmls. That site also provides useful contact details of SPXs for obtaining information on their programmes (fax and telephone numbers, etc.).

competitiveness, especially in the case of small and medium-sized enterprises (SMEs). UNIDO began to investigate this approach systematically in 1995.[3]

Although the *Guide* is intended for SPXs, the role of each of the parties involved (suppliers, procuring enterprises and experts) should not be overlooked. While they may not yet have become aware of the need to promote supplier development, one of the major tasks of an SPX will be to involve them in such a programme. The procuring enterprises have a key role to play since, by assigning a team to the subcontracting firms selected by them, they will be able to assess and analyse the weak points in their suppliers more readily and overcome them more successfully.[4]

[3]See the document "Comparative study of the promotional framework for the development of industrial subcontracting with the SSIs in India and selected Asian countries", UNIDO, Vienna, 1996.

[4]See the example of the John Deere & Co in annex 4.

I. Role of the parties involved in the programme

Industrial subcontracting and partnership exchanges (SPXs)

"An SPX is a centre for technical information, promotion and the matching of capacities, processes and production or industrial service specialities, in the form of an autonomous structure whose basic purpose is to help bring together enquiries for and offers of subcontracting work and outsourcing."[5] It is thus an ideal intermediary for achieving the objectives of the present *Guide*, which is why the *Guide* is intended for SPXs. While an SPX facilitates contacts between subcontractors and main contractors, it also offers services for ensuring the effective operation and continuity of partnerships, such as solving enterprises' problems regarding quality, delivery times, etc. or providing investment advice.

In addition, an SPX possesses databases on enquirers for and suppliers of work and has a good knowledge of the members. Because of these resources, it is aware of the requirements of the former and the capacities of the latter. In this respect, it is a defect detector and problem solver. Moreover, SPXs maintain relationships with chambers of commerce and industry, professional organizations and the authorities, to whom they can put forward their projects under this programme in order to develop them jointly and/or obtain funding.

SPXs thus have a crucial role within the programme since they are able, through the services and advice that they provide, not only to foster and support supplier development but also to monitor the course of the developments set in motion.

In general, they will be required:

- To identify industrial sectors displaying a need for such development (for example, plastics processing, electricity, welding, maintenance, etc.);
- To formulate a work plan and a strategy;
- To participate in selecting main contractors and subcontractors;
- To investigate contracting enterprises in order to better identify their subcontracting requirements;
- To determine the complementarity of the outcomes expected by the main contractor and the subcontractor;
- To encourage cooperation both among subcontractors and by subcontractors with the buyers (promotion of trust between the main contractor and its suppliers);
- To explore and ascertain the availability of resources for joint investment; and
- To monitor subcontracting operations.

SPXs that have not yet undertaken any supplier development programme can base their actions on the present *Guide*, which, as already stated, has evolved from the

[5]Definition appearing in the *Guide for the Creation of Industrial Subcontracting and Partnership Promotion Centres (or Exchanges)*, UNIDO, Cuny and de Crombrugghe, Vienna, 2000.

successful experiences of SPXs that have already implemented such programmes, from whose experience in this area they would accordingly be able to benefit. It would also be desirable for them to strengthen existing networks, for example, the Latin American Association of Subcontracting Exchanges (ALABSUB), and to establish new links at the local, national or international level with a view to arranging high-level training activities and to organizing trade fairs or exhibitions.

Main contracting/procuring enterprises/buyers

Contracting enterprises offer work to subcontractors, thus enabling them to conclude contracts with them and, in the case of long-term contracts, to guarantee them a certain economic continuity. If such enterprises want their suppliers to meet their requirements to the greatest possible extent, they will need to support them in their development and they will in this way achieve benefits since, by assisting them, they will be better able to serve the end customer.

- They should analyse their subcontractors' problems and the solutions to be adopted.
- After being selected by the SPXs and undergoing awareness-raising or because they have independently acquired such awareness, they should help their subcontractors develop so that their requirements as regards pricing, delivery times, quality, the environment, etc. can be met. Such help can take different forms, in particular jointly conducted research and development activities, technical assistance through the loan of machinery, personnel, patents and licences, financial assistance or training.
- They should ideally form a team of engineers and assign it to their suppliers with a view to successfully carrying out the specific development project. While the SPX, or any other organization, and experts can help firms meet quality, lead time, and other requirements, no entity can entirely replace the contracting enterprise in the daily monitoring of the selected suppliers' development or in dealing with highly technical issues relating to their development.

Such assistance from main contractors is especially necessary since SMEs often undertake operations on a short-term basis only, particularly when the national economy is in recession. By having the direct support of their client and regular monitoring of their development, subcontractors will be better able to envisage the benefits that they can achieve, will be more motivated to carry out the programme fully and will readily realize that the programme is indispensable irrespective of the local or national economic situation. Large enterprises will, for example, be able to give their subcontractors the benefit of their experiences in reducing costs or increasing productivity.[6] Such cooperation between main contractors and their suppliers will also make it possible to strengthen partnership relations which, as is known, are essential for sustainable development and for achieving mutual benefits.

Subcontractors/suppliers

Subcontractors enable main contractors to reduce their costs by attaining increased flexibility, responding more effectively and quickly to market demand and avoiding non-strategic investments.

[6]See the example of the John Deere & Co in annex 4.

Subcontractors jointly selected by the SPXs, experts and main contractors should analyse their difficulties in meeting their own main contractor's requirements.

They should cooperate fully with the SPX so that the SPX can also analyse their deficiencies and advantages on the basis of the sector in which they operate, their special field within that sector and their client's specific needs.

They should (unless this has already been done) liaise with their main contractor and with the other subcontractors with a view to collaborating and cooperating in sharing their expertise and technology.

External or independent experts

Experts are specialists who can advise and assist enterprises in the areas of industrial technology, management, total quality, lean production, cost accounting, marketing and management systems. They are organized by the SPXs and selected through UNIDO and are thus ideal persons to make excellent moderators and to seek only mutual benefits for the main contractors and the subcontractors.

- Their role is to set up the programme in line with the stages described below and on the basis of the experience that they have acquired in their respective special fields with a view to achieving the objectives specific to the relationship between the main contractor and the subcontractors.
- They should plan and organize the actions undertaken with the SPX staff.
- They may be recalled periodically to check the activities carried out, inspect the operations conducted by the SPXs and implement any technically difficult project.
- They should set up one or two pilot projects that will enable the SPXs to be trained and carry out similar programmes in different sectors.

However, experts cannot be a substitute for a permanent team formed by the enterprise. They have to serve as stepping stones for the establishment of a team of specialist engineers that will be able to set up specific projects for each of the subcontractors of the contracting enterprise to which they belong,[7] being aware that the SPXs' services and advice will still need to be provided in order to support the subcontractors in their development.

[7]See the example of the John Deere enterprise in annex 4.

2. Ten-stage application of the programme

Publicizing the programme

SPXs have to arrange for the programme to be publicized by presenting the advantages of supplier development and the mutual benefits resulting from it. Such publicizing, carried out through chambers of commerce and industry, professional associations, large enterprises, etc., will enable the authorities or other bodies to become acquainted with the programme with a view to participating in it and possibly assisting the SPXs financially in its implementation. The SPX should point out its advantages not only for subcontractors and main contractors in terms of the mutual benefits arising out of it for them but also for the local and national economy (for example, increased exports) as well as for sustainable industrial development.

Publicizing can initially be general, i.e. through a presentation on the SPX's web page or on any other page specifically designed for the programme. Again via the Internet, the SPX can also e-mail a presentation directly to the enterprises. Other means of communication, in particular press articles or reports, should not be overlooked.

More specific publicizing can subsequently be arranged during visits to enterprises or at meetings or through official statements.

Selecting main contractors

The SPXs select main contractors on the basis of:

- The stated need to develop/improve their subcontractors' management and technical standards;
- The existence of a supplier development plan or project within the enterprise or, in the absence of any plan or project, on the basis of a declared commitment to formulating one;
- The subcontracting percentage share within the enterprise in relation to total purchases;
- The number of subcontractors working with the enterprise;
- The type of products/services outsource;
- The level of awareness of the mutual benefits both for the enterprise and for its subcontractors.

This selection stage forms the development basis since the gains in terms of quality (hence greater end-customer satisfaction) and reduced costs (hence increased profits) will depend on the above-listed criteria, in particular on the first and the last, which are the need for the main contractor to develop the subcontractors and its awareness of the benefits resulting from such development. The procurer's commitment will in fact serve to facilitate the establishment of an enterprise team. Therefore, during the selection stage, the SPX must ensure that those points are present and evaluate the strength of this commitment by very carefully following the selection process.

Analysing client needs and subcontracting requirements

In the course of a meeting proposed by the SPX or the main contractor to deal specifically with the planning of a supplier development programme, the SPX and experts should identify the contracting enterprise's main subcontracting problems in order to ascertain what solutions are to be adopted.

The SPX thus has to devise an evaluation framework in order to highlight the main contractors' priorities from among the following:

- Production costs;
- Delivery times;
- Product and service quality;
- Expertise;
- Technical resources;
- Geographical proximity.

All these factors are naturally important and, rather than produce figures and percentages to indicate the importance of one factor in relation to another, it is preferable to draw up a table classifying the problems to be resolved as priorities on the basis of each main contractor's specific situation. It will thus be possible to consider how to undertake the surveys.

Selecting subcontractors/suppliers

The supplier development programme cannot achieve positive results unless the subcontractors are as carefully selected as the main contractors. It is therefore understood that the SPXs, experts and procuring enterprises must jointly choose the subcontractors on the basis of:

- Their sector of activity: Enterprises in one sector of activity that are affiliated to the SPX may not be sufficiently represented in the programme's area of application or other sectors are not willing to receive such assistance because the demand for subcontracting is directed at the area of available capacity.
- Their special field: An evaluation should be made of the expertise possessed by the subcontractors in their special fields.
- Their level of development: Suppliers having an adequate level of development will be likely to meet demand through improved management or technical standards. In this respect, subcontractors must at least possess sufficient technical expertise to innovate and evolve with the main contractor.
- Their individual awareness of the need to develop in order to become more competitive: It is the entrepreneurs' commitment that will actually determine the possibility of putting the programmes in place. If they are genuinely resolved to involve themselves, anything is achievable.

Once the subcontractor has been selected, the procuring enterprise can propose to the subcontractor a cooperation agreement between the two entities. Both enterprises would thus be able to begin by sending staff from the main contractor to the subcontractor in order to advise and assist the subcontractor on product manufacture on the basis of its expertise, and from the subcontractor to the main contractor in order to learn from its methods and gain an understanding of its requirements.

Surveying subcontractors' production/manufacturing processes and productivity

Once the subcontractors have been selected, the SPX (this role can initially be performed by the experts) or the team that will have been formed by the main contractor to support the subcontractor's development should contact the suppliers with a view to:

- Analysing the manufacturing process;
- Making an inventory of the subcontractor's plant (its state of operation, technology, etc.);
- Evaluating the plant capacity;
- Assessing quality management;
- Analysing the formulation of the production system;
- Evaluating technology acquisition (strengths, weaknesses);
- Analysing the organizational aspects of the enterprise (management of subcontracting arrangements, organization of production, coordination between departments, etc.);
- Assessing the balance sheet, expenditure, profits and cost-effectiveness of the enterprise;
- Ascertaining whether targets are realistic on the basis of planning schedules prepared;
- Evaluating staff training levels (skills, proficiency, etc.).

The SPXs can undertake such surveys by means of the information in their possession on the enterprises. Such information, gathered through visits and recorded in a regularly updated database, constitutes an effective ongoing inventory of production facilities.

Analysing subcontractors' ability to meet main contractors' requirements

This involves analysing the actual capacities of the selected subcontractors compared with the capacities expected by the main contractors. After the subcontractors' strengths and weaknesses have been identified, it will be necessary to assess problems of delivery, quality, insufficient resources, etc. in order to ascertain when and how to remedy them. In this connection, there is also a need to assess the impact of each component or service on the end product.

The aim is to focus on subcontractors' deficiencies with a view to finding the best solutions to be applied.

At this stage, the subcontractor and its client can enter into a second agreement, aimed at fulfilling the objectives to be achieved in accordance with the survey findings.[8]

It should be noted that the main contractor will generally outsource the production of more components to its supplier if the supplier is in a position to meet the demand but will nevertheless retain for itself the manufacture of those components which it regards as strategic, it being still possible to contract out the production of such components to the subcontractor if the subcontractor possesses adequate technology or if a high level of trust exists between the parties.

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[8]With regard to the initial agreement, see chapter 2 of the *Guide* "Selecting subcontractors/suppliers".

Formulating technical recommendations for carrying out necessary adjustments

No standard recommendations can be given here since every deficiency clearly has an origin that is linked to the specific activities of the enterprise. It is, however, possible to state the parties involved and specify the capacity which each of them possesses for giving advice on the basis of its knowledge of the enterprise, its position vis-à-vis the enterprise or its role within the programme.

- UNIDO experts provide support and advice, with recommendations technically geared to each individual case.
- The SPXs should assume this constancy role subsequently, concentrating on the subcontractors' special field and also following the points outlined below regarding cost control, pricing policy, quality, ownership of movable property, logistics and the environment.
- The main contractors should, through the formation of a team, offer advice and make recommendations to their subcontractors during the entire course of their development throughout the life cycle of the jointly manufactured product.

Training subcontractors

Training constitutes, according to the SPXs, one of the most important stages in supplier development.[9]

Its purpose is to overcome deficiencies detected in suppliers and should thus be targeted in such a way that subcontractors can undertake it independently. It can relate to quality, management, etc.

- Training should be planned on the basis of the deficiencies detected as a result of a previously conducted evaluation of suppliers' skills.
- It can be arranged on a group basis, with firms combined according to their special fields and interests, or on an individual basis, with each firm treated separately. In the latter case, the staff taking part in the training should be carefully chosen so that it can be passed on accurately to the remainder of the workplace.
- The training may be organized by the SPX, choosing a trainer—who is highly qualified in the field concerned—from among its own personnel, experts or enterprises affiliated to the SPX or from among bodies such as a chamber of commerce and industry, professional association, university or technical centre.
- A client who cooperates more intensely with its subcontractor can make such training available throughout the time that it provides support to the subcontractor.

Subcontractors' implementation of recommendations and training received

By means of the surveys conducted, deficiencies detected, training imparted and solutions envisaged for overcoming difficulties in meeting the main contractor's requirements, its subcontractors should implement the measures that have been recommended to them.

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[9]See in annex 2 the presentation concerning the analysis of the survey conducted on SPXs that have already implemented one or more supplier development programmes.

Setting up the programme within the production units can then become effective and checks should be carried out for the purpose of making any necessary rectifications.

Where a procuring enterprise has involved itself in its subcontractors' development, it should, on the basis of its level of cooperation with them, deal with these aspects to ensure that the development is positive and sustainable. If the SPX undertakes this work, it should be assisted by the experts so that the task can be completed in the most effective manner.

Analysing the possibility of establishing partnerships and strengthening existing ones

This aspect is especially important since joint activities will enable the main contractor and its subcontractors, or the subcontractors together, to initiate a partnership whose purpose is to lead to a lasting relationship of cooperation. SPXs have a very relevant role to play in these collaborative arrangements since they possess databases on affiliated enterprises. Two types of partnership can be identified:

- Between suppliers themselves: For such a partnership, they must be geographically close, operate in the same specialist sector and possess a similar enterprise culture to facilitate trust among the partners. They can accordingly form groups with the aim of producing and selling similar or complementary products and addressing common concerns. Such partnerships will then be clusters.[10]
- Between a main contractor and its subcontractors: A partnership of this type must be established on a long-term basis. The present *Guide* is designed precisely for the establishment or strengthening of such cooperation so that procuring enterprises and suppliers can build "win-win" relationships. In that connection, the stages described here are important but it is also necessary to observe certain principles, such as fair pricing, transparent management, meeting the client's requirements and providing subcontractors with necessary assistance (financial support, help with quality management, provision of technology and loan of licences, patents and plant).

It should be noted that partnerships can operate on different levels and in different forms. More specific forms of partnership and wider degrees of involvement are strongly recommended. The SPX can suggest, if the parties do not do so or have not considered it themselves, that a technical partnership should be formed, the purpose of this being to develop cooperation among the partners within their specific trade. For such an option, it would be necessary for the partners to complement each other and possess a common technical interest.

For the establishment of a more in-depth collaborative arrangement on the basis of the type of partnership, a capital holding (or a joint venture agreement) may be advantageous—or even necessary—to attain the common objectives.[11]

[10]See the concept paper "Sustainable Business Linkages for SME Development", UNIDO, SME Branch, Vienna, 2002.

[11]See the example of Maruti Udyog Ltd. in annex 5.

3. Objectives to be achieved

Cost control

Given that the aim is to create better subcontracting arrangements in terms of quantity and quality at different stages, main contractors and suppliers should accordingly transform their purely contractual relationships into collaborative relationships. It is necessary to fully appreciate the concept of cooperation, since both parties are interested in reducing their costs, this being one of the factors in persuading procuring enterprises to agree to assist their subcontractors.

It is essential for the main contractor, in order to reduce its costs, to maximize its subcontracting operations and its investments. It will consequently limit the risks and be able to concentrate on what it knows how to do best. In the case of contracts between a procuring enterprise and a supplier in different countries, one of the major aspects in reducing costs is knowing how to take advantage of the best exchange rates.

Aware that subcontracting is one of the key factors in reducing costs, the client should enable its suppliers to benefit from its expertise in this area. For such cooperation agreements, mutual trust and loyalty are fundamental criteria, especially in cases involving the confidentiality of one partner's special expertise or the distribution of benefits from lean transformations.

Many operations, without providing any real value-added (maintenance, storage, control operations, etc.), give rise to enterprise costs which the experts and the SPX, and subsequently the procuring enterprise, will need to locate and eliminate. A series of measures exists for successfully carrying out this task, ranging from production line rationalization to reducing the volume of orders.

In this search for cost reduction factors, consideration should be given, inter alia, to lowering stock levels and, in a broader context, to just-in-time practices.[12]

Pricing policy

According to a study carried out in France by the Ministry of Industry, Post and Telecommunications,[13] expertise, quality and delivery times are contracting enterprises' three primary requirements, ranking even above price.

Since competition among subcontractors for a supply contract with a main contractor will normally determine the selling price of the goods supplied, pricing is the outcome of a balance between supply and demand. If, however, prices are fixed below the level of production costs, such a practice could be regarded as dumping, a form of unfair competition. Nevertheless, the importance of other factors, such as quality, delivery times and terms, in particular the cost of equipment, should not be overlooked, since these factors are crucial to securing the contract.

More generally, all the points set out in the *Guide* are aimed at assisting SMEs in becoming more competitive and thus at having prices in keeping with the quality of the services provided. It should be realized that, if a subcontractor possesses expertise that

[12]See chapter 3 of the *Guide* "Logistics".

[13]Ministry of Industry, Post and Telecommunications, SESSI Journal No. 65, *De la sous-traitance au partenariat: une approche nouvelle des relations interindustrielles*, Hanouin & Guerrier, France, 1966. In this study, enterprises cited expertise in the top position at 45 per cent, quality at 25 per cent, delivery times at 20 per cent and price at 15 per cent.

is special and hence difficult to replace as well as high-quality products or services, the price could be higher since the subcontractor will be indispensable.

It is also necessary to bear in mind that, for the purposes of the programme, it is desirable for prices to be determined and re-assessed jointly by the supplier and the main contractor on the basis of the latter's involvement and assistance.

When the subcontractor has reached a level of development where it can independently meet the procuring enterprise's requirements, its prices will be negotiated and specified in a contract. While the contract is in force, the prices should not be questioned by the main contractor if the products supplied remain the same.

In the case of long-term contracts (generally extending beyond one year), problems can arise for subcontractors or main contractors from unforeseen fluctuations in costs. Such fluctuations can be offset by clauses providing for price adjustments in relation to the costs of the products and their exchange rates. Where a long-term contract has fixed prices, it should in principle leave the way open for further negotiations that will allow a price to be adjusted if it has been affected by unforeseen events.[14]

Technological improvements

Supplier development is possible only within a context of specialization subcontracting. While such specialization, regardless of the enterprise's sector of activity, is to be understood primarily as the acquisition/possession of special expertise, it must also be understood as the ability to adapt and to develop products and services (owing to demand and thus to the requirements of large enterprises). Main contractors will in fact search for subcontractors as technical partners capable not only of designing a system but also of innovating, improving and developing a product throughout its life cycle.

- Once an inventory of the supplier's available technology has been carefully made, the following stages have to be undertaken:
- Examining the technological improvements needed by the enterprise in order to remain competitive;
- Analysing demand: identifying, mapping and anticipating demand for technology from customers;
- Developing new applications: differentiating products;
- Improving productivity;
- Adapting to evolving production systems;
- Using technical assistance services, in particular those of the SPX (which must be able to meet such requests).

Use of main contractors' production facilities by subcontractors (instruments, moulds, prototypes, patterns, quality control equipment)

It is important for subcontractors to have access to specialist plants for carrying out their work. Since expertise is the chief factor in engaging a subcontractor, it should not be hampered by the lack of equipment that would enable the subcontractor to use such

[14]See the *Guide for the Creation of Industrial Subcontracting and Partnership Promotion Centres (or Exchanges)*, Cuny and de Crombrugghe, Vienna, 2000.

expertise. Main contractors thus have an important role to play here, since this is also in their own interests. The SPX should make enterprises aware of the need for cooperation in this respect. Several factors should be borne in mind:

- In line with the code of conduct, the loan or grant of equipment by the main contractor to the subcontractor has to take place in a climate of collaboration and cooperation.
- Agreements governing the ownership or transfer of such property can be concluded.
- Production facilities entrusted by the main contractor to the subcontractor for a specific or short-term operation must generally be returned to their owner once the work has been completed, particularly in the case of key components.

Total quality (zero defects) management

Quality is increasingly being geared to customer satisfaction. Scope for competitiveness gains is also linked to customer service, a strategy fostered by partnership relations between main contractors and subcontractors. Staff involvement is, together with customer consultation, a major factor in the success of a quality management exercise.

Nowadays, quality no longer means simply the ability to manufacture and remanufacture products perfectly according to a model; it also means controlling the entire process leading to customer satisfaction.[15] Quality thus encompasses concepts such as comfort, aesthetics, etc.

The components of total quality naturally stem from the aim of the enterprise, which is to satisfy its customers while benefiting at the same time. To attain that goal, the management relies on its staff, working practices (processes) and planning methods. Controlling the entire procedure is achieved by analysing the financial, operational and human outcomes. Steps thus have to be taken to:

- Determine precisely the quality expected by the customer (who will be the ultimate reference as to the product quality required);
- Carry out a detailed survey on the current status of the quality control process (i.e. the use of financial, operational and human resources as at the date of the survey);
- Define the functional characteristics of the product; acquire a sound knowledge of the customer's needs in order to guard against over-quality and under-quality;
- Evaluate the firm's resources on the basis of the technological facilities and skills required to manufacture the product;
- Analyse deficiencies by means of the existing groups concerned or ideally through the use of experts;
- Detect defective components and diagnose the causes of such defects;
- Reduce waste and reworking;
- Build up expertise;

[15]According to a study conducted by the consultancy firm Plein Sens at the request of the management of the Department of Industry, Technology, Information and Postal Services (DIGITIP) in the Office of the State Secretary for Industry of France.

- Review the importance of quality in the budget;
- Ascertain the causes of customer rejection;
- Appraise staff motivation, accountability and technical competence;
- Develop an enterprise culture centred on the workers' accountability for quality in order to raise their awareness and show them what they can gain in terms of personal satisfaction and security.

Client certification procedure

ISO 9000 certification does not constitute an end in itself; it is a quality tool. SPXs should accordingly stress the importance of compliance with the main contractor's technical specifications and the quality requirements set out in them.

However, some procuring enterprises agree to work with suppliers only if they are ISO 9000 certified.

To help suppliers acquire such certification, the SPXs, experts and main contractors should assist them by first considering whether or not there is a need to obtain the certification. It is then important to scrupulously follow three stages:

- *Survey:* The experts (especially the quality expert) and the SPX should jointly determine whether the main contractor requires ISO 9000 conformity. It should be pointed out that this standard is a tool and the client may request its own quality control only. If the main contractor does require the ISO qualification, an assessment will then have to be made of the subcontractor's capacity and the efforts that the subcontractor is prepared to make to be certified. If that appears feasible, it is necessary to move to the next phase, i.e. implementation.
- *Implementation:* The supplier will have to be assisted with regard to management accountability for quality in the following areas: drawing up the contract setting out the procuring enterprise's requirements, controlling design (from an established plan, through distribution of tasks among the workforce and resources to be employed, to checking the designed products), documentation control, product purchasing, finished product storage, product identification, process control, product checking and testing, inspection of checking and testing equipment, control of products failing to meet specifications, remedial action, handling, storage and delivery, quality records, internal quality audits, staff training and statistical procedures.
- *Certification:* The above points are obligatory phases to be completed with a view to obtaining ISO 9000 certification. The experts, SPX and main contractors must employ the necessary resources to help suppliers become certified.

Organization of work within the enterprise

As has been stated, the internal functioning of an enterprise is important from a quality viewpoint. The way in which the enterprise is organized and divided should not be overlooked since, even if the departments function well, the staff are motivated and there is good product quality control, it is necessary to be able to stand back and gain a better appreciation of overall coordination. There is thus a need to:

- Reduce and decompartmentalize the structures of the enterprise and upgrade workshops where necessary;

- Encourage teamwork;
- Improve the manufacturing processes, emphasizing integration rather than separation of tasks;
- Arrange staff meetings regularly (daily or weekly);
- Organize discussions on working practices and investigate solutions to problems;
- Strengthen consultation and cooperation, in particular through staff involvement;
- Expand employees' skills, making them more committed and adaptable;
- Show up rather than mask problems and bad practices.

Logistics (just-in-time practices)

Meeting delivery times is a major requirement of customers. However, this aspect is also important in reducing costs.

The main objectives to be achieved through just-in-time practices are:

- Shorter manufacturing cycle periods;
- Smoother process flows;
- Reduced stock in hand;
- Hence lower costs;
- Reduced reserve stocks;
- Stock warranty extension removed;
- Greater space availability;
- Improved subcontracting relations.

Optimization involves primarily:

- Rapid throughput (short storage periods), with stocks established and planned at the lowest possible prices;
- A high degree of flexibility in adjusting to changes in main contractors' orders.

The environment

Respect for the environment in industry is an issue that cannot be ignored today. Some enterprises are more subject than others to environmental rules since their activities have a more direct impact on the environment. However, even a firm whose business is concerned with electronics or metal processing has to comply with such rules since, in many countries, firms that fail to observe these norms are liable to sanctions by the authorities and, more importantly, are immediately shunned by contracting enterprises.

It is in fact one of the constituent elements of enterprise competitiveness since it has become a prerequisite for access to and continuity within the market.

The SPX will accordingly ensure that it is familiar with the environmental requirements relating to the sector to which the firm belongs, with a view to their strict observance.

Compliance with regulations is not the sole motivation for promoting the environment. Particular attention should be paid to commercial relationships. In the case

of foreign trade, subcontracting firms have to be well informed about the needs of the main contractor abroad since, in addition to the requirements of the law, the enterprise environmental culture may be predominant. Similarly, in some countries, many enterprises sometimes give priority to subcontractors' environmental awareness, for example, whether they sort or recycle waste.

In this connection, ISO 14000 certification is being increasingly required by such main contractors but the reasoning is the same as for quality considerations.[16]

[16]See chapter 3 of the *Guide* "Client certification procedure".

Conclusion

The *Guide* seeks to draw the attention of SPXs that have not yet implemented any supplier development programme to the usefulness—and even necessity—of assisting subcontractors in their efforts to become more competitive in an increasingly demanding economy. Since enterprises can no longer rely solely on their know-how, they must also maintain high standards of efficiency throughout the manufacturing process until the end product reaches the customer. The *Guide* also seeks to make SPXs aware of the key issues involved in achieving effective supplier development.

It does not claim to solve the problems of all enterprises. The points outlined above cannot simply be followed and applied directly as such to enable subcontractors to have no further problems of any kind.

In the first place, this entire document is based on an essential precondition, namely the motivation of all participants in the programme, in particular the enterprises. That motivation will determine primarily the outcome of effective supplier development.

Also, the *Guide* is intended to serve as a model for all countries and it is a known fact that economies differ considerably across the globe and operate according to dissimilar principles.

Furthermore, SPXs do not all have the same status, experience or resources. It can be seen from their experiences that the supplier development programmes already put into effect are all different. This is due not only to the factors set out above but also to the SPX members, who belong to one sector rather than another, and to the support received from governments, chambers of commerce and industry, etc.

The various points listed thus have to be adapted to specific situations, in particular to the industrial environment of the region and country. An attempt has been made to take into account all the factors coming within the scope of such programmes. However, at the time of a programme's implementation, SPXs should concentrate on some points rather than others on the basis of the specific solutions to be adopted.

The *Guide* should therefore be used as a tool to enable the initial foundations of a supplier development programme to be laid. In that respect, UNIDO is proposing to set up pilot programmes of this type in conjunction with SPXs so wishing.

In practice, from selecting the enterprises and seeking funding to the practical application of solutions, the road is long. The programme therefore has to be carefully prepared from the outset. If that requirement is observed, the ensuing results will be beneficial to all.

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Annex 1

Questionnaire on supplier development programmes implemented by SPXs

Name of the suppliers/subcontractors development programme: _____

1. Background information

Name of SPX	
Name of the person who completed the questionnaire	
Date of implementation of the programme	

2. General information on the programme

How many programmes have *you implemented*?		
Which industrial sectors are covered by the programme?		
Scope of programmes implemented?	At the local level	%
	At the national level	%
	At the international level	%
Number of enterprises that have already taken part in the suppliers/subcontractors development programme		

3. Financing

Who funded these programmes, and to which extent?

SPX (through income generated by itself)	%
Government	%
Associations, banks Which ones? _____	%
Chamber of Commerce and Industry	%
International donors Which ones? _____	%
Enterprises themselves	%

4. Objectives

What are the main objectives of an efficient suppliers/subcontractors development programme?

Please, grade between 1 and 5 for each objective (1=not important; 5 = very important)

To reduce costs	
To improve technology	
To increase productivity	
To increase total quality	
To obtain a certification (ISO 9000)	
To make internal reorganizations	
To improve deliveries (just in time)	
To secure a fair price in subcontracting contracts	
To conform to environmental regulation	
To train suppliers/subcontractors	
Others (specify?)	

5. Implementation of the programme

5.1. Which inputs did you need to implement the programme?

New SPX services	
Independent consultants	
Motivation of the enterprises	
Support from public authorities	
Others (specify?)	

5.2. Does an autonomous unit to carry out the subcontractors development programme, already exist? Y/N ☐

Or is foreseen? _____ ☐

If yes, where do (will) the representatives of this unit come from?

Please, mark with an "X" the appropriate option

Government	
Main contractors	
Independent consultants	
SPX staff	
Delegates of the Chamber of Commerce and Industry	
Others (which ones?) _____	
_____	

5.3. Programme monitoring

	Y/N
Will the SPX conduct the programme with and support from other institutions?	
If yes, which ones? _____ _____	
Will the programme work without any intervention from the SPX (or is it already working without its intervention?	

5.4. Payment for services

	Y/N
If the programme becomes a permanent activity within the SPX, do you think that the SPX will be able to charge the enterprises for the services provided and thus to generate incomes for paying one or two engineer(s), devoted to this task, as a permanent activity?	

Annex 2

Analysis of the questionnaire sent to SPXs on their supplier development programmes

Introduction

A questionnaire was sent to SPXs that had already formulated supplier development programmes. These are the SPXs of Argentina (Argentine Industrial Union (UIA)), Costa Rica (Chamber of Industry of Costa Rica (CICR)), India (Confederation of Indian Industry (CII)), Hyderabad, and Kamataka Small-Scale Industries Association (KASSIA), Bangalore), Mexico (Chamber of Processing Industries of Nuevo Léon (CAINTRA), Monterrey), Paraguay (Centre for Enterprise Cooperation and Industrial Development (CEDIAL)), Sri Lanka (Small and Medium Enterprise Developers (SMED)) and Uruguay (Chamber of Industry of Uruguay (CIU)).

Analysis of the answers to the questionnaire reveals more specifically the sectors targeted by the programmes, their areas of application, the number of participating enterprises, sources of funding, requirements for their successful implementation and their operating modalities. It was also considered essential to ask them what were the most important objectives for them (quality, delivery, costs, etc.).

The aim is to highlight what, according to the SPXs concerned, are the key aspects of a supplier development programme. Since the main points to be included in any supplier development programme have been discussed in chapter 3 of the *Guide,* this analysis will not cover all the important points that such a programme should in theory incorporate but will indicate those points which the SPXs surveyed considered it useful to include in their own programmes.

Industrial sectors

It can be concluded from the answers provided by the SPXs that, for most of them, the sectors for which such a programme is either most appropriate or most necessary for their successful operation are the metal processing, mechanical engineering and electronics sectors. Nevertheless, even if no implementation sector has been predetermined, a supplier development programme is entirely suitable in any industrial sector where specialized subcontracting is involved and the partners (main contractors and subcontractors) are committed to maintaining long-term relationships.

It can also be concluded that the programmes were all implemented locally or within the national territory, although it would be appropriate to extend them to the international level. This is a question of experience since it is impossible to launch such a programme directly on an international scale if it is immature and has not been tried and tested at the local level.

Financing

Each of the SPXs financed its own programme differently. One SPX financed its programme entirely through government funding; two others did so from the revenues that they had generated. Three SPXs were assisted by their chambers of commerce and industry. It was generally noted that banks,

donor countries or organizations, professional associations or the enterprises themselves contributed to the financing. The variety of sources of funding showed that the search for financing should not be limited just to one public or private institution and that it should not be planned to obtain funding solely from the revenues generated by the services provided by the SPX; the search should rather be extended to all public and private actors who might support the SPX in this way. The financing of such a programme does not necessarily require that one source be given priority over another.

Prerequisites

Without exception, all the SPXs completing the questionnaire clearly needed the motivation of the enterprises, which are the driving force behind such programmes. Experts and the support of the authorities also appear as important elements. That bears out the recommendations in the *Guide*.

Programme operation

The SPXs were asked whether an autonomous programme implementing unit existed or was at least planned. Only one SPX answered negatively, which thus shows that this is a necessary and feasible function and that, even if an SPX can theoretically carry out the programme itself, such a unit would appear to make for better programme execution in practice. These units are all composed of SPX representatives and often government representatives. However, as indicated in the *Guide*, it would be necessary for representatives of the enterprises to be more involved so that the unit becomes genuinely independent, as in the case of the example of the John Deere enterprise.[17]

Programme monitoring

It was also generally noted from the answers that these programmes are intended to operate without the intervention of the SPX.

As to whether payment for the services provided under such a programme could generate remuneration for one or two employees fully assigned to a department to be set up to conduct the programme, 75 per cent of the SPXs stated that this would not be possible. However, that does not conflict with the establishment of an implementing unit, given that these SPXs have successfully set one up through other sources of funding.

Objectives pursued by the SPXs

According to the SPXs surveyed, reducing costs, raising productivity and increasing total quality are the three most important objectives to be achieved through a supplier development programme. It was also noted that, in the case of virtually all the SPXs, training of the firms' personnel is a key element. Surprisingly, delivery does not appear to be a priority under the programmes implemented by the SPXs.

Reference should, however, be made to the programme descriptions in order to appreciate that some objectives are more important than others if the programme is aimed at a specific sector.

[17] See annex 4.

Annex 3

Presentation of the supplier development programmes set up by SPXs in Argentina, Costa Rica, Mexico, Paraguay, Sri Lanka and Uruguay

Preliminary remarks

Summarized below are the programmes of those SPXs that at least submitted detailed documentation on the subject (independently of the questionnaires). They are the SPXs in Argentina, Costa Rica, Mexico, Paraguay, Sri Lanka and Uruguay. SPXs wishing to set up a supplier development programme will thus have an opportunity, through this document, to appreciate the stages that have to be undertaken in practice according to the more specific objectives set by each of them. However, those requiring further details of these programmes can request them from UNIDO or the SPXs concerned.

Argentina (Argentine Industrial Union (UIA))

Objectives

The Buenos Aires SPX, the Argentine Industrial Union (UIA), has formulated a supplier development programme on behalf of the Small and Medium Enterprise and Regional Development Secretariat (SEPYME), attached to the Ministry of Industry of Argentina. The programme is known as the Supplier Consolidation and Development Programme (PCDP).

Its primary objective is the development of new subcontractors that are able to meet the requirements of main contracting enterprises and the strengthening of a group of subcontractors exhibiting deficiencies.

Its secondary objective is to publicize the programme and match public and private sector supply requirements. For publicizing purposes, steps have been taken to set up an information system linking contracting enterprises' outsourcing requirements with suppliers' offers. Also, details of government procurement and external demand are made known via the Internet.

Operation

The PCDP finances the programmes through various means, such as tax credit (the enterprises initially meet the supplier development costs and, under an agreement with the State, are subsequently given by the Government a tax certificate equivalent to the programme costs, whereby the enterprises recover those costs through taxation), venture capital funds or mutual guarantee societies.

The programme is publicized on the Internet (messages sent to large enterprises and creation of a web page), through press articles and reports, individual meetings and official statements to enterprise organizations (chambers of commerce and industry, professional associations, etc.).

Large enterprises wishing to be programme members sign a letter of intent formalizing their undertaking. They then have to establish their membership aims and identify the problems affecting their subcontracting relations.

Subcontractors are selected jointly by the main contractor, the PCDP working team and representatives of the organizations that have supported the programme financially. Selection takes place according to the admissibility criteria previously laid down by the main contractor and also on the basis of the programme objectives.

For programme monitoring purposes, a working team and an implementing unit are set up. The working team is composed of one representative from the contracting enterprise and the implementing unit is made up of representatives chosen by consensus between SEPYME and the main contractor. The task of the unit is to manage the activities in line with the plan to be implemented. It analyses and appraises subcontractors' competitiveness with a view to identifying deficiencies. The unit then designs the project with the aim of promoting quality control, management, relationships between subcontractors, cost reductions, production control and research and development.

Costa Rica (Chamber of Industry of Costa Rica (CICR))

Objectives

The Supplier Development Project for High-Tech Multinational Companies of Costa Rica is aimed at:

- Helping to increase domestic value-added in the output of high tech multinational companies;
- Improving SME competitiveness;
- Enhancing the technological capacities of SMEs.

The general aim of the Costa Rican project is to enable SMEs to attain the technology levels necessary for their vertical integration into the high-tech multinationals' production chains.

Operation

Costa Rica's SPX has received funds for implementing its programme from the Foreign Trade Promotion Agency of Costa Rica, the Development Initiatives Coalition of Costa Rica, the Chamber of Industry, high-tech multinationals and SMEs.

For the programme's execution, a steering committee composed of representatives of the donor organizations has been set up and an implementing unit has been formed of a director, a technical assistant, an accountant and a secretary, who are assisted by a supplier development expert. The steering committee's main role is to oversee the attainment of the objectives (including also approval of the budget), while the implementing unit is responsible for carrying out the programme and ensuring its effective execution.

The project supports the manufacture of products of SMEs incorporated in the high-tech multinationals' production chains. The SPX initially selects, according to motivation and quality criteria, the SMEs to be admitted to the programme. A methodology, based on analysis of product demand from the high-tech multinational companies and on the technical and entrepreneurial status of the SMEs, is then drawn up by an international expert. The project encompasses the selected SMEs' development through technical assistance and training activities.

There is also an information-gathering system in operation to provide the enterprises involved in the project with access to sources of supply of and demand for products and services, to establish links with SME support institutions and to guide the SMEs in their search for funding and venture capital.

To ensure the institutional continuity of the project if the pilot project functions satisfactorily, the SPX will set up a national supplier development office. This will be an independent body having its own legal status.

Mexico (Chihuahua SPX: Supplier Development Centre (CEDEP))

Objectives

With a view to integrating enterprises into the export production chain, the Supplier Developer Centre (CEDEP) has organized a programme to assist enterprises in their efforts to improve quality, productivity and competitiveness. To achieve that aim, the Chihuahua-based CEDEP has set up a supplier development model.

Operation

CEDEP has focused its assistance on quality and service provision.

After selecting the subcontractors, CEDEP incorporates these firms into the supplier development process, beginning with assistance in obtaining ISO 9000 certification. The selected enterprises undergo four stages, namely surveying, process implementation with a view to certification, certification and re-certification.

Since the start of the programme in 1998 to October 2001, CEDEP has facilitated 230 contacts, of which 76 have led to long-term contracts, 16 to contracts that had already terminated by October 2001 and 43 to potential contracts. In general terms, CEDEP has made its services available to 421 enterprises, primarily by organizing training activities and seminars, providing legal and accounting advice, arranging contacts, etc.

Paraguay (Centre for Enterprise Cooperation and Industrial Development (CEDIAL))

Objectives

To assist suppliers in the area of production subcontracting.

Operation

Paraguay's SPX selects and appraises subcontractors, puts them in contact with main contractors and provides them with technical assistance.

Selection is carried out according to criteria agreed with the contracting enterprises. Once selected, the subcontractors have access to technical assistance and training with regard to quality, cost reduction and delivery.

Appraisal is concerned primarily with product quality, compliance with obligations, observance of agreed criteria and information flows from the subcontractor to the main contractor. It is conducted in conformity with the documentation prepared by UNIDO on relationships between suppliers and procuring enterprises (a copy of which is supplied to the main contractor).

A monitoring system operates through discussions and the use of printed forms. Monitoring of deficiencies is based on a pre-established classification and the preparation of basic technical specifications for each product as well as technical process specifications.

The aspects developed with the enterprises are marketing, sales, production, management of subcontractors, quality, foreign trade and participation in international fairs.

An international expert specializing in the field in question supervises the development of these aspects.

Sri Lanka (Small and Medium Enterprise Developers (SMED))

Objectives

The programme set up by Sri Lanka's SPX is concerned with supplier development in the field of injection moulding and moulded parts.

The Small and Medium Enterprise Developers (SMED) and the Japan External Trade Organization have worked together to develop the plastics industry with a view to making it more competitive.

Operation

Following visits by a Japanese expert to enterprises affiliated to the SPX, a seminar was held in February 2002 with the participation of 48 SPX members, enterprises and technical institutes. At that seminar, a review was conducted of the problems existing for suppliers in the plastics industry and of the solutions to be adopted. Having selected 30 enterprises, the SPX observed that there was a lack of knowledge among those enterprises regarding tool steel and its usage.

A further seminar was therefore organized in March 2002 on this topic in order to determine how to deal with those problems.

During the seminars, the SPX also noted the existence of a problem relating primarily to heat treatment. Staff of an Australian SME accordingly came and gave a demonstration to explain modern heat treatment methods to the Sri Lankan enterprises.

Uruguay (Subcontracting Exchange of Uruguay (BSU), Chamber of Industry of Uruguay (CIU))

Objectives

The supplier development programme (PFP) set up by Uruguay's SPX is aimed at supporting Uruguayan enterprises in improving their competitive integration into the domestic and foreign markets. The objectives to be achieved are the formation of partnerships between main contractors and their subcontractors, cost reductions (provided that quality is not thereby impaired), shortest delivery times and the introduction of modern management tools in the subcontracting firms.

Operation

The main methods employed to attain these objectives are individual awareness-raising and the holding of monthly group meetings. The development process takes place at all levels, according to where the suppliers' weaknesses are diagnosed (logistics, quality, etc.) and in line with the contracting enterprises' requirements.

Annex 4

Example of the Supplier Development Programme of John Deere & Co.

Abstract

The continual demands of customers to lower costs force today's companies to think beyond the traditional Continuous Improvement approaches to reducing waste. As a greater percentage of costs are outside the plant in the supply chain, it becomes harder to realize savings by addressing only that portion of the cost structure within the plant walls. A way must be developed to work with the supply base to lower the Total Acquired Cost of goods purchased. One important component of this is a group of highly skilled engineers who work with the suppliers to implement lean transformations throughout the supply chain. Results are immediate and dramatic. We call this group "Supplier Development".

The Need

As customer expectations rise, companies come under increased pressure to deliver products to market faster, with more features, higher feature mixes, and lower cost. The ability of a company to respond quickly to market changes and customer demands is a competitive advantage. As the percentage of purchased material increases, the supply chain becomes the dominant factor in determining market response.

Suppliers determine a large share of the cost of the product. As more and more components are out-sourced, the majority of costs can be built into a product before the company selling it starts building it. Traditional manufacturing techniques have difficulty handling low-volume, high-mix production, and additional costs are incurred all along the supply chain as many firms deal with these challenges through inventory pools.

The time it takes to fill an order is in many cases the difference between dominating the market or running in the back of the pack. Supplier lead times sometimes impose critical limits on a firm's responsiveness to customer demands. When the first tier suppliers have to wait for their suppliers, the summation of all supply chain lead times can frustrate the best marketing plans.

Clearly the company that figures out a way to influence the entire cost structure (internal and supply base) will have a cost advantage. If that firm can also develop the means to cope with production fluctuations, lead times issues and product mix challenges, it will be a formidable competitor in its industry.

Meeting The Need

In the mid-1990s, Deere & Company used the assessment criteria from the Malcolm Baldrige Quality Award to evaluate areas of the business. Part of the plan, which emerged from this exercise, was a renewed emphasis on Supply Management. The leadership group determined that it would be difficult-to-impossible to compete globally if supply base costs were not brought under closer control. To this end, they authorized the formation of Supplier Development groups throughout the enterprise.

Supplier Development is comprised of engineers with a broad range of experience in various aspects of manufacturing. The typical Supplier Development engineer has a graduate degree in a field of engineering combined with real-world experience. They combine the latest theories with a healthy dose of reality. To this prerequisite base, Deere added extensive training in specific techniques essential to leading change within a company. Facilitation skills are emphasized. The result is a group of motivated, highly trained and experienced change agents.

Supplier Development engineers work with supply management's Strategic Sourcing group to select Supplier Development project candidates. Working in teams, the Supplier Development and Strategic Sourcing personnel, together with other stakeholders, analyse the performance of various suppliers to determine where opportunities exist for improvement. Some of the selection criteria which a supplier needs to meet to be chosen for Supplier Development activity include: the presence of a critical technology, intent for a long-term supply relationship, a genuine desire by the supplier to make improvements, and the usual factors of cost, quality and delivery. As there are far more suppliers than there are Supplier Development engineers, candidates for Supplier Development projects are chosen carefully with the goal in mind of maximizing the impact on overall business performance.

Once candidates are selected, they are entered on a Supplier Development web-based project tracking system. This notifies all factories using that supplier so that they can contact the lead Supplier Development engineer working with Strategic Sourcing and determine enterprise performance goals that this supplier should meet. The supplier's past performance, new performance goals, and potential new business are blended into a presentation that is given to the supplier by the Strategic Sourcing and Supplier Development team that visits the supplier. The team also takes an initial charter that is a non-binding, written agreement for everyone to cooperate if a project is identified, to share data, and how cost reductions will be shared. The Supplier Development programme is explained to the supplier management team and they are asked to make their best people available for a process mapping exercise to determine potential projects.

The supplier almost always agrees to process mapping their operation. Process mapping combined with an assessment identifies opportunities for projects. These are presented to the supplier management who normally selects a team to work the project. At this point another charter is created that is specific to the project. This charter names the people, the start and expected completion date, meeting frequency, percent of time assigned to the project, the goal results, and anything else that is needed to exactly define the project scope. Following their selection, a supplier is introduced to Supplier Development by the supply management specialist working with that supplier. The Supplier Development engineer then assumes responsibility for the next phase of the supplier development relationship. In an initial visit, the business and manufacturing processes are evaluated, and opportunities are identified for joint effort involving the supplier and the Deere Supplier Development engineer, who may be assisted by other Supplier Development resources as needed. A starting project is selected and a charter is written which details the scope of the project to be undertaken, the expected benefits, roles and responsibilities, deliverables, and management commitment. A team of resources from the supplier is identified to work on the project in conjunction with the Supplier Development engineer.

Using the charter as a project guide, the Supplier Development engineer trains supplier personnel as necessary in the techniques of problem solving which will be employed. A fairly basic tool used early in the project is process or value-stream mapping. The mapping exercise helps to focus the project team on where the challenges lie, and the training helps the team

think of original solutions. The process also trains supplier personnel in the use of advanced problem solving tools, so that they are able to use this approach in the future without the involvement of Deere Supplier Development resources.

After results are achieved from the project, the supplier and Deere supply management agree on the impact of the project. If, for example, it used to cost the supplier $900,000 to produce a product which Deere would buy for $1,000,000, they would have a profit of $100,000, or 10%. If working together, the supplier and Deere Supplier Development were able to reduce the cost of this product by $200,000, the new cost of production would be $700,000. By splitting the cost savings, Deere would then pay $900,000 for the material, while the supplier would realize a profit of $200,000. This is truly a "win-win" approach to supplier development.

Results

Suppliers who have participated with Deere & Company in this effort have realized significant savings. They have been able to increase production capacity, reduce lead times, and improve their overall business performance. This creates a stronger supplier for Deere. Stronger, healthier suppliers cost less to work with and improve the bottom line performance for supply management. An important benefit from the supplier's viewpoint is that the savings they realize from involvement in Supplier Development activities apply to all their production for all customers. Deere only asks for a share of the savings on production going to Deere. This increases further the profitability of the supplier.

Supplier Development success stories are published to demonstrate the type of results that can be expected from participation in this programme. Four typical projects are summarized in the next few paragraphs. Each of the following case studies comes from a different Deere division. Supplier Development is a common process across divisions, with Supplier Development resources taking an active role in all of Deere's supply management groups.

Case Study no. 1.

Supplier Development engineers from the Construction & Forestry Division worked with "Supplier A", a supplier of sheet metal and plastic products, to reduce cost while improving quality and delivery performance. The end result was the identification of part families and the introduction of cellular manufacturing techniques. Annual savings realized by Deere were $354,000. Tangible benefits to the supplier, in addition to their portion of the cost savings, were:

- 40% reduction in cycle time, from 10 days to 6
- 40% reduction in inventory
- 75% reduction in rework costs
- 50% reduction in scrap
- 40% reduction in indirect labour
- 9% reduction in direct labour

Case Study no. 2

The Commercial & Consumer Equipment Division worked with "Supplier B", a supplier of exhaust components. In this project, field engineers from the Wisconsin Manufacturing Extension Partnership were also brought in as additional resources. The resulting projects were directed at reducing

manufacturing cycle time. Annual savings realized by Deere were $455,000. Tangible benefits to the supplier, in addition to their portion of the cost savings, were:

- 50% reduction in manufacturing cycle time
- 70% reduction in assembly cycle time
- 82% reduction in rework operations
- 17% increase in average line rate
- 7.5% increase in production capacity
- 5.4% decrease in manufacturing cost

Case Study no. 3

A Supplier Development team from the Agricultural Division worked with "Supplier C", a supplier of transmission housings and related parts for agricultural tractors. The purpose of this project was to help the supplier meet cost targets for a transmission housing to be used in a new model of tractor. The new parts were similar to existing parts produced using a mature manufacturing process, and had been reviewed several times by design engineering for savings opportunities. It was believed that there was limited potential for improving the housing. The team identified major cost drivers and was successful in making significant improvements in the cost and manufacturability of the part. Annual savings realized by Deere on the transmission housings were $576,000, with an additional $10 per tractor in associated parts savings. Other tangible benefits realized from this project were:

- Simplified part design for manufacturability
- Eliminated two cores from foundry process
- Reduced casting weight from 891 pounds to 812 pounds
- 18.3% reduction in machining cycle time
- Combining two part numbers into one

Case Study no. 4

Deere & Company Supplier Development engineers worked with "Supplier D", a supplier of wire-form parts. The focus of this project was to increase the supplier's flexibility and ability to respond quickly to customer orders. The action plan addressed three main areas: 1) capacity issues, 2) material flow and control, and 3) process variability. Annual savings realized by Deere from this project were $580,000. In addition to annual savings of $1,435,000, other tangible benefits to the supplier were:

- 78% reduction in manufacturing cycle time
- 71% reduction in quality PPM
- 42% improvement in on-time delivery
- 47% reduction in total inventory cost
- 23% reduction in floor space requirements
- Improved flexibility to meet changes in product volume and mix
- Increased sales to other customers as a result of these improvements

The Business Case

The above results, impressive as they are, are not the sole reason for developing a Supplier Development capability. Supplier Development is a tool that can be used by Strategic Sourcing to help in commercial negotiations. Supplier Development is a technical resource, which complements the commercial side of supply management. Where seemingly insurmountable technical problems are encountered, Supplier Development gives the buyer the ability to achieve corporate goals while improving the relationship with the supply base.

At the end of FY 2001, Deere had 92 Supplier Development engineers across the enterprise. These engineers had worked on a total of 426 projects, with $52,000,000 in cost savings and $36,000,000 in cost avoidance. Similar results were realized in quality, delivery, and lead time metrics. Relationships with the supply base have been strengthened, and suppliers have become more able to respond to changes in production schedules and requirements. This increased performance of the supply base constitutes a significant competitive advantage for Deere over our competitors.

Another benefit to Deere from Supplier Development is the creation of a pool of talented problem solvers. The training of a Supplier Development engineer in modern lean and flexible manufacturing techniques, coupled with the experience they have in a variety of industries and situations, equip them well for positions throughout the organization. They are equivalent to "black belts" in the scope of their knowledge, and also possess a strong appreciation for the supplier and their relationship to Deere. This perspective puts them in a unique position to be able to integrate the supplier's processes with Deere's.

There is an initial investment when starting Supplier Development. Including training and travel with salary and other expenses, the annual cost of one Supplier Development engineer is in the neighbourhood of $130,000-$150,000. The return on this investment is in the 3:1-8:1 range. Annual savings of $1,000,000 per Supplier Development engineer are not unusual, although the average is closer to $700,000. The job attracts talented people who appreciate a challenging assignment and are able to work with little supervision. These people have the skills to accept assignments of considerable responsibility at higher levels within the company.

Summary

If this is such a great idea, why doesn't everyone do it? It would seem that benefits such as these would be enough to convince anyone of the wisdom of this course of action, but inertia and tradition are powerful forces. Some of the more common reasons identified include:

- "It's the supplier's job".
- "We don't have the manpower."
- "Consultants can do it."
- Win-lose mentality
- Unwillingness to share benefits

Each of these excuses are indicative of a resistance to change. Supplier Development, as practiced at Deere, is a radical departure from prior practice. It requires a willingness to face internal issues uncovered at the supplier. Deere has had to learn from suppliers and make changes in the way it relates to the supply base. This has been a painful and positive process of improvement and growth. The supply base has also been changing and growing. As they become more capable of responding quickly to the changing

requirements of the customer, Deere has increased its ability to respond. Responsiveness and Flexibility are important keys to not only survive but prosper in the economic climate of the twenty-first century.

If the excuses for not doing supplier development are familiar to you, ask yourself the question, "If my company doesn't do Supplier Development, would I want my competitor doing it?"

Annex 5

Presentation of the Supplier Development Programme of Maruti Udyog Limited, India

Maruti Udyog Limited (a joint venture between the licensor, the Japanese SUZUKI Motor Company and the Indian Government) is another interesting example of a supplier development programme in the form of a partnership with a foreign investor, which has considerably stimulated and reinforced the local subcontracting capabilities. In 1991, after 7 years of operations of the programme, already 90% of the parts and components were supplied domestically by Indian subcontractors. On a total of 400 local suppliers and subcontractors, 200 were small enterprises and 50% were exclusively working for Maruti Udyog Ltd. On 1 December 2001,[18] the past-president of Maruti Udyog Ltd., who actually designed and conducted this programme, R. C. Bhargava, made an assessment of this programme, 18 years after it was launched by him.

The Maruti way of doing things

The VENDOR development programme of Maruti was formulated to meet the following main objectives:

- To implement the government policy of 95% indigenization in 5 years in a phased manner;
- To observe Suzuki's policy of outsourcing all but the most critical components. In house value addition was planned to be about 26%;
- To be totally transparent in all vendor dealings;
- To ensure quality standards were maintained and cost targets fulfilled.

The Maruti board approved a vendor development policy. This recognized that car-maker's ability to meet quality and cost targets depended on upgrading vendor capabilities, and ensuring continuous improvement. Long-term mutually beneficial relations were to be developed with vendors.

They were to be given assistance to improve technology and manufacturing standards. Maruti helped to bring together foreign manufacturers and Indian companies. Engineers worked with vendors to improve plant layouts and manufacturing systems. Vendors were helped to establish quality practices and acquire ISO certification. Where necessary, financial support was also given, including supply of costly tooling.

Maruti entered into joint ventures with a number of suppliers, taking minority equity positions, but being fully involved in ensuring that quality and productivity levels were as high as possible. There are now 11 such joint venture companies, and they greatly helped in attaining localization targets, as well as maintaining high quality.

[18] According to an article by R. C. Bhargava, the former chairman of Maruti Udyog Limited (MUL), published in *The Economic Times* of India, on 1 December 2001.

In India, large companies do not, in general, try and build long-term relationships with suppliers. They do not provide the kind of support that Maruti provided. Relations with vendors are no different than those between any buyer and seller. The importance of improving the vendor's quality, productivity and cost levels, as a means of improving one's own competitiveness, is not generally recognized. Maruti's policies were developed on the basis of Japanese experience, where car companies have financial stakes in many vendors and vendors are treated as being part of their family. Of course, vendors also realize that they have to constantly work to make their principal competitive and profitable.

Outsourcing is a very major system of improving competitiveness and reducing investment requirements and risk levels. Companies have to approach outsourcing as an activity requiring sustained attention.

This is possible only if there is a structured vendor development programme, and it is accorded high priority by the top management.

Most vendors in India are small or medium sized industries. They cannot easily access technology, or implement modern lean management practices. Their ability to introduce information technology is virtually zero.

They cannot engage consultants for introducing quality systems, and their balance sheets do not usually make it possible for them to access bank finance. The "mother industry" needs to recognize the gaps in the supplying companies management, and help to fill these in its own interest. This is what Maruti did.

The ancillary programme of the government, which is now defunct, did not aim to improve the quality, productivity and competitiveness of the supplying companies.

Ancillaries attached to a "mother plant" were given protection, which worked against the concept of continuous improvement. In outsourcing, the attempt is to improve the competitive strengths of both buyers and sellers, and there is no room for protection.

Maruti has nearly 370 vendors, who have been suppliers for many years. When Maruti started to outsource in 1983, not one component of the car was available in India. All the components had to be developed to Japanese standards. Today, for all but the recently introduced vehicles, localization levels are around 95-97%. The purchases from vendors would now be in excess of Rs 3500 crore.

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