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Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org

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TECHNOLOGY DISPLAY AND RESOURCE CENTRE FOR SMALL-SCALE INDUSTRIES IN MALAYSIA.

by

Dr. Anuwar Ali
Faculty of Economics
Universiti Kebangsaan Malaysia
(National University of Malaysia)
Bangi.

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I. Introduction

There is little doubt that small-scale industries (SSIs) generate a significant impact on industrialization specifically in terms of employment creation, capital utilization, domestic skill training and entrepreneurial development. Enhancing the role of the SSIs particularly with respect to upgrading their technological capability would certainly be beneficial for industrial growth as a whole and for the development of inter-industry linkages between the SSIs and their larger counterparts.

It is in the latter area that more emphasis is expected to be given during the proposed Industrial Master Plan (IMP) period, i.e. 1986-1995. Given the appropriate institutional support, the SSIs would be able to create substantial inter and intra-industry linkages as they become ancillary or supporting industries producing parts, components and engineering services for the larger enterprises, often on sub-contract basis. These industries include foundries, casting, solid metal forming, metal cutting, surface treatment and joining techniques. Other ancillary or supporting industries include the production of processing machinery, equipment, parts and accessories for the export-oriented resource-processing industries such as tin mining, palm oil refining, rubber processing and timber processing.

Numerous studies have indicated that the contribution of the SSIs has been significant for developing countries like Malaysia especially during the early phases of industrial development. These studies also indicate that the potential contribution of the SSIs would have been larger were it not for existing industrial strategies that tend to favour the large-scale industries. For example, fiscal incentives, tariff protection and facilities such as loans and industrial estates granted to new manufacturing projects tend to be biased against the SSIs.

Based on an employment cut-off point of 50 or less, 85.9% of the 20,429 manufacturing establishments covered by the 1981 Census of Manufacturing Industries can be considered as small-scale (See Table 1). On the other hand, the medium-scale industries (employing between 50-199) account for 8.2% and the large-scale industries (employing more than 200) account for only 2.3%.

The SSIs account for 28.3% of total manufacturing employment while the medium-scale industries account for 27.6% and the large-scale industries account for 44.1%. In terms of fixed assets and revenue generated, SSIs shares are even smaller; i.e. 16.4% and 15.8% respectively. The contribution by the medium-scale industries amount to 33.3% and 33.7% respectively. The share of the large-scale industries are even bigger, amounting to 50.3% and 48.7% respectively.

The average value of fixed assets employed per SSI is only about M$93,200 compared to about M$2 million for medium-scale industries

TABLE 1 : MALAYSIA - MANUFACTURING ESTABLISHMENTS BY EMPLOYMENT SIZE, 1981

Employment Size	No. of Establishment (%)	Employment (%)	Fixed Assets (%)	Revenue (%)	Fixed Assets Per Establishment ($'000)	Fixed Assets Per Employee ($'000)
Less than 5	43.2	3.6	1.0	1.0	11.5	4.9
5 - 49	46.3	24.7	15.4	14.8	169.2	11.2
(Less than 50)	(89.5)	(28.3)	(16.4)	(15.8)	(93.2)	(10.4)
50 - 199	8.2	27.6	33.3	35.7	2,071.7	21.8
200 & over	2.3	44.1	50.3	48.7	112,991.1	20.6
(More than 50)	(10.5)	(71.7)	(83.6)	(84.4)	(4,072.0)	(21.0)
Total Manufacturing	100 (20,429)	100 (578,682)	100 ($10,438 million)	100 ($38,693 million)	510.9	18.0

Source: Malaysia, Census of Manufacturing Industries, 1981.

and over M$11 million for the large-scale industries. In terms of fixed assets per employee, the SSIs average only M$10,400 per employee compared to M$21,790 per employee and M$20,570 per employee for the medium-scale and large-scale industries respectively.

The above indicators explicitly imply the increasing dominance of the large-scale industries in terms of employment per establishment, fixed assets per establishment, and revenue per establishment. In spite of this, the SSIs contribution in terms of Malaysia's industrial growth is still significant; and this is manifested by their predominance in a number of industries including food manufacturing, fabricated metal products (including tinsmithing and iron foundries), and timber-based products including wooden furniture. The SSIs are also significant ir a number of relatively labour-intensive industries including the textiles and clothing sub-sectors (e.g. batik making) and in certain leather products, paper products and rubber-processing.

The predominance of the SSIs in the above industries is in general a reflection of the relatively low level of technology inherent in these industries. They are generally labour-intensive, using relatively familiar technologies that are mainly imported, and sometimes adapted to suit domestic conditions. As a consequence of these traits, it is also observed that the SSIs experience relatively low levels of productivity or value-added per employee.

It is in this context that the SSIs need supportive government strategies which would ultimately enhance their technological capability. Given the appropriate incentives to minimise the numerous constraints that they face, including financial and managerial, the SSIs will certainly remain as an important contributor towards further manufacturing growth. The establishment of the Technology Display and Resource Centre in May 1983 for the SSIs is thus timely, if the role of the SSIs is to be encouraged further. Its establishment thus complements the earlier formation (in May 1981) of the Small Enterprises Division (SED) in the Ministry of Trade and Industry.

2. The Concept of The Technology Display And Resource Centre (TDRC)

The need to disseminate technical information and skills to the SSIs becomes all the more significant with the increasing pace of industrialization and the increasing dominance of the large-scale industries. It was in this light that the TDRC was mooted out by the Malaysian authorities as early as 1978 in the hope that the creation of the Centre is able to provide four important facilities:-

(i) as a focal point through which the SSIs could have access to information on suitable technology that is available in the market;

(ii) as a place where various types of modern machinery could be displayed and demonstrated for the benefit of the SSIs;

(iii) as a resource centre stocked with books, magazines, journals, periodicals, newspaper cuttings, articles, brochures and catalogues with particular emphasis on the SSIs; and

(iv) as a provider of consultancy and advisory services to the SSIs.

Being relatively small and mostly locally-owned and managed, the SSIs generally lack the information network that is essential for decision-making regarding production methods, finance, marketing etc. This also means that they are disadvantaged as regards the procurement of capital equipment or machinery in the international markets. Such a situation often reduces their competitiveness vis-a-vis their larger counterparts. The establishment of the Centre is thus appropriate at this stage considering that the Malaysian government currently gives substantial weight to the development of domestic industries. The current review on the overall industrial strategy under the proposed Industrial Master Plan 1986-1995 with the financial and expert assistance of UNDP and UNIDO respectively reflects the government's concern on this matter.

The Centre is established to achieve the following objectives:-

(i) to upgrade technical knowledge and skills within the SSIs;

(ii) to upgrade management skills of SSI entrepreneurs;

(iii) to advise the SSIs on matters regarding the supply of equipment and machinery as well as their suitability and capability;

(iv) to advise the SSIs on the financing of machinery;

(v) to encourage the modernization of production techniques so as to increase efficiency and thus profitability;

(vi) to upgrade the quality of finished products; and

(vii) to create a sense of awareness and educate the general public on the contribution of the SSIs.

Some of the above objectives are general in nature, and have in fact been adopted by other government agencies that have been formed earlier than the TDRC. Some of these agencies do not specifically assist the SSIs, but are more generally concerned with the expansion of all manufacturing projects irrespective of firm size. Amongst the more important agencies are Bank Pembangunan Malaysia Berhad, Credit Guarantee Corporation (CGC), Malaysian Industrial Development Authority (MIDA), Malaysian Industrial Development Finance (MIDF), National Productivity (NPC), and the various State Economic Development Corporations (SEDCs). In view of the proliferation of these agencies and thus the necessity to co-ordinate their activities, this paper shall argue later that it is essential to provide a well-conceived and comprehensive plan of action if the SSIs were to be given a boost in manufacturing activities.

Of particular interest to this paper and specifically with respect to industrial technology development is the Standards and Industrial Research Institute of Malaysia (SIRIM). Since its establishment in 1975, SIRIM serves as a national nucleus for promoting standardization, certificating marking, industrial research and other related industrial activities. It is in this respect that SIRIM should complement the present activities of the TDRC, given the former's wider experience and access to well-qualified personnel. This is particularly so given the fact that the Centre is still in its infancy and its present activities are mainly limited to being a display centre and providing limited services. The consolidation of their respective activities must be seen as a vital link to upgrade the quality of the SSIs and increase their contribution towards manufacturing growth.

3. Early Experiences Of The TDRC

Dispite the numerous objectives that the Centre is supposed to achieve, its early experiences has been quite limited since it is recently established and relatively under-staffed. This inevitably reduces its ability to provide the various needs of the SSIs. However, the Centre has so far been able to assist the SSIs in the following areas:-

(i) Machinery Exhibition Centre:

Machinery and equipment of a specific industry group are put on exhibition at the Centre once every three months. By enabling the suppliers of machinery and equipment the opportunity to

display their machinery and related products, the Centre has to a large extent created an awareness amongst the SSIs regarding the availability and costs of machniery and equipment in the market. Equally important is the impact of such exhibitions on SSI entrepreneurs regarding the contribution of new technology towards higher productivity, upgrading product quality and keeping abreast with consumers' tastes. This is part of the 'learning process' that is so vital to the industrialization process in the country.

By the end of 1984, six exhibitions were held at the Centre covering the following areas:-

(a) locally fabricated machines;

(b) food processing and packaging machines;

(c) light engineering and metal-working machines;

(d) wood-working machinery;

(e) packaging material and machinery; and

(f) auto-services.

With the exception of the exhibiton on auto-services, the other exhibitions seem to reflect the current needs of the SSIs in view of their preponderence in such industry groups.

Most of the entrepreneurs who visited the Centre are impressed with the displays and demonstrations of machinery and equipment since the production capacity and price of such machinery are

most appropriate for their needs. More importantly, they are exposed to a new information network on matters relating to up-to-date technology or production processes. This kind of exposure is indeed essential to the SSIs given the fact that they are in no position to send their managers overseas to locate or buy imported machinery and equipment.

(ii) Guided Tours:

To enable SSI entrepreneurs from outside the capital city Kuala Lumpur to participate in the exhibitions being held at the Centre, guided tours are being organised in the hope that such tours would enable them to enhance their technical know-how on new machinery and equipment. Besides upgrading their technical know-how, facilities provided by the Centre including demonstrations of production techniques, lectures, discussions, film shows and reading materials would inevitably upgrade their management skills. This is certainly an important ingredient in the 'learning process' of a developing country like Malaysia where industrialization is still in its infancy.

But the end of 1984, a total of 16 guided tours were organised for the 6 exhibitions held at the Centre; accommodating a total of 339 entrepreneurs who were provided with various facilities in Kuala Lumpur including accommodation, food and travelling expenses. To complement these guided tours, two mobile exhibitions were also organised outside Kuala Lumpur (Ipoh and Kuantan) to encourage more entrepreneurs outside the Kuala Lumpur area to participate.

(iii) Consultancy And Advisory Services:

A wide range of these sefvices are provided by the TDRC for the benefit of the SSIs, and these include:-

(a) sources of finance and eligibility;

(b) choosing the right mix of machinery;

(c) identification of business opportunity;

(d) project feasibility studies;

(e) general management problems;

(f) marketing strategies; and

(g) planning and control procedures.

In seeking these consultancy and advisory services, the majority of SSI entrepreneurs tend to seek advice on project financing and the selection of machirery and equipment; thus indicating the two major constraints that seem to impede the expansion of the SSIs.

The shortage of financial resources appears to be a major constraint faced by the SSIs; particularly for purposes of initiating a manufacturing project and for expanding and modernizing their plants. The shortage of funds will simultaneously affect their ability to employ qualified and experienced personnel as well as their capacity to select the appropriate machinery and equipment and to innovate and upgrade their product designs and quality. At the same time, the SSIs are at a disadvantage as far as the recruitment of well-

qualified and experienced personnel is concerned since the wage structure in the large-scale industries seem to attract such personnel away from the SSIs. In the process the SSIs will become less competitive vis-a-vis the medium and large-scale industries.

4. The TDRC : Its Impact on the SSIs and its Future Plans

Given that the Centre is newly-established and it lacks the services of experienced technical personnel, its impact on the SSIs is still negligible, particularly in terms of upgrading the technological capability of the SSIs. Apart from the lack of technical expertise, the Centre is faced by a number of other constraints. In the case of technology displays, amongst the more important constraints are:-

(a) Some machinery suppliers are unwilling to participate in exhibitions organised by the Centre. They cite inconvinience and the need to safeguard trade secrets as reasons for inability to participate;

(b) The inability of the Centre to display the full range of some machineries. This arises because of the limited space in the present Centre and machinery suppliers seldom have the full range of machinery for loan to the Centre; and

(c) Certain machinery or equipment could not be demonstrated because of inadequate power supply or inavailability of related facilities.

with the view to provide better facilities for the SSIs.[1] The success of the Centre in the future will depend a great deal on the willingness of the private sector to participate more actively by supplying at regular intervals machinery or equipment for display and demonstration purposes. Incentives could be provided for his purpose. To make these displays and demonstrations more meaningful, the Centre plans to produce operation manuals of various machinery with the co-operation of other government agencies, particularly SIRIM. By introducing these measures, the Centre hopes to attract better responses from the SSIs.

(ii) The Importance of SIRIM as a Link for developing Technological Capability

Presently, the role of industrial extension to the SSIs has not been a prime objective and activity of SIRIM, and it is also constrained by the fact that there is no explicit and detailed assignment of objectives and fuctions with respect to SSI development. Although the existing organizational structure of SIRIM does not cater specifically for SSI development, its future role in this respect must be enhanced. This is particularly significant in the light of the establishment of TDRC. The links between these two organisations are recognised by the government given the fact that SIRIM is also represented

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1. A five acre site has been earmarked for this purpose. The existing Centre is a temporary one, located in rented premises in Kuala Lumpur city centre with only 3,423 square feet of floor space.

in policy-making body responsible for the SSIs (i.e. the Co-ordinating Council for the Development of Small Enterprises) and the Management Committee of the TDRC itself, with the Ministry of Trade and Industry playing a pivotal role in the overall development of small-scale enterprises.

The recent establishment of the Metal Industry Technology Centre (MITEC) within SIRIM should act as a catalyst to improving the technical capability of the SSIs. MITEC has to a certain extent contribute towards the improvement of the SSIs in metal and light engineering practical training courses, in areas of diemaking, presswork, welding and electroplating. To complement this, SIRIM also provides technical advisory services through its Industrial Extension Services Unit whose objective is to ensure that entrepreneurs will have the capacity to produce quality products at minimum cost by using the most appropriate technology. These advisory services cover such areas as production technology, production control, production cost and technical information pertaining to factory location, material handling, storage and maintenance.

5. Concluding Remarks

Considering that the SSIs is expected to play a significant role in increasing the pace of industrialization in terms of producing both consumer products and intermediate goods and that there is a need to upgrade their technological capability, it is vital that the authorities give top priority to the establishment of

R & D facilities and the provision of technical and consultancy services to the SSIs. This will enable the SSIs:-

(a) to compete effectively with the large-scale industries in terms of product quality;

(b) to be competitive in the export markets; and

(c) to play an increased role as dependable suppliers of inputs to the medium and large-scale industries.

It is in this light that the TDRC and SIRIM could effectively co-ordinate their respective activities and actively provide advisory and training services, particularly to the SSIs. These services should include updating information systems on technical-know-how, engineering products, machinery and services available in the country and ensuring their widest dissemination.

The tasks of upgrading and modernizing the SSIs, particularly with respect to their technological capability, are indeed crucial and their effectiveness can only be ensured with strong institutional support. For this purpose, it is important that the existing Small Enterprises Division (SED) in the Ministry of Trade and Industry be strengthened so as to co-ordinate and rationalise the functions of both the TDRC and SIRIM as well as other government agencies that are directly involved in assisting the SSIs. Such co-ordination and rationalization are indeed vital for the future development of the SSIs given the limited financial and manpower resources at Malaysia's disposal.

It is thus proposed that the newly strengthened SED will now emphasise the following functions:-

(a) to co-ordinate the functions of various government agencies which serve the SSIs so as to avoid duplication of efforts;

(b) to review the existing policies and strategies of these agencies to maximise their potential contribution for the benefit of the SSIs;

(c) to set up a data-bank on all SSIs in manufacturing; listing their existing activities, their sources of technical and financial assistance, technology activity, marketing outlets etc; and

(d) to co-ordinate training programmes, technical and management courses for the personnel of the SSIs.

Given that the SED is equiped with the necessary manpower and a newly redefined role, it is also proposed that a detailed assessment of its performance will be carried out within a three year period, and if it is deemed necessary, a special authority for the SSIs may be established.