

## Subcontracting: A Strategic Approach for SMEs Development in Bangladesh

M. Kamal Uddin, PhD\*

### Abstract

*Inter-organizational linkage of industrial firms through subcontracting is an effective means of facilitating greater participation in the product (or product component) technology & production process, sharing of facilities, assurance of quality, price competitiveness, advance marketing and augmentation of market horizon. The approach is not only a supportive to small firms but also to larger firms which in turn gain better management functionality rendering less hassle to producing even complex products with multitude of modules. As a developing country, Bangladesh should adopt & spur such strategy both in micro and macro level. In Bangladesh, SMEs (Small & Medium Enterprises) possess high potency to proliferate through subcontracting. BSCIC (Bangladesh Small & Cottage Industries Corporation) though launched its subcontracting scheme in mid-eighties, has not been expanded significantly as was planned. This scheme to be rejuvenated and all other possible forms of subcontracting arrangement among the industries to be proliferated at larger scale. Since the sector periphery of the State-Owned-Enterprises (SOEs) is being contracted, the scope of subcontracting under government patronage is becoming limited. Thus subcontracting among the industries in private sector to be spurred with dynamism at larger scale. The outcome of the research study leads to formulation of some key policies & strategies for proliferation of subcontracting in SMEs sector in Bangladesh.*

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\* Professor and Director, Institute of Appropriate Technology, Bangladesh University of Engineering and Technology (BUET), Dhaka

Email: kamal@iat.buet.ac.bd

### 1.0 Introduction

Subcontracting refers to a type of contractual arrangement among firms under which an enterprise (herein called the parent enterprise) gets component(s) of a product/service made/done by other enterprise (herein called the subcontracting enterprise) on contract basis. Generally, in an industry, whether it is manufacturing or non-manufacturing, a product/job process consists of one or multitude of components/modules or job segments. In most cases, an industry making complex products/services having many modules, it is difficult to possess all the required facilities in the same industry for making various components of the product/service. It is conceivable that incorporation of all facilities in an industry (especially for the case of large industry or industry producing capital machinery/product) would incur high investment. This imparts liability of high investment for an industry. Moreover, it would need technology of required level and manpower expertise as well. In many cases, high investment adorned with advanced technology is required to get one or more part of the job done. Hence, mostly, it becomes difficult to make all the components or modules of the job in one industry. Under the circumstances, a parent industry has to seek assistance of one or more industries to get the specific module(s) done through subcontracting. Generally, it is seen that the module of the job that is considered to be difficult to execute for the parent enterprise or the part for which required facility or expertise is not available, is subcontracted. It is not always the case that subcontracting takes place only in absence of facilities within the parent organization. Due to various multifaceted advantages, a parent organization may embark upon giving subcontract to other company though the parent company might have the facility or possess capability to perform such activity. Any contract or subcontract is ultimately a viable financial, administrative practice and mostly contingent on the policy of an enterprise.

There are generally two levels of application of subcontracting: micro level & macro level. Micro level subcontracting corresponds to linkage among firms in the private sector. On the other hand, macro level linkage program is conducted under government patronage and the SOEs purchase the products of the local firms under the stipulated government rules set forth for the subcontracting scheme.

### 2.0 Objective and Methodology of the Research Study

A research study on subcontracting was conducted by the author at the Institute of Appropriate Technology, BUET, Dhaka in 2013. The objective of the research was to find out the status and scenario of subcontracting in Bangladesh and to

explore how the linkage program among various ranges of enterprises through subcontracting can be proliferated and strengthened. Deliberations of all these aspects are beyond the scope of this paper. Some pertinent aspects and conceptual ideas have been discussed. Table 3 shows some of the subcontracting products of the surveyed industries. The methodology adopted in the research can be summarized as follows:

- **Focus Group Discussion (FGD):** Focus group discussion were carried out with a number of subcontractors, parent organizations, end users, stakeholders, support organizations, marketing middlemen, entrepreneurs, factory managers, technicians, professional and R&D organizations, financial institutions, etc.
- **Field Survey:** A survey program was conducted on 25 selected small industries. A questionnaire was served to all the selected industries for surveying to probe various functional aspects such as subcontracting process, subcontracting products/ services, backward and forward linkages, supply chain management (SCM), input and output linkages, flow chain of raw material and Bought-Off-Finished (BOF) item, etc. The data collected through the questionnaire also included profile of enterprise, investment, products, production process, machinery, equipment & facilities, sector distribution, raw materials, manpower, growth of sales, stakeholders, agencies, use of finished items, financial, SWOT information, market demand, etc. Twenty five industries ranging from small to large were selected and surveyed. Primary data were obtained through in-depth interviews with the entrepreneurs and filling of the questionnaire at the field.
- The paper is an outcome of a research study recently conducted by the author on subcontracting. A survey program was conducted on 25 selected small engineering industries focusing various aspects of subcontracting.

### 3.0 Characteristics and Differences among Contracting, Subcontracting and Outsourcing

The difference between contracting and subcontracting is contingent on the sequential order of contractual chain and thus depends mainly on the logical status of contract signing parties (with whom the contract is being made) and not on the merit or share or volume of the performed portion of the job by the parties. An 'owner' of a job/project can be nomenclatured here as the master of the job/project who is the sole possessor/proprietor of it and is the top decision

maker pertaining to the concerned; thus the paymaster for its implementation may be a person or a group or an organization or government itself. The 'owner' can perform the job by himself or may get the job done by rendering contract to some person/organization; then it is first contract in the contractual chain for the particular job/project; such case is termed as 'contracting'. Thus when an 'owner' of a job/project renders contract to someone to perform the entire or a specific task of its kind, it is called contract or main contract and the person contracted is termed as 'contractor' or 'main contractor'. In the contractual chain, when the 'contractor' or 'main contractor' for his convenience, render entire or a specific part of the job (which has been contracted from the 'owner') to other party, then it is the second contract in the contractual series and is called as 'subcontracting'. The 'main contractor' this way can subcontract out entire or one or more part of his job to one or more persons/organizations. In the contractual chain, the subcontractor can further subcontract out his portion of the job (or part) to other person/organization for his benefit or convenience. *Outsourcing* is a method or process of getting a job/service done by other person(s)/organization(s) from anywhere outside the organization. A person / organization embarks upon outsourcing when it becomes difficult for the organization to get the job/service done by them or by subcontracting. There are a number of reasons for outsourcing on the part of a parent organization. Some of them are lack of required facilities, or if outsourcing is deemed to be convenient, or if incurring cost is high, etc. General motive of outsourcing is to reduce cost; a firm resorts to outsourcing when its in-house production/job accomplishment cost is high. Generally, it is seen that subcontracting is more formal and possesses long and good network with the parent organization. Subcontracting is found more in manufacturing industries, construction sectors, etc. On the other hand, outsourcing is seen to be intermittently done by an organization whenever needed and found suitable; involvement is usually for shorter period.

### 4.0 Subcontracting in Small Engineering Industrial Sector in Bangladesh

Cottage, tiny and small engineering industries are called Light Engineering Industries (LEIs), whereas cottage, tiny, small, & medium enterprises are called SMEs (Small & Medium Enterprises). Thus LEIs belong to a sub-sector of SMEs. The LEIs & SMEs can cater as subcontracting co-partners to larger industries under subcontracting scheme. The LEIs as supportive industries to both medium & large industries play a momentous role by rendering services both as forward & backward linkages. In the process of industrialization of Bangladesh, the role of LEIs & SMEs as linkage industries & supportive industries, mutually as well as to the large industries is enormous. They can play

key role as complementary or feeder industry to various mills, factories, plants, industries, etc. In the country, there are skilled labors and technicians who learn by working and develop expertise in their respective trade. These engineering industries are capable of producing import-substitute capital machinery/spare parts for medium and large industries. The industries have variety of facilities (such as casting, machining, forging, welding, heat treatment, electroplating and other surface treatment, etc.) and machinery (such as lathe, shaper, drill machine, boring machine, milling machine, gear cutting machine, welding sets, etc) as per their requirement. But most of the small & medium industries can not use its full capacity due to lack of work. Thirdly, the overhead cost of these industries is comparatively low and thus an opportunity exists for these products of being competitive to the imported products in the local market. In order to utilize the potency of the local industries and to achieve their full capacity utilization, marketing support & privilege to be rendered to the local industries. A marketing policy based on subcontracting schemes under government patronage can be a strategically motivated approach in merchandising local products in different mills, factories, plants, and industries as well as large sectors such as power stations, dockyard, railway, automobiles, etc., around the country.

### **5.0 Integrating Large and Small Scale Enterprise through Subcontracting**

The development of efficient small-scale production is of prime importance to the large-scale public sector corporations. The flexibility and spontaneity of small-scale industry should be an immense asset to the corporations, and contribute greatly to their profitability. The public sector corporations should actively seek out small units, which can adapt their production, to the requirements, provide them with the technical assistance to do so, and provide the necessary quality control over their production. Unfortunately pressure within the large industries of public corporations tends to run in the opposite direction. It was found that most large units would, as a first choice, import them, would purchase from small-scale industry as a second choice. There are examples of products for which capacity already exists in small-scale industry, which are being imported. It was reported that illegal monetary gain is the reason behind the advocacy for import. Achieving a balanced industrial structure will require a review on an industry-by-industry basis at an early stage. This should include the plans of the sector corporations so as to ensure that production, which could be undertaken at lower cost in small-scale units, is not pre-empted through import. By definition SMEs (Small and medium industries) correspond practically to cottage, tiny, small & medium industries (Kamal Uddin, 2002). SMEs have to specialize in different activities or processes from large firms. Through

clustering, SMEs can jointly undertake functions where economies of scale arise. For instance, information collection & distribution, new entrepreneurship, collection of advanced & appropriate technologies and their application, training workers, designing new products, conducting quality control, advanced marketing, research activity, storing and transporting goods etc. Subcontracting to large firms is an effective way for SMEs to build on their advantages. For support services to create inter-firm linkages or subcontracting, it is essential that parent firms and subcontracting firms may be identified. There are mostly three types of sub sectors as stated below, in which SMEs are active in subcontracting operation.

- (a) Machinery and equipment.
- (b) Chemicals, electrical and electronic products and transport equipment.
- (c) Textiles, furniture and food processing industries.

In all these sub-sectors, parent organizations exist, which are subcontracting their components or materials production to vendor industries or subsidiary industries. These subsidiary or subcontracting firms, specializing in production of one component or intermediate good are SMEs. Hence one major source of growth of SMEs is the development of subcontracting firms.

### **6.0 Reasons for Subcontracting**

The finished product usually consists of various parts and components. Facilities for some of the production of some of the component do not exist in the parent organization. The costs of establishing separate manufacturing capabilities for these components do not always justify themselves. Thus it is more desirable for firms to establish subcontracting agreements. Since parent firms have to face severe competition, subcontracting agreements to reduce costs becomes a necessity. Beside this, the subcontracting firm possesses greater production flexibility. They can add a new plant and can retain their labor force, may be by adapting through training, in new technologies. Subcontractors are generally used to specialize in the production of one or few components; hence they achieve greater production efficiency and produce high quality products. Mostly, large industries do not want to retain all the tasks and in favor of shrinking its area of production to avoid management hassle though the industry do not run in short of capital for neither investment nor it is devoid of technological capability. If large firms produce all their components for the finished product, then larger labor force has to be engaged. This can create labor management problems. In order to avoid such problems, it is preferred that several components may be distributed

to smaller subcontracting firms. Sub-contractors are normally smaller firms and fully utilize their plant capacity and labor force. As such, wastage in production is avoided. On the part of the subcontractors and in the context of globalization and free market competition, three things are to be emphasized. They should maintain lower price of the product. Secondly, they should ensure higher quality of the product by enhancing technological capability and the most essential thing is that they should comply the delivery schedules of products with the parent organization.

## 7.0 Modality of Subcontracting

In practice, different forms of subcontracting are in force in various types of organizations. The particular type is contingent on the type of individual industry. Industries are broadly classified into three categories, namely Manufacturing Industries (e.g., metals, paper, plastic, chemical, electrical, ceramics, etc.) & Non-Manufacturing Industries (e.g., construction, agriculture, etc.) and Service Industries (transportation, automobiles maintenance, telecommunication service, etc.). Manufacturing Industries are again subdivided into Engineering Industries (EIs) & Miscellaneous Industries (MIs). LEIs belong to lower segment of Engineering Industrial Sector. SMEs belong to lower segment of Manufacturing Industries, Non-Manufacturing and Service Industries. Industries Manufacturing Industry includes all production, processing and assembling activities as well as repairing and reconditioning of processed goods. Non-manufacturing Industry involves production of different kind other than manufacturing. Service Industry entangles activities rendering services, repair, maintenance, fabrication, etc., which involve significant use of equipment or fixed assets. All categories of industries have subcontracting of its kind whose nature varies depending on the characteristics and typology of the industries. Some general forms of subcontracting are mentioned in (Figures 1 & 2):

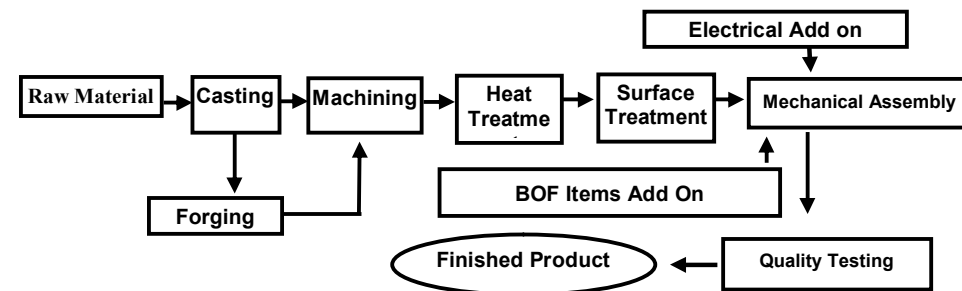


Figure 1: Typical Production Process: Subcontracting is Given in Each of the Component Modules

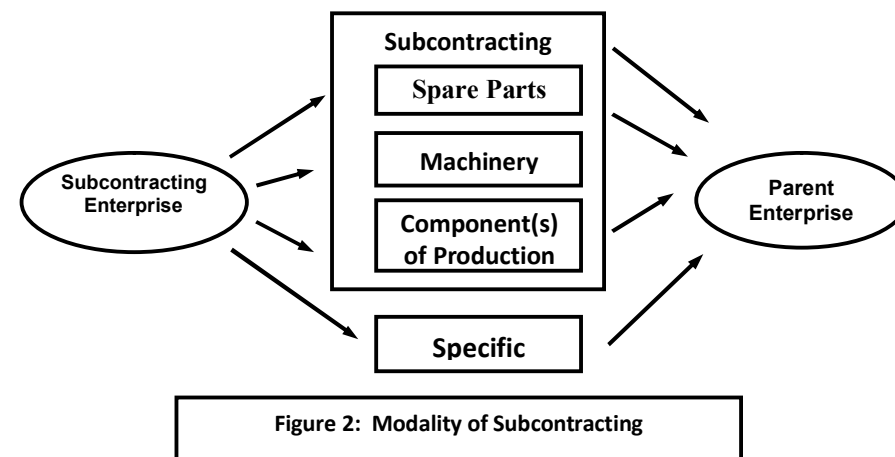


Figure 2: Modality of Subcontracting

Subcontracting in manufacturing industry is done by supplying spares/machinery or by executing a part of production process. On the other hand, in a service industry, subcontracting is done mainly by rendering service/doing component(s) of the service chain (e.g., repairing crankshaft).

## 8.0 The Development of SMEs & LEIs through Subcontracting

SMEs constitute the highest growth potential in Bangladesh. The sub-sectors together play an increasingly dominant role in the economic development of Bangladesh despite there being some lack of policy support in terms of finance, technology, management, marketing, etc. SMEs have unique contribution in the country's economy especially in view of their combined contribution to poverty

alleviation. The SMEs policy and strategy 2005 identified 11 no. of Booster sector of SMEs. A recent estimate of IAT, BUET reveals that there are about 98,750 small industries (up to June, 12), 6,40,939 nos. of cottage industries (up to June,12), in various sectors in Bangladesh. No of Employment is 32.28 lakh (up to June,12) in SMEs sector. Presently, a large number of machinery and spare parts are produced locally by the LEIs. SMEs play a vital role in the socio-economic development of the country. Manufacturing and processing activities in small and micro engineering enterprises contribute to the livelihood of huge number of poorest citizen. It was declared a 'Priority' sector for development in the mid-eighties (GOB, 1986). Subcontracting scheme in SMEs can be used as tool that has immense potential for the growth of the sector. Viewing the employment potential and its particular suitability for development, special emphasis on subcontracting should be placed in government policies to produce rapid growth in this sector. In the country, as labor cost and cost of infrastructure, electricity, gas & water are cheaper than other countries; the cost of production obviously can be competitive if management & marketing support in the form of subcontracting can be provided in an appropriate planned manner.

## 9.0 Subcontracting Scheme of BSCIC

Due to many limitations and hindrances, the entrepreneurs of SMEs do not succumb to be interested in achieving export market. Moreover, the influence in the context of market economy & liberalization and backwardness of product technology & production process, in many cases, the local products are facing fierce competition even in the domestic market. Sometimes government has taken some measures but overall situation was not improved. After launching subcontracting program by BSCIC in 1986, the LEIs got comparatively more privilege in the local market than before. Under the program, firstly the suitable LEIs were selected and enlisted under subcontracting scheme. Later, linkages were made between the LEIs and medium and large industries. Table 1 provides number of the sub-contractors enlisted by BSCIC (1995).

BSCIC has started Sub-contracting activities since 1986. The main activities of this programme are;

- ❖ Identifying the Small and Cottage Industries those are complementary to medium and large Industries and establishing linkage between them.
- ❖ Create environment to signing the memorandum of understanding (MOU) of sub- contracting with medium and large industries.
- ❖ Provide assistances in signing the Memorandum of Understanding for subcontracts and their implementation.

- ❖ Implementation of the Gazette notification of the Peoples Republic of Bangladesh dated 1st October 1989 regarding sub contract.

Since 1983 BSCIC has been implementing the programme of subcontracting and linkage establishment and has successfully brought about 1206 SCI units under this programme. The Programme has been adopted keeping in view of the successes achieved in this field by countries like Japan and Korea.

It is well recognized by now that sub-contacting activities have positively beneficial implementation for creating a sound industrial base in the country. Through this programme BSCIC also attempts to encourage subcontracting relationships and to encourage Small Engineering Firms to enter Public tenders for large firm contracts. Till today BSCIC assessment is that those subcontracting units have already supplied import substitute engineering goods like spares of other items worth BDT 300 crores. The market scope for expansion of these engineering items is excellent.

To promote small enterprises/industries through the promotion of sub-contracting relationship by BSCIC providing sub-contracting firms a package of promotional services such as;

1. Technical assistance in production technology;
  - Liaison with large facilities and liaison between small a large firms
  - Information and assistance in tendering for orders;
  - Marketing and design services.

## 9.1 Subcontracting: Buyer Organizations of Products

There are 30 MOU (Memorandum of Understanding) for promoting sub-contracting and establishing linkage between BSCIC sponsored (Enlisted) SCI (s) and enterprise / Large establishment of the following organizations;

- Bangladesh Steel and Engineering Corporation (BSEC)
- Bangladesh Textile Mills Corporation (BTMC)
- Bangladesh Sugar and Food Industries corporation (BSFIC)
- Bangladesh Agriculture Corporation (BADC)
- Bangladesh Railway
- Bangladesh chemical Industries Corporation (BCIC)
- Milk Vita
- Rural Electrification Board (REB)
- Power Development Board (PDB)
- Bangladesh Jute Mills Corporation (BJMC)
- Bangladesh Inland Water Transportation Authority (BIWTA)

- Bangladesh Water Development Board
- Petrobangla (BOGMC)
- Bangladesh Water Transport Corporation (BIWTC)
- Dhaka WASA
- BRTC
- Chittagong Port Authority
- Bangladesh Fisheries Development Corporation
- Chittagong WASA
- Bangladesh Forest Development Corporation (BFIDC)
- Biman Bangladesh Airlines
- Mongla Port Authority
- Public Health Engineering Department
- Sena Kallyan Shangsta
- Bangladesh Telegraph and Telephone Board (BTTB)
- Khulna City Corporation
- Civil Aviation Authority
- Bangladesh hand Loom Board
- Bangladesh Petroleum Corporation
- Bangladesh Film Development Corporation (FDC)

A gazette notification was issued in 1989 that described rules and regulations of the linkage stating that machinery and spare made of any metals, plastic, ceramics, can be supplied to the State-Owned Enterprises (SOEs) by the Small and Cottage Industries (SCIs) under subcontracting scheme. Under the jurisdiction of this gazette, the enlisted light engineering industries (LEIs) in BSCIC supplies various products (such as spare parts, equipment, small & capital machinery) under subcontracting scheme. Table 2 provides a summary of subcontracting arrangements made by BSCIC up to 1992 since its introduction of such function. These LEIs, which are scattered all over the country, supply their products to agriculture sector, automobile sector, gas sectors (Titas, Bakhrabad, Jalalabad gas company), Sugar & Food Industries Corporation, Bangladesh Railway, BRTA, BRTC, BIWTA (for ferry), BIWTC, Port Authority, WASA, T&T, PDB, Public Health Engineering, Civil Aviation, Bangladesh Biman, garments factory, pharmaceutical Industries, all fertilizer & chemical industries under BCIC, industries under Engineering Industries Corporation, all industries under BTMC, Jute Industries Corporation, paper & cement mills, other small, medium & large industries, equipment for various laboratories, R&D institutes, etc. Thus, firstly, the import substitute parts/products are saving foreign currency, secondly, generating employment opportunity and thirdly, playing effective role in technology assimilation. About 600 spare parts & other products (including piston, liner) are supplied by LEIs to Bangladesh Railway. If some supportive measures can be provided, LEIs are deemed to be able to supply 70-80% of the

requirements of Bangladesh Railway. As per BSCIC estimate, LEIs produces about 3765 types of machinery & spare parts (Table 3).

Under the scheme, the enlisted SCIs are able to produce machinery and spare parts of large industries. Lack of investment and uncertainty of purchase by consumer organizations give rise to deterrent circumstances in commercial production of these products by the SCIs. They are not getting required work order from large industries especially from SOEs. Thus these SCIs can not run in its full capacity in spite of possessing potentiality, expertise and efficiency. Various steps are needed to upgrade the quality of the products and simultaneously reducing the cost as well. Among other steps, subcontracting can play a key role in merchandizing the products. To utilize the prospect of LEIs, subcontracting scheme was launched. During 1986-91, as a part of marketing activity, BSCIC arranged subcontracting orders amounting to Tk. 380.3 million, while distributed credit for such purposes amounted to Tk. 11.25 million. Marketing support such as subcontracting is an important type of support service provided BSCIC. Unfortunately, little was known until recently about the effect of such support. But it is obvious that Subcontracting can play a significant role in assisting small firms to market their products. According to BSCIC annual report, there has been an annual growth in the amounts of work order, 63.8 percent, and the number of small enterprises, 18.58 percent receiving such marketing support during 1986-91 (GOB, 1992).

One of the very important aspects of LEIs is to serve the needs of local consumers by supplying a wide range of products. In Bangladesh, over 90 per cent of LEIs serve the local needs of the people and thus, they are engaged every day in every economic sphere of the society. Moreover, it is revealed that there are strong backward and forward linkages between the LEIs and other sectors (such as agriculture, automobile, transportation sector) of the economy in Bangladesh. Day by day this number of subcontracting LEIs is increasing. These industries supply their diversified products, machinery and spare parts under special arrangement of subcontracting scheme to different organizations, sector corporations, and various sectors of the country.

## 10.0 Subcontracting Exchange Schemes

In order to develop subcontracting among the large and small enterprises among various countries (e.g., SAARC, BIMSTEC, ICO, other friendly countries etc.), Subcontracting Exchange Schemes can be launched. Professional Associations and National Chambers can set-up such an establishment. They may collect information about engineering industry components, and what vendor industries

can provide such components. These way inter-firm linkages can be expanded among the countries. The activities of these organizations for interlink ages among small & medium enterprises and assistance to these enterprises should be properly identified. Thereafter program of maximum utilization of their services may be formulated. This will lay a strong foundation for promoting effective cooperation among small and medium enterprises among the various countries. It is generally observed that through subcontracting with large firms, small industries possess stable marketing. Hence, linkages with firms which demand business products is highly essential.

### 11.0 Various Forms of Collaboration and Subcontracting

Links with big firms or with the network of SMEs are becoming a crucial issue. Links with big firms are today usually in the form of subcontracting. In the case of independent SMEs, their business associations are becoming indispensable. Both these institutional forms make possible the process of 'learning-by-interacting'. Since technology is in essence an intangible asset, the market system is not the best mechanisms for its acquisition ('market failure'). The network production systems seem to have advantages in the learning process. The reduction of the individual risk and the minimization of transaction costs are the consequence of the network's superior learning capacity. This is confirmed by the current processes of 'quasi disintegration' of big and multinational companies. Instead of grouping, divisions under the strict control of a central office, big firms form conglomerates of independent firms. Firms in these groups share information more freely amongst themselves than with outsiders, but retain certain autonomy. The classical case of Japan confirms the importance of close links between big and small firms. The developed system of subcontracting permits big firms to have a high degree of flexibility because SMEs are able to follow them in permanent changes. Due to strong contracting, sub- contracting and integrating links, the protection of, for example, Japanese industry was not dependent on tariff barriers or on the yen depreciation.

**Table 1: Subcontracting Industries Enlisted in BSCIC**

Sl. No.	Division/District	No. of Small Industries Enlisted in BSCIC	Sl. No.	Division/District.	No. of Small Industries Enlisted in BSCIC
<b>A. Dhaka Division</b>			<b>C. Rajshahi Division:</b>		
1.	Dhaka District	469	1.	Rajshahi District	11
2.	Gazipur District	38	2.	Chapai Nawabganj District	1
3.	Manikganj District	1	3.	Natore District	2
4.	Narayanganj District	17	4.	Naugaoan District	1
5.	Norshingdhi District	3	5.	Kushtia District	12
6.	Tangail District	6	6.	Bogra District	24
7.	Mymensingh District	2	7.	Pabna District	6
8.	Kishoregnj District	1	8.	Serajganj District	2
9.	Faridpur District	3	9.	Rangpur District	4
10.	Gopalganj District	1	10.	Nilphamari District	7
<b>B. Chittagong Division</b>			11.	Lalmonirhat District	1
1.	Chittagong District	145	12.	Dinajpur District	3
2.	Rangamati District	1	13.	Thakoregoan District	1
3.	Coxbazar District	1	14.	Phanchagar District	1
4.	Comilla District	11	<b>D. Khulna Division</b>		
5.	Braharnanbaria District	1	1.	Khulna District	55
6.	Chandpur District	1	2.	Satkhira District	3
7.	Noakhali District	2	3.	Jessore District	11
8.	Feni District	2	<b>E. Barisal Division:</b>		
9.	Sylhet District	8	1.	Barisal District	5
				Total	871

Source: BSCIC Report, 1995.

BSCIC (June, 2004)

The protection is primarily enabled by the strength of business associations, subsidiary networks and flexible subcontracting. Such a market structure favors trade among domestic companies instead of importation. A JIT (Just-In-Time)

system is a logistic-based coordination method in the 'production process. A number of forms of collaboration between buyer and seller have been grouped together under the term 'strategic alliances'. The need for links between companies in strategic alliances may be occasioned by a desire to utilize distinct specialization and localization among companies in, for example, geographical, cultural, know-how, resources and other areas. A strategic alliance may embrace different common functions and be arranged in different forms of formal contract. Figure 3 delineated position subcontracting in the broader spectrum of strategic alliances.

**Table 2: Subcontracting Assistance Arranged by BSCIC**

Activities	Year			
	1989-90	1990-91	1991-92	1986-92
Work order from big units (in Mil. l'k.)	150	148	163	544
Actual supply of goods (in Mil. Tk.)	109	118	157	435
Registration of subcontracting units (No.)	134	178	94	755
Identification of big industries (No.)	29	2	15	189
Recommendation for subcontracting (No.)	121	160	81	709
Establishment of subcontracting(No.)	466	207	86	1861
Identification of subcontracting tools(No.)	359	452	343	3455
Small firms received work orders (No.)	51	68	61	295
Credit for subcontracting (in Mil. Tk.)	345	141	100	1223
Arranging seminars, workshops, etc. (No.)	8	7	15	52
Skill development training (No.)	96	53	-	550

Source: GOB (1990) and (1992)

**Table 3: Machinery/Spare Parts Products of LEIs in Bangladesh (2002)**

SL No.	Sub-Sectors	Types of machinery /Spare Parts
1.	Automobile Spare parts	200
2.	Railway Engines & Rail Spare parts	600
3.	Bicycle & Cycle Rickshaw Spare parts	50
4.	Machine Tools	100
5.	Jute & Textile Spare parts	550
6.	Chemical Industries: Machine & Spare parts	550
7.	Sugar & Food Industries: Machine & Spare parts	200
8.	Pharmaceutical Industries: Machine & Spare parts	50
9.	Engineering & Metallurgical Industries: Spare parts	800
10.	Ship Industries Spare parts	150
11.	Agricultural Accessories & Spare parts	100
12.	Oil & Gas Line Fittings	15
13.	Electrical Accessories & Spare parts	350
14.	Electronics Accessories & Spare parts	50
15.	Telecommunication Accessories & Spare parts	50
Total:		3815

Source: BSCIC (2002)

## 12.0 Bangladesh Gazette Enacting Rules for Subcontracting

By enforcing the Bangladesh Gazette (15 September, 1989), Peoples' Republic of Bangladesh has enacted rules & regulations for making linkages between each corporation, state-owned-enterprises/industries and small & cottage industries under subcontracting scheme in order to procure machinery & spare parts made of metals, plastic, ceramic produced by the local small firms. The small & cottage industries are able to produce machinery & spare parts of large industries. These small industries are facing difficulties in merchandizing their products (machinery & spare parts) on commercial basis due to lack of investment and uncertainty of getting purchase order by the consumer organizations. For such reason, government has launched the subcontracting system under the rules & regulations stipulated in the gazette. Though the small firms have got merit, skill, efficiency & expertise, they are unable to use the full capacity of the factory. Through development of small & cottage industries, in one hand, the scope of employment generation will be augmented and secondly, the demand for machinery and spare parts of large industries will be met. Thus foreign dependency of large industries will be reduced and a significant amount of foreign currency that is being used to import spare part & machinery in every year will be saved. Through subcontracting arrangement, the small firms will find opportunities to develop their technological skill and capability.



### 13.0 Survey Data on Subcontracting Aspects

A survey was carried out on 25 nos. of selected industries in the engineering sector. A summarized tabular scenario of subcontracting is shown in Table 4. The complicated component that is difficult or not possible to make either by the industry or by sub-contract is usually purchased as finished item or BOF items. A number of spare parts of the machinery of the industries are produced in a routine & scheduled manner by the sub-contractors. The industries that do not have casting facility get the casting & molding job done by other industries having foundry facility. The foundry workshops usually provide material as well. Some specific industry who are particular about quality of the product, supply raw materials of their own to the foundry to ensure quality of raw material. In that case, only casting & molding charge is paid by the customer industry. In general, major casting that is subcontracted is of cast iron (C.I). Twelve industries were found to do C.I. casting by rendering sub-contract (Table 3). Beside c.i., other casting such as mild steel (M.S.), aluminum, brass, gun metal, are also done on subcontracting basis. Plastic and rubber are also molded on subcontract basis. Two industries render subcontract on plastic items, one industry on rubber items and other two industries on wooden components. Aluminum and brass casting are done by three industries by rendering sub-contract. Some of the items that are made on subcontracting basis are copper alloy bush, guide pin, wood component, plastic component, spare parts, etc. Plastic three industries, rubber one industry, two metal-based industries and wooden component two industries render subcontract. For die casting, die is made on sub-contract basis. One surveyed industry was found to make die for other industries on sub-contract. Some special machined parts were found to be done on sub-contract (from mainly Dholai Khal) by five industries. Some surface treatments such as electroplating, galvanization are done on sub-contract basis by two industries. This is done for the industries that make laboratory equipment & machinery. Three industries were found to get the heat treatment done from St. Joseph Institute, Dhaka, one from BIT AC, on sub-contract basis. Two companies were found to get special milling and gear cutting from other industries. Three industries for some other special work such as polishing, hardness testing, spray painting, etc. were found to get done on sub-contract. Two industries were found to get M.S. forging work done from other workshop on sub-contract basis. One enterprise producing PVC pipe extruder renders subcontracting for his electrical panel, heater making, etc.

### 14.0 Learning from Foreign Experience

The story of how subcontracting was successfully developed in Taiwan is very interested indeed. Almost all observers in Taiwan agree that the foundation for subcontracting in the general machinery sub-sector were laid by the Singer

Sewing machinery Company. Government policy was critical but largely is so far as it protected sewing machines for home use from foreign units and made Singer's entry into the Taiwan market conditional on Singer's establishment of subcontracting network, the importance of Singer as a catalyst is indisputable and the strategy Singer pursued to comply with government requirements may prove instructive to policy makers in Bangladesh. Before Singer came to Taiwan in 1963, there already existed a group of small sewing machine producers. The sewing machine industry, however, was stagnant. Government approved Singer's investment for two reasons: First to save foreign exchange (local manufacturers could not produce certain types of sewing machines), and secondly, Singer as a technological leader could improve the quality of local parts if they were locally produced. The government imposed the following conditions in approving Singer's investment, in exchange for which Singer received the same 33% tariff that other sewing manufacturers enjoyed. The Singer subsidiary should procure 83 percent of the required parts from local parts manufacturers a year after establishment: provide them with standard blue prints and assign experience engineers to help establish work methods, prepare material specifications, and inspect finished products.

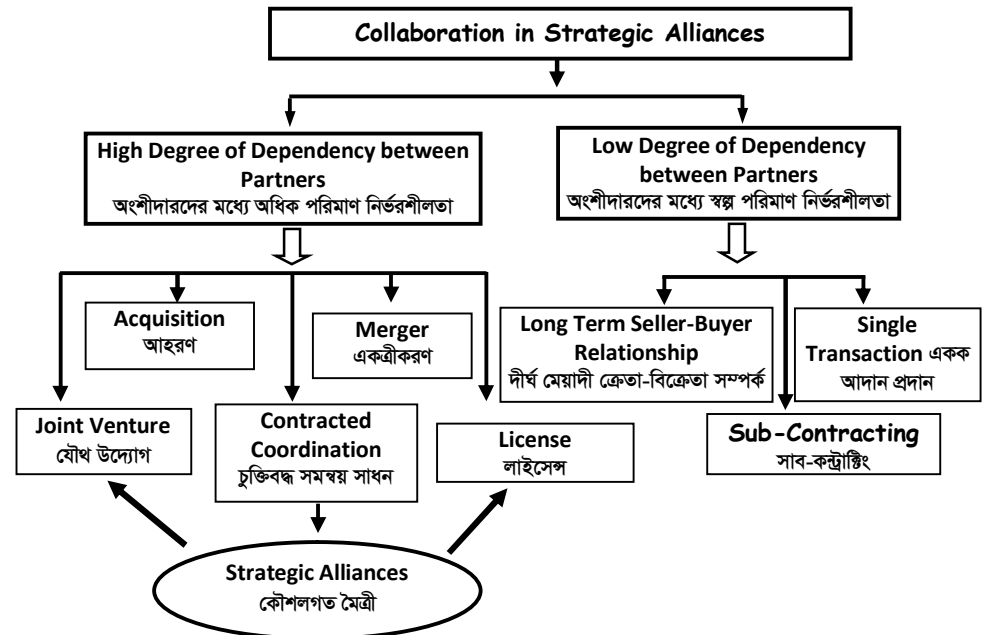


Figure 3: Subcontracting in the Broad Spectrum of Various Collaborations.

In the neighboring country India, there are certain products that are reserved for small-scale industries. As scheduled subcontractor, these small industries produce the products for the parent industries. In Japan, almost all large & medium scale Industries have cluster of industries that produce & supply product/component only for their parent industries under long term agreement. Product/components are produced under 'Bundling System'.

**Table 4: Subcontracting Items of Some Industries (Survey, 2013)**

Industry	Subcontracting Products	Sub-contract Supply
I-1	No item is sub-contracted	
1-2	Copper alloy bush Wood component Plastic component Some spare parts (from Dhaka & Madhabdi) Motor, electrical accessories, bearing	Sub-contract Sub-contract Sub-contract Sub-contract BOF Items
1-3	Some spares (machining) Casting (10 ton/yr.) (C.I) Motor electrical accessories, bearings)	Subcontract Subcontract BOF Items
1-4	Some spares (machining)	Subcontract
	Casting (30 ton/yr.) (C.I) Motor electrical accessories, bearings)	Subcontract BOF Items
1-5	Casting (18-20 T/yr.) (C.I) Motor 30 no./ set of machine, 3-25 HP, bearing, net, burner, electric fittings, meters etc.	Subcontract BOF Items
1-6	Some machined spares (Dhlaikhal) Casting (C.I) (Dholaikhal) Boiler burner parts, water treatment resin and media (USA, France), various instruments, motor (0.5 to 7.5 H.P., Singapore), activated carbon (India) electrical accessories)	Subcontract Subcontract BOF items
1-7	(1.6 ton/Month) (C.I.) (C.I. aluminum and mainly brass) Motor, bearing, V -belt, circuit breaker	Subcontract BOF item
1-8	Gunmetal brass, plastics, rubber items (16 ton/yr.) Motor, bearing, electrical accessories	Subcontract BOF item
1-9	Electroplating & galvanizing Heat treatment from St. Joseph School M.S. forging (5 ton/yr.) Switch, circuit breaker, relay pressure gauge, testing equipment, motor, electrical accessories	Subcontract Subcontract Subcontract BOF item
1-10	Casting (C.I) 3-6 ton/day	Subcontract

Industry	Subcontracting Products	Sub-contract Supply
	Ball bearing and shaft, motor, electrical accessories	BOF Items
1-11	I. Parts of die, guide pin, bush, polishing	Subcontract
1-12	No item is sub-contracted	
1-13	C.I. casting Heat treatment Painting Hardness testing Some spares Motor, engine and electrical accessories	Subcontract Subcontract Subcontract Subcontract Subcontract BOF Items
1-14	Casting C.I. Wooden component Gear cutting Motor. electrical accessories	Subcontract Subcontract Subcontract BOF Items
1-15	Casting C.I. (50 kg/month) Electrical panel, heater making, milling (gear cutting) Motor, electrical accessories	Subcontract Subcontract BOF Items
1-16	Some parts Screw	Subcontract BOF Items
1-17	No item is sub-contracted	
1-18	No item is sub-contracted	
1-19	Casting, AI, Brass and C.I.	Subcontract
1-20	Electrical accessories, and Motors	BOF Items
1-21	No item is sub-contracted	
1-22	Casting C.I., brass, aluminum Sheet cutting & bending Electrical accessories, Motors, electrical control, display	Subcontract Subcontract BOF Items
1-23	Casting C.I., copper alloys Grinding and surface treatment	Subcontract Subcontract
1-24	Heat treatment (from BITAC)	Subcontract
1-25	Casting Forging Heat treatment Electroplating	Subcontract Subcontract Subcontract Subcontract

The Mantta pump factory of UK has actively developed a subcontracting network in the area around the factory. Most of the people who became surplus to requirements at the factory are now employed in the local area by small companies around the factory. For example, all the functions related to sheet metal production, surface treatment and packaging are now subcontracted to such companies. The sub-contractors went partly through the same educational events as the workers in the factory. However, some of the stocks of the Manna factory have moved to the sub- contractors due to a lower level of methodological knowledge and capabilities of managing production. The sub-contractors now see

that the situation was caused by obtaining the information on production capacity needed in the near future too late. It is obvious that smooth cooperation between sub-contractor and the main company needs constant care.

One special problem with subcontracting is to update the proper price of the goods. In the local area, it is not possible to find competition every month or year to find the market price. The tendency is towards long-term co-operation. That is why both sides should agree the price according to methodological developments over time. The problem was solved using weekly or monthly visits to sub-contractors to give them advice on the latest methodological developments, and to learn about current developments on the sub-contractor. The sub-contractors are ranked in categories I, II and III according to their service level (quality of parts, accuracy of delivery time, etc.). If a sub-contractor stays at the lowest level, it is aware that it could be replaced if a better supplier is found. It is an indicator that the company has started to look for a more reliable partner and there should be some improvements in this sub-contractor's operation.

### 15.0 Policy Imperatives for BSCIC and Other Associated Organizations

As a corporate body of the Government, the prime objective of BSCIC is to nurture & assist small & cottage industries (SCIs) in its growth trajectories. BSCIC to be reorganized in the paradigm of multifaceted demand of the present so that its capability augments in a competitive manner. To proliferate subcontracting among various sizes of industries, it is essential to develop small & cottage industries for different sectors. Cluster industries to be developed as per requirement in different regions of the country. In the areas, where industrial estate has not been built yet but possess significant potency, concerned authority should provide infrastructure facility on priority basis as per the recommendation of BSCIC. In the growing & blooming industrial areas of the country, BSCIC should strengthen its continued effort in providing of at least those infrastructure facilities that presently exist in other BSCIC's industrial estates. Through development of subcontracting system, endeavor to be taken to establish relationship between corporate sector and small & cottage industries. In order to render financial assistance in developing subcontracting, especial fund to be created through banks and financial organizations. Subcontracting enterprises, irrespective of their locations, will be entitled to get incentives and other facilities similar to Small & Cottage Industries around the country. BSCIC is to launch 'The Small Industry Credit Guarantee Scheme' with joint collaboration of Bangladesh Bank, Government / Non-Governmental bank/ insurance and financial organization in a most comprehensive, far-reaching and extensive

manner. Priority should be given to foreign investors for establishing industries in the BSCIC industrial estates.

### 16.0 Policy Recommendations

- (1) **Expansion of Subcontracting in Micro & Macro level:** Subcontracting system to be proliferated comprehensively both in the Government sector & private sector (micro & macro level). Since the sector periphery of the state-owned industries (Sols) in Bangladesh is being contracted, the scope of subcontracting under Government patronage is being limited. Thus subcontracting among enterprises in private sector to be spurred with dynamism at larger scale.
- (2) **Bangladesh Gazette (1989):** The rules & regulations stipulated in Bangladesh Gazette (October, 1989) have to be revised. The subcontracting scheme of the mentioned gazette applies to machinery and spare parts made of metal, plastic and ceramics only. The scope of subcontracting to be expanded to all products of Small & Medium Enterprises (SMEs), as for examples chemicals, agro-products, garments, textile, electrical etc. In the gazette, there should be provision of punishment for those who violate the government rules subcontracting. The gazette rules to be fostered and implemented.
- (3) **Subcontracting Scheme of BSCIC:** The subcontracting scheme of BSCIC to be strengthened. The subcontracting section of BSCIC is to be made powerful and its scope to be widened. Brochure with information about subcontracting to be published time to time. The required fund to be allotted for brochure publication.
- (4) **Industrial Policy:** 'Industrial Policy 2010' stated about the subcontracting policy. The policy to be implemented.
- (5) **Incentive:** Incentive to be rendered to the subcontracting organizations that act as linkage industries to large industries. Special facilities to be given to the subcontractors of small industries in terms of concession in VAT & turnover tax.
- (6) **Standing Committee:** A strong standing committee to be formed comprising of representatives from inter-ministerial body such as Ministry of Industry, Ministry of Commerce, Ministry of Law and from other organizations such as BSCIC, University, FBCCI, Board of Investment, EPB, etc. The committee will propose policy imperatives and recommendations pertaining to subcontracting. The complex issues of

subcontracting will be solved by the committee. Any sort of arbitration/dispute between supplier & purchaser will be solved by this committee. If any product is in use in perfect orderly fashion in the country, then any change or replacement in the product to be approved by the committee so that the genuine change prevails.

- (7) **Subcontracting Monitoring Cell:** A subcontracting monitoring cell is to be formed. The monitoring cell will collect and preserve all information & data regarding subcontracting from various concerned organizations (both purchaser & vendor organizations) and will act as data bank of subcontracting affairs. The data of product/components that can be supplied through subcontracting from various organizations around the country will be collected the monitoring cell. The importation of the products/components by the importers organization to be checked/supervised by the monitoring cell. The monitoring cell is required as institutional setup to conduct all these essential activities.
- (8) **Innovation Promotion:** Opportunities to be rendered to the sub-contractors regarding innovation promotion. Opportunities to be given to produce the products /component that are not being produced in the country. For this purpose, sample products or prototype to be distributed among the potential sub-contractors and necessary advice and assistance are to be provided.
- (9) **Expert Forum:** An expert forum can be formed comprising of experts of relevant subject matters who will render required advisory services to the sub-contractors.
- (10) **Common Facility Center:** A number of Service & Training Centers that are modern having advanced technology have to be established around the country. One center at each of the divisional city/town and at least two in Dhaka Metropolitan are required. Through centers, the efficiency, capabilities, expertise and productivity of the subcontracting firms will be augmented.
- (11) **Accountability:** For better accountability, the subcontracting scheme to be adhered to the Auditor General, Bangladesh.
- (12) **Display Center:** In order to merchandize the products, Product Prototype Display center to be established permanently so that the products of the whole country can be exhibited whole year sector wise. Local display centers are to be established at various places to display local products.

- (13) **Compatible Specification in Projects:** For big projects, the specification for each engineering component of the project to be such that it becomes compatible to local firms so that they can compete effectively.
- (14) **Importation of Foreign Goods:** There should be explicit rules & regulations for the consumer organizations regarding importation of foreign goods. Opportunities to be given to the local industries to produce the products instead of import. For this, emphasis to be given a development of technological capabilities. For the consumer organization, import can be allowed for the first time and then steps to be taken to produce locally.
- (15) **De-packaging of Large Projects:** In the case of implementation of large projects, de-packaging to be done to identify the engineering components that can be made locally. Priority to be given to the local engineering industries (individually or in consortium) to produce appropriate part of the project
- (16) **Subcontracting Rules to be made as Law:** The rules and regulations stipulated in the gazette to be made as law so that in case of arbitration/dispute incurred between consumer organization and subcontractors that has appeared at the court, can be solved lawfully.
- (17) **Subcontracting Exchange Scheme:** Steps to be taken to launch Subcontracting Exchange Scheme with other countries (such as ICO, SAARC, BIMSTEC, neighboring countries, friend countries etc.). The foreign mission/embassy of Bangladesh can collect information & data and take positive steps to implement such endeavor.

## 17.0 Conclusions

Development of subcontracting network is one of the prerequisites for healthy growth of the engineering sector. Subcontracting allows firms to specialize in a narrow field. Engineering products consist of a large number of components each requiring a number of metals working processes for its manufacture. Complexity of production planning and control and management increases exponentially with the number of component parts to be manufactured in-house. Hence, much of the managerial problems as well as cost of production can be reduced if the industry can develop a system for promotion and patronization of firms who specialize in a particular process or type of products. Subcontracting is less practiced in our engineering industries. Many enterprises try to carry out entire operations by

themselves. The large units in the public sector were designed to produce almost all the manufactured parts in-house. Even within the public sector units, there is strong resistance to subcontracting. The impediments to the growth of metal industries were identified in the mid-sixties as the lack of suppliers of quality casting, forging, heat treatment, surface treatment and jigs and fixtures. The objective behind creation of facilities in Bangladesh Machine Tools Factory (BMTF) for such processes was to provide services to other industries as well. However, in spite of the fact that BMTF was launched about 23 years back, it failed to provide these services to outside units, partly due to lack of marketing efforts. BIT AC was established in the sixties to render assistance to LEIs. According to government notification (Ministry of Industries), it is mandatory that sector corporations should render at least 20% of its work BITAC. Thus BITAC is presently a competitor to LEIs on unlevelled ground. The subcontracting relationship being developed between sister organizations of many private group industries developed recently appears to be promising one. Many manufacturing units have also been found to subcontract out parts to other workshops. Such subcontracting has been necessitated more due to limited capacity rather than reasons of specialization. These units have been able to manage orders for pumps which much exceed their capacity. While it is desirable for the large public sector industries to develop their own subcontract supplier, the procurement system does not permit them to promote a few selected firms and provide technical and financial assistance to them. The operation and management of the public sector units do not generate enough confidence in the private entrepreneurs to invest in parts whose client is exclusively one manufacturing unit.

Government should formulate and implement policies so that state owned and other large enterprises give priority to local Engineering Industries (EIs) while purchasing spares and machinery. BSCIC subcontracting arrangement, which was designed to achieve this, should be rejuvenated. While implementing large projects, de-packaging should be done to identify the engineering components that can be done locally. Local EIs/LEIs, individually or in consortium, should be given priority to participate in bidding for the appropriate components of the projects. Some of the local EIs are reported to have worked already for international firms as sub-contractors and proven their capabilities. Local LEIs often complain that concerned personnel of big state-owned and private enterprises are more interested to buy machinery and spares from abroad because of illegal monetary gains. Buyers, on the other hand, complain about poor quality of LEIs products. The government, as a prime stakeholder, has a definite role to play in bringing together not only these two parties but also other stakeholders

e.g., R&D organizations, training institutions, financial institutions, Chambers/Associations, NGOs, raw materials suppliers etc. to resolve this problem and formulate policy imperative for various forms of cooperation through subcontracting between industries so that a pathway can be formed towards a strong, progressive & dynamic industrial sector.

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