

SKILL SHORTAGES IN THE CONSTRUCTION SECTOR: A CRITICAL SURVEY OF EXISTING FORMAL VOCATIONAL TRAINING SYSTEMS*

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Industri pembinaan telah mengalami kekurangan buruh tempatan sejak awal 1980-an, lebih-lebih lagi pada dekad yang seterusnya. Kemasukan buruh asing, secara sah mahupun haram, telah banyak memulihkan keadaan. Dalam tahun 1994, Lembaga Industri Pembinaan Malaysia (CIDB) telah ditubuhkan untuk memastikan industri pembinaan berkembang secara teratur. Untuk menangani kekurangan buruh tempatan, peruntukan telah dikhaskan untuk menyediakan enam Akademi Binaan Malaysia (ABM) yang sudah pun beroperasi. Artikel ini cuba membezakan peranan ABM dengan sistem latihan vokasional awam yang wujud. Dalam usaha mengurangkan pergantungan ke atas buruh asing, usaha tambahan diperlukan seperti yang sedang dilakukan oleh CIDB.

INTRODUCTION

While the presence of foreign site operatives in post-Independence Malaysia can be traced to the boom years of the 1970s (Kassim, 1986), the 1980s and 1990s were characterised by a dramatic augmentation in their number. From the estimated 500,000 foreign workers in 1984 (Ministry of Human Resources, 1991), their population was reckoned to have increased to 1.2 million by 1991 (Pillai, 1992) and 2.4 million by early 1998 (*Utusan Malaysia*, 1998). Even though foreign labour had permeated into many economic activities, construction was among those that had come to rely heavily on foreign workers. In 1987, the Construction Workers Union estimated that about 60% of the 300,000-350,000 workers in the industry were immigrants (Gill, 1988), a figure

* Thanks are due to an anonymous referee of this journal. Remaining errors are my responsibility.

that was revised upwards to 70% in 1991 (Pillai, 1995). The author's own study found that in the major cities of Georgetown, Kuala Lumpur and Johor Bahru, foreign workers made up in excess of 80% of site operatives (Abdul-Aziz, 1995). Today, despite the dwindling of foreign workers due to poor economic climate, the construction industry's dependency on them still remains.

Up to the late 1990s, legal entry was granted to construction labour from five different countries (i.e., Indonesia, Bangladesh, Philippines, Thailand and Pakistan) (Table 1). An indeterminate but sizeable number of clandestine foreign workers, however, circulated in the construction labour market in Malaysia (Table 2). The early years of acquiescence to undocumented foreign inflow due to their small number in rural areas (Kassim, 1986), and subsequent official vacillation between leniency (i.e., amnesty) and stringency (i.e., deportation) (Abdul-Aziz et al., 1999) engendered a callous disregard among local employers for legal intervention. The under-staffed authorities seemed debilitated by the enormity of the task that confronted them. Hence, documented and undocumented workers co-existed, mingling at work and socially.

Ever since the 1970s, various parties representing contractors and developers alike had urged the government to set up a board that would develop, manage and regulate the country's construction industry. The Bill for the formation of the Board was finally passed by Parliament in May 1994 and gazetted as an Act in July 1994. The Construction Industry Development Board (CIDB) began operations on the 1st December 1994. In facing up to the challenge of local labour shortages that afflicts the construction industry, CIDB allocated RM360 million for the construction of six training facilities under the name of Akademi Binaan Malaysia (ABM). This paper dwells on the role that ABM play in relation to the several public vocational training systems that already exists. This paper however highlights that attempts to address skilled local labour deficiency must go beyond increasing training facilities and programmes. In preparing this paper, various parties were interviewed including 1 CIDB officer, 10 trainers [3 were from Industrial Training Institute (ITI)], 4 from MARA Vocational Institute (MVI), 3 from Akademik Binaan Malaysia (ABM), 10 construction employers, 20 site operatives (5 were from ABM, 5 from ITI, 5 from GIATMARA and 5 from MVI).

Table 1: Number of Regularised Foreign Workers by Nationality (July 1992-Dec 1995)

Country	Construction	Plantation	Domestic help	Manufacturing	Services	Others	Total	Percentage
Indonesia	92,805	101,521	62,347	16,188	2,063	1,125	276,049	64.96
Bangladesh	26,484	16,416	56	40,996	4,743	416	89,111	20.96
Philippines	1,160	49	26,876	1,298	191	554	30,128	7.09
Thailand	6,342	10,845	3,818	166	1,126	519	22,816	5.37
Pakistan	1,121	183	2	672	67	3	2,048	0.48
Others	2,218	460	83	660	867	574	4,862	1.14
Total	130,130	129,474	93,182	59,980	9,057	3,191	425,014	
Percentage	30.6	30.5	21.9	14.1	2.1	0.8		100.00

Source: Immigration Department, as quoted in Kassim (1996).

Table 2: Number of Illegal Foreign Nationals apprehended by Malaysian Police according to Country of Origin and Sector (from February 1993 till 1996).

Country	Construction	Plantation	Services	Manufacturing	Petty trading	Begging	Others	Total	Percentage
Indonesia	47,948	13,606	5,055	2,786	113	5	8,587	78,100	58.54
Bangladesh	11,130	2,842	2,041	3,849	99	26	11,986	31,973	23.97
Myanmar	1,290	307	402	271	58	64	10,056	12,448	9.33
Thailand	600	950	274	113	56	5	4,263	6,261	4.69
India	616	172	145	16	28		1,049	2,026	1.52
Pakistan	429	111	27	24	14		1,207	1,812	1.36
Philippines	7		2	40			357	406	0.30
Nepal	24		15	8	10		106	163	0.12
Cambodia			4				63	67	0.05
P. R. China	1		1		18	1	21	42	0.03

Country	Construction	Plantation	Services	Manufacturing	Petty trading	Begging	Others	Total	Percentage
Vietnam					6		23	29	0.02
Sri Lanka					6		10	16	0.01
Others*	2	1	3				48	54	0.06
Total	62,047	17,989	7,969	7,107	408	101	37,776	133,397	
Percentage	46.6	13.5	6.0	5.3	0.3	0.1	28.3		100.0

Source: Fieldwork, The Police Force.

* Iran, Taiwan, Ghana, Afghanistan, Singapore, Kampuchea, Somalia, Sudan, Algeria, Iraq, North Korea, Britain, Brunei, Mali, Punjab, Lesotho, Brazil, Argentina, USA, Turkey, Burma and Barbados.

TRADITIONAL TRANSFERENCE OF CONSTRUCTION SKILLS IN MALAYSIA

Construction skills in Malaysia are traditionally passed to local youths through an informal apprenticeship system. Young entrants are exposed to practical skills under the close supervision of senior craftsmen. Arguably, the occupational orientation of the informal training process is the best preparation for production. A parallel path to skilled employment in the Malaysian construction industry by way of systematised formal training procedures does however have its benefits.

By having the institution-mediated training process, vocational training is 'occupation-led' rather than 'company-based.' As such trainees are not subjected to the uncertainty in quality and breadth of work training arising from variation in trainers and organisation policies. Trainees are not simply exposed to training patterns subjected to the company's narrow economic and technological needs or constrains. An insidious employer may seek to reduce turnover cost and employee bargaining power by confining the apprenticeship exposure to minimally complex and easy-to-learn tasks (Attewell, 1987). Moreover by having formal training venues, would-be trainees are left in no doubt as to which party they should approach for skill acquisition. Formalised vocational training allows any young person, not just those with industry contacts, to enter the construction labour market as semi-skilled and even skilled individuals. One of the features of the urbanisation pattern introduced during the colonial days is the concentration of Chinese (and to a lesser extent Indian) immigrants as urban dwellers (Ma and You, 1960; Arles, 1970). Under the British administration, the Chinese dominated commerce and industry that include the urban building and construction activities (Fisk, 1962). The Chinese construction entrepreneurs would engage young apprentices from their own family members, relatives, friends or business acquaintances (Mehmet, 1972), even then when there is shared clanship. The informal apprenticeship arrangement therefore operates within the predominantly ethnic Chinese construction community.

PUBLIC TRAINING INSTITUTIONS

The public training systems in Malaysia have been described as being 'diverse and complex' (Lucas and Verry, 1999). There are the Industrial Training Institutes (ITIs) run by the Manpower Department within the Ministry of Human Resources, MARA Vocational Institutes and GIATMARA both by the Ministry of Entrepreneurial Development, National Youth Skill Institutes by the Ministry of Youth and Sports, Youth Development Training Centres in Sarawak by the Social Development Ministry and skill training centers in Johore by the Social Welfare Department. The structure of vocational training varies markedly from one system to the next. For the purpose of this paper, only the Industrial Training Institutes, MARA Vocational Institutes and GIATMARA are described, in addition to the ABM.

There are also close to 600 private vocational training institutes registered with the National Vocational Training Council, of which 14 offer building construction courses. Due to space limitation, they are not discussed in this paper. They are mentioned here simply to draw attention to their existence.

Industrial Training Institutes (ITIs)

Beginning with the ITI in Kuala Lumpur that began operations in 1964, 8 others have since been established - Jitra in the state of Kedah, Ipoh, (Perak), Kuantan (Pahang), Kuala Terengganu (Terengganu), Kota Bharu (Kelantan), Pasir Gudang (Johore), Federal Territory of Labuan and state of Malacca. Five new facilities in Negeri Sembilan, Johor, Perlis, Sarawak and Sabah are nearing completion. Under the 8th Malaysia Plan that stretches from 2001 until 2005, the government plans to build more ITIs and expand existing ones in the hope of augmenting its annual output of skilled workers to between 30,000 and 40,000, from the present 4,000. By having ITIs geographically dispersed throughout the country, as many potential trainees as possible in outlying areas can be enrolled.

ITIs offer all kinds of courses. Intake is done twice yearly, in January and July. Table 3 shows the venue where construction-

related courses are offered. Roughly 90% of the trainees are exempted from paying fees. Instead participation brings monthly allowance of RM45 (US\$12.86, using exchange rate of RM3.80 as equivalent to US\$1.00) while on campus, and RM210 while undergoing on-the-job training. Sponsored skilled trainees taking advanced courses are charged an annual fee of RM2,000. Funding for the running of ITIs come from the Manpower Department under the Ministry of Human Resources. Applicants must be over 17 years old and medically fit. Entry requirements vary between courses. For wood-based construction, building construction, and plumbing and sanitary, applicants must have completed at least Form 3 of formal schooling and be between the ages of 16 to 19. All applications are centrally processed by the Manpower Department in Kuala Lumpur which then assigns successful candidates to the various courses and locations.

In the wood-based building construction course, trainees are taught to construct wooden structures such as roof frame, floor, window, door-frame and wall, as well as maintain and use all types of wood machines. Trainees are also taught the fundamentals of brickwork and pipework. In building construction, trainees are taught to read construction plans, prepare estimates, set out, do tiling, plastering, walling and such like. In plumbing and sanitary, among the skills imparted are fixing and connecting pipes for hot and cold water circulation system, treating wastewater system and performing remedial work. According to the head of the Kuala Terengganu ITI, the ratio between theoretical and practical components is 30:70. Evaluation is done either through the Terminal Examination System or Continuous Assessment Approach.

The intake for each ITI course is not large, as typified by statistics from the Kuala Terengganu branch (Table 4). Of the three ITIs that offer construction-related courses, only one (i.e., in Labuan) indicated that it is able to meet its intake quota for every new session. Premature departure of participants arises from a number of reasons: late university offers, disinterest in designated courses or indiscipline. Those who successfully complete the ITI courses are awarded the Malaysian Skills Certificate issued by the National Vocational Training Council (NVTC). While the other

surveyed ITI locations merely described that 'most' of its leavers enter the construction, the Kota Bharu ITI had data that show 75% of them joining the construction industry, 15% furthering their education, while a mere 10% migrating to other economic sectors.

Table 3: Construction-Related Courses and the ITI Branch Locations where they are offered

Course	Duration	Venue
wood-based building construction, building construction, and plumbing and sanitary	1 year respectively	Kuala Lumpur (previously), Kuala Terengganu, Kelantan and Labuan

Table 4: Number of intake, dropouts and output for Kuala Terengganu ITI

Wood-based building construction				
Year	Session	Registered	Drop-Out	No. and Date Completed
1996	2/96	11	2	9 (June 1997)
1997	1/97	-	-	No intake
1997	2/97	16	5	11 (June 1998)
1998	1/98	4	1	3 (Dec 1998)
1998	2/98	15	3	12 (June 1999)
1999	1/99	15	1	14 (Dec 1999)
1999	2/99	17	2	15 (June 2000)
2000	1/2000	14	2	12 (Dec 2000)
2000	2/2000	18		Trainees due to finish in June 2001

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Building construction

Year	Session	Registered	Drop-Out	No. and Date Completed
1996	2/96	11	2	9 (June 1997)
1997	1/97	18	4	14 (Dec 1997)
1997	2/97	15	1	14 (June 1998)
1998	1/98	12	1	11 (Dec 1998)
1998	2/98	19	1	18 (June 1999)
1999	1/99	16	3	13 (Dec 1999)
1999	2/99	17	2	15 (June 2000)
2000	1/2000	18	4	14 (Dec 2000)
2000	2/2000	20		Trainees due to finish in June 2001

Plumbing and Sanitary

Year	Session	Registered	Drop-Out	No. and Date Complete
1996	2/96	27	2	25 (June 1997)
1997	1/97	9	-	9 (Dec 1997)
1997	2/97	14	1	13 (June 1998)
1998	1/98	14	3	11 (Dec 1998)
1998	2/98	29	1	28 (June 1999)
1999	1/99	22	4	18 (Dec 1999)
1999	2/99	27	3	24 (June 2000)
2000	1/2000	15	1	14 (Dec 2000)
2000	2/2000	31		Trainees due to finish in June 2001

Source: Kuala Terengganu ITI.

Table 5: Construction-related courses and the venue of the MVI's where they are offered

Course	Duration	Venue
Civil engineering (building), and civil engineering (pipework)	18 months respectively	Sungai Petani (Kedah), Lumut (Perak), Kuching (Sarawak) and Pekan (Pahang)

MARA Vocational Institutes (MVIs)

There are currently 12 MVIs run by the Ministry of Entrepreneur Development, the first of which was construction in Malacca in 1968. Both MARA Vocational Institutes and GIATMARA Centers (see below) are geared to impart skills to *bumiputera* youths particularly from rural areas in areas that they are under-represented. Through the formal vocational training scheme, it is hoped that they can become independent and involved in business and industry. The colonial legacy of 'divide and rule' saw to it that the *bumiputera* remained as traditional farmers while the mainly Chinese (and to a lesser extent Indian) immigrants dominated in business and commerce. Prompted by ethnic clashes on the 13th May 1969, the country's economic policies have since been underpinned by affirmative action policies to mitigate the inter-ethnic economic disparity between the predominantly Malay *bumiputeras* and the Chinese non-*bumiputeras* on the basis of sustained economic growth (Snodgrass, 1980). While this approach has been criticised by some for retarding economic growth (e.g., Yoshihara, 1988), others (e.g., Zainal Abidin, 1997) see it as averting volatile ethnic clashes that has plagued countries such as Bosnia, Somalia, Rwanda and Chechnya.

The locations of the MVIs that offer construction-related courses are shown in Table 5. Except for the Kuching branch that is located in East Malaysia, entry application for the other MVIs are processed centrally in Kuala Lumpur. Intake is done twice a year, in January and July. Academic entry requirement is Sijil Pendidikan Malaysia (SPM) or Sijil Pendidikan Vocational

Malaysia (SPVM) (equivalent to the British 'O' levels) with minimum Grade 3. The applicants must also be between the ages of 17 and 40 inclusively, and healthy. Those accepted are not required to pay fees. Monthly stipend is RM200. Hostel facilities are provided at every MVI.

The course structure for civil engineering (building) and civil engineering (pipework) is shown in Table 6. The training setting requires entrants to take up all 3 components - technical studies, general studies and co-curriculum. Technical studies imparting skills form the core component. General studies cover English, religious education and entrepreneurship. Evaluation is based on the Grade Point Average (GPA) System and Cumulative Grade Point Average System (CGPA). Evaluation is done on every taught subject through written and oral tests, assignments and final examinations. Trainees are expected to participate in at least one of the co-curriculum activities such as uniformed bodies, sports, clubs and social activities. In the wake of the Asian Financial Crisis, trainees are no longer required to undergo industrial training as in the past.

Those who successfully complete the training programmes are awarded the MARA Skill Certificate. When asked, an instructor in Kuching replied that the MVI courses in fact exceed the NVTC's framework following the addition of subjects such as mathematics, computing and building science. As a matter of fact the course structure and content for the civil engineering (building) course is partly based on a similar course at diploma level offered by Universiti Teknologi MARA (UiTM), which is the sister education institution of the MVIs. Universiti Teknologi Malaysia was also involved at the conceptualisation stage.

Table 6: Structure for Construction-Related Courses offered at MVI's

Civil Engineering (Building)		
Semester 1	Semester 2	Semester 3
Building Construction 1 Construction and Materials Construction Technology Technical Drawing Engineering Science Mathematics 1 Computer Applications English and Communication Studies 1 Islamic Studies 1 Entrepreneurship 1	Building Construction 2 Construction and Materials 1 Project and Contract Management 1 Civil and Structural Drawing 1 Engineering Mechanics Construction Survey 1 English and Communication Studies 2 Islamic Studies 2 Entrepreneurship 2	Building Construction 3 Project and Contract Management 2 Construction Survey 2 Project Mathematics 3 English and Communication Studies 3 Islamic Studies 3 Entrepreneurship 3
Civil Engineering (Pipework)		
Semester 1	Semester 2	Semester 3
Building piping Construction Materials 1 Engineering Science 1 Technical Drawing Mathematics 1 Computer Applications English and Communication Studies 1 Islamic Studies 1 Entrepreneurship 1	Civil (civil piping) Construction Materials 2 Civil and Architectural Drawing 1 Building Science 2 Construction Survey Mathematics 2 English and Communication Studies 2 Islamic Studies 2 Entrepreneurship 2	Water and sewerage treatment Project Management and Estimating Civil and Architectural Drawing 2 Building Science 2 Design and Practice Piping Project Mathematics 3 English and Communication Studies 3 Islamic Studies 3 Entrepreneurship 3

Between 1969 and 1997, 7,759 individuals completed their building-related courses from MVIs. The existing MVIs are able to absorb approximately 7,000 trainees per session for all the courses offered. The Sungai Petani branch's intake for the last four years is as indicated in Table 7. Of the four MVIs that offer construction-related courses, three regularly have take-up rates below their set targets. Drop out rate is 1 for every 25 students arising from poor performance, indiscipline, entry into universities and sheer lack of interest. Although not backed by hard data, all of the contacted MVIs expressed confidence that a high proportion of their leavers are assimilated by the construction industry.

GIATMARA Centres

Also under the aegis of MARA are GIATMARA Centers. Unlike ITIs and MVIs, there are a greater number of GIATMARA centers located all over in rural areas, each capable of handling small batches of students of between 15 and 30. In all there are currently 130 Centres offering up to a maximum of four different types of courses. Currently, 26 locations offer construction technology (Table 8). One informed source made known to the author that an annual operating budget of RM200,000 is allocated for all GIATMARA Centres by the Ministry of Entrepreneurial Development. Aside from classrooms and workshops, each Centre is well equipped with recreational and sport facilities, although not hostels as trainees are expected to come from the surrounding vicinity.

GIATMARA Centres have lower entry requirements to capture those unable to enter other institution-mediated training programmes. GIATMARA training programmes are open to those who:

- a. have never undertaken any skill training programme before,
- b. have lost their jobs and are forced to seek alternative employment,
- c. or wish to expand their skill for career advancement.

Applicant must be between the ages of 15 and 40, healthy, show interest in the course, literate and numerate (i.e., able to read,

write and count). Application is done directly to the GIATMARA Centres to which the trainees would like to be attached. Training is entirely funded publicly. Monthly allowance of RM100 is given to full-time participants.

Table 7: Intake of the civil engineering (building) course at Sungai Petani MVI

Session	Number of intake
January and July 1997	137
January and July 1998	120
January and July 1999	133
January and July 2000	125

Source: Sungai Petani MVI.

Table 8: Number of GIATMARA Centres and those offering Construction Technology and Domestic Electrical Wiring Courses

State	Number of GIATMARA Centres	Number of Centres offering construction technology
Perlis	3	-
Kedah	13	3
Penang	9	1
Kelantan	10	2
Terengganu	9	2
Pahang	10	2
Perak	16	3
Selangor	11	1
K. Lumpur	2	-
N. Sembilan	6	-
Malacca	5	-
Johor	15	5
Sabah	10	3
Sarawak	11	4
Total	130	26

The building technology course lasts for six months. Courses are structured such that only 20% is theory, the rest comprise of hands-on practical assignments. They are based on the NVTC's guidelines. The theoretical component revolves around classroom teaching on construction safety, equipment and such like (Table 9). On the practical side, the curriculum guides trainees through woodwork, brickwork, pipework, tiling and other basic construction trades. They may get involved with real-life projects from the local community, subject to solicitation by outside parties. Skills evaluation is based on completed assignments. Those who do not meet the minimum expectations are required to repeat their assignments until the instructors are satisfied. Under this system, GIATMARA Centres record 100% achievement rate. By the end of their course, trainees are expected to be capable of constructing a house all on their own.

Table 9: Breakdown of building construction course

Part	Training module	Weeks
A.	Theory 1. Safety 2. Hand and machine equipment 3. Reading building plans 4. Estimating	1 ½
B.	Theory and practice 1. Building foundation 2. Door and window 3. Wall erection 4. Fixing wooden floor 5. Ceiling 6. Roof 7. Stairs 8. Formwork	7

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Part	Training module	Weeks
C.	1. Brickwork	2 ½
D.	1. Plastering	2 ½
E.	1. Concreting 2. Steel reinforcement 3. Setting out	2 ½
F.	1. Tiling	1 ½
G.	1. Domestic Pipe fixing 2. Fixing sanitary fittings 3. Sewerage system	3
H	1. Painting	1
I	1. Ferro-cement construction	1 ½

Source: Sungai Bakap GIATMARA Centre.

A random survey on 6 GIATMARA Centers in Sitiawan (Perak), Sungai Bakap, (Penang), Pontian (Johore), Raub (Pahang), Kuala Selangor (Selangor) and Kota Belut (Sabah) found that the response for the building course is mixed, conditional upon the population density of the catchment area and the competing alternatives that exist. The Kota Belut Centre, for example, virtually always experiences full enrolment, Kuala Selangor faces lukewarm response especially during the second intake, while Pontian receives on average 15 trainees for each session for a quota of 20. GIATMARA Centres in sparsely populated areas have to actively publicise their courses to surrounding schools to achieve decent enrolment rates.

Between 1986-1998 inclusively, 8,004 individuals completed their construction course at GIATMARA. Of the 6 randomly selected GIATMARA centers offering construction technology, 33.3% do not completely meet their intake quota. Drop-out rate at GIATMARA Centres is low (Table 10), mainly because those who enter are prohibited from stopping mid-way. Counselling is given to those who contemplate abandoning their courses. Having said that, there are permissible early departures arising from offers

from higher vocational programmes or good employment opportunities. Those with discipline problems are expelled from the course after repeated warnings. A tracer study by Sungai Bakap GIATMARA Centre found 95% of its leavers working in the construction industry while Kota Belut Centre placed the figure at 60% (the lower figure for the latter can be attributed to scarcity of construction employment in East Malaysia arising from slower pace of physical development).

Table 10: Record of Building Technology Course at Sungai Bakap GIATMARA Centre

Session	Registered	Drop-out	Completed
1/1995	19	-	19
2/1995	-	-	-
1/1996	9	-	9
2/1996	9	-	9
3/1996	11	-	11
4/1996	5	-	5
1/1997	13	1	12
2/1997	6	-	6
3/1997	11	-	11
1/1998	4	2	2
2/1998	8	-	8
3/1998	12	-	12
1/1999	20	3	17
2/1999	16	-	16
1/2000	15	-	15

Source: Sungai Bakap GIATMARA Centre.

Akademi Binaan Malaysia (ABM)

The latest body to offer systematic formal construction training courses is the Malaysian Construction Industry Development Board (CIDB) through its Akademi Binaan Malaysia (ABM) with facilities in Kuala Berang (Terengganu) which began operations in 1998, Kuala Lumpur in 1999 and Johore in 2000. Three more in Sabah, Sarawak and Kedah have since come into operation. Each ABM comes complete with the latest in construction equipment, workshops and classrooms. ABM's training intervention has to be discussed in light of its stated objectives:

1. To produce more locally skilled and semi-skilled construction personnel, hence reducing the country's dependency on foreign workers.
2. To undertake structured and widely recognized construction skills development courses are conducted by well-trained and professional trainers.
3. To produce productive, safety conscious, quality-oriented and competent construction personnel to meet the ever-changing needs of the construction industry.
4. To provide opportunities for construction personnel to upgrade their skills from time to time.
5. To support the industry in pursuit of competitive advantage by providing them with the right construction manpower capable of handling the increasingly advanced construction technology.
6. To develop and pave the way for the present and future export of locally groomed skilled manpower.
7. To carry out skills accreditation programs.

Hence, in addition to performing the task that established public formal training systems do, ABMs do much more. In fact the next section reveals that ABM has taken on new duties not originally envisaged.

The ABMs offer special programmes called the 'Youth Training Programme' for school-leavers with a duration of between 2-6 months (Table 11) to equip them with the necessary construction trade skills. Among the courses offered are plastering, tiling, carpentry, backhoe loader operation, crawler crane operation,

hydraulic excavator operation, mobile crane operation, tower crane operation, scaffolding (prefabricated), scaffolding (tube and coupler), and gas pipe fitting, among others. Thus, in addition to imparting construction skills provided by established public vocational centers, ABM offer others beyond their range. Aside from fee-exemption, school-leavers also receive a monthly stipend of RM45 as an incentive. In exchange, they are made to sign an undertaking agreement to work in the construction industry upon leaving ABM (although how this can be strictly enforced is uncertain) for five years in the case of fully-funded trainees and three years for partially-funded individuals. Courses, based on 'competency-based training', are a combination of classroom teaching and practical work, although industrial training is not incorporated. Evaluation is based on examination and assignment, as part of the course structure. There are no failures at ABMs— those who do not pass any particular examination or assignment are required to repeat until they succeed. Youths who complete the training programme are awarded certificates. Aside from gathering trainees at ABM centers, there is talk of rendering training programmes more accessible by bringing them to sites and even rural communities.

Table 11: Statistics on intake for CIDB Youth Training Programme at Terengganu MCA

Course	Course duration (in months)	From Jan. – Nov. 2000		From Feb. 1999 – Nov. 2000	
		No. registered	No. of sessions	No. registered	No. of sessions
Building wiring installation	3	25	2	63	5
Plumbing (building and sanitary fitting, water reticulation)	3	39	3	76	6
Bricklaying, plastering and tiling	6	11	1	38	4
Carpentry (joinery and formwork)	2	8	1	32	4

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Course	Course duration (in months)	From Jan. – Nov. 2000		From Feb. 1999 – Nov. 2000	
		No. registered	No. of sessions	No. registered	No. of sessions
Mobile crane operation	2	27	3	58	6
Backhoe loader operation	2	20	3	50	6
Scaffolding (frame, tube and coupler)	2	28	3	59	6
Gas pipe fitting	3	14	1	14	1
6G welding	3	14	1	14	1
TOTAL		186	-	404	-

Source: Terengganu MCA.

Table 12: Fees and duration for CIDB accreditation exercise according to trades

Trade	Duration (days)	Fee (RM)
Bricklaying	6	500
Plastering	6	500
Tiling	6	600
Backhoe loader operation	4	800
Scaffolding (frame)	6	1,000
Scaffolding (tube and coupler)	6	1,200
Tower crane operation	4	1,000
Dozer operation	4	1,000

Source: CIDB

Table 11 shows the intake for CIDB Youth Training Programme at ABM Terengganu. Contact with ABM Terengganu, Kuala Lumpur and Johor found that some courses (e.g., gaspipe fitting, plumbing, electrical, mobile crane operation, backhoe loader operation and scaffolding) are more popular than others (e.g., woodwork, bricklaying, plastering, tiling). The chief trainer in

Kuala Lumpur opined that local youths eschew heavy, outdoor work that the latter courses entail. Consequently Kuala Lumpur ABM is forced to conduct newspaper promotions and solicit applicants through the Aborigines Affairs Department to fill up their intake quota, especially for less attractive courses. CIDB has set a target of releasing between 25,000–30,000 trained youths annually. Clearly this feat cannot be achieved with the six ABM facilities that are available, even when fully operational. For that reason, CIDB is working together with selected private training centers to help it achieve its output target.

In addition to training for school leavers, ABMs also provide advanced courses for those, including leavers of other public training institutes, wishing to upgrade their skills from time to time (Table 12). According to one CIDB officer, response has been poor despite a 50 percent rebate on the fees (at one time they were even offered for free). ABMs have also been conducting accreditation exercises since 1996 in line with CIDB's objective of engendering skilled manual construction workforce in Malaysia. Site operatives wanting to be accredited will have to undergo the Skills Assessment Programme. For site supervisors, they are required to attend a course offered by ABM or CIDB-approved private training providers, fill up a log-book for six months before being interviewed. Accreditation fee for locals is absorbed entirely by CIDB. As it is non-mandatory, CIDB's accreditation scheme has not been well received to the extent that CIDB contemplated at one time of recommending to the government that certain construction works be carried out only by accredited workers only. Beginning 2003, ABM has been called upon to accredit the skills of inbound foreign site operatives for a fee of RM350 each. Those found not to possess their claimed skills are deported immediately, without recourse to changing trades or industry.

DISCUSSION

As elaborated above, several national public construction vocational systems were already well established throughout the country before the ABMs were set up. It can be rationalised that

CIDB's motive for intervening into training provision is to make up for whatever is lacking in it.

One thing is for certain; the under-supply of centers in the national vocation system *per se* is not the issue. Established public vocational training centers cover the entire nation, in urban (mainly ITIs and MVIs) as well as rural areas (mainly GIATMARA). What is more, there are national plans to construct additional new centers as a strategy to improve national industrial competitiveness. In January 2001, the Ministry of Human Resources announced that 15 more ITIs will be constructed between then and 2005 (*New Straits Times*, 2001). Similar expansion programmes for MVIs and GIATMARA are likewise projected in the same 5-year national economic plan.

One major point of divergence between the ABMs and other established training centers lies in the wider range of courses offered by the former. While the latter offer conventional construction trades (tiling, woodworking, plastering, concreting, piping), ABM, in addition to these, provide exposure to machine operating (for backhoe, tower crane, dozer), scaffolding, welding and such like. Several construction employers recommend that ABM solely concentrate on 'high level' skills not offered by others so as to better utilise resources. Besides, one CIDB officer indicated that they appeal more to school leavers than conventional trades. Indeed, as mentioned in previous sections, most established public training centers offering building courses experience low uptake to the extent that vigorous promotion in schools becomes imperative to achieve decent enrolment figures. By concentrating on 'high level' skills, the distinction between ABM and established public training centers would become sharper.

The training format between the ABMs and the others are also at variance. Established public training centers have structured their training packages to, not only impart skills, but also make them educational, in the hope of cultivating an ethical (by virtue of religious studies), enterprising (entrepreneurship studies) and more marketable (English and computing) workforce. ABMs on the other hand, focus solely on vocational training, a feature

appreciated by all five ABM-leavers and two employers spoken to. The dichotomous views of what training provision should constitute have been debated. While some feel that it should pertain to skills formation only, others opine that it should be designed to encourage trainees to critically examine the social, economic and political context of employment and unemployment (Finn, 1987; Hart, 1996). Elliot (1999) for example argues that while employability is important, it should not be the sole objective, as training cannot possibly provide complete answers to problems that lie to a considerable extent in social and economic contexts.

Dissimilar training duration also differentiates ABM for the other public training systems. By imparting construction skills only, ABM is able to increase the supply of critical skills in the minimum time period. Training at ITIs take 12 months, MVIs 18 months and GIATMARA 6 months, whereas at ABM it lasts from between 2-6 months. Advanced training schemes at ABM take days only, thus minimizing work disruptions arising from workers' absence. Indeed one employer interviewed did indicate that shorter duration may provide the incentive for youths to participate in ABM training programmes, an observation supported by one ABM-leaver. On the other hand, two ABM-leavers complained that the duration is too short for the skills to be fully imparted resulting in the trainees being rushed through their course content, thus affecting their interest. There is consensus among the ex-trainees, regardless of which vocational training systems they underwent, that quality of trainers is important. There is always the concern about mismatch between the skills offered through national training schemes and those required in the labour market (McGivney, 1992). Any suggestion that the more established public vocational institutions are less in tune with the market needs compared to the ABMs would not be fair as the former are required to abide by the National Occupational Skills Standards (NOSS) formulated by National Vocational Training Council (NVTC). Through NOSS, skills training programmes are benchmarked against actual workplace requirements. NVTC develops NOSS with input from industry experts and practitioners. Established in 1989, NVTC is empowered to ensure that the diverse skills training activities

carried out by the public and private sectors in Malaysia are properly coordinated so that they actually meet the needs of the industry. All training providers, public or private, must be accredited by NVTC for NOSS compliance before they can operate. As far as possible, the ABMs try to ensure that their programmes are in line with NOSS. While CIDB previously came up with Construction Industry Skills Standard (CISS), it was subsequently conceded that NOSS is more substantive and that having two different national skills baselines would only lead to industry confusion. A conscious decision was then made to abide by NOSS as far as possible, except for trades not covered by them (in which case ABM would fall back to CISS). Programmes offered in joint venture with overseas training bodies (e.g. ,TWI from the UK on welding) also do not follow NOSS.

Indeed if employment in the construction industry can be taken as a reflection of employability, then the information from the surveyed established vocational institutions does not suggest that they are out of touch with the labour market. Elaborations made in previous sections suggest that the assimilation by the industry of leavers from from ITIs, GIATMARA and MVIs appear to be fairly high. However, the industry laments that these people have to undergo retraining upon employment, a weakness that can be attributed to the multi-skills approach they have been subjected to (Tables 6 and 9). Arguably broad elementary multi-skills training provides greater flexibility and mobility across different work situations and employers. As the nation is faced with acute local labour shortages, generating a multi-skilled rather than uni-skilled workforce is actually more beneficial. The compromise that had to be made in upholding this precept is the limited time that can be devoted to any one trade during training. This weakness cannot be attributed solely to the established public vocational centers but rather to NOSS that they have to adhere to. The amendments to NOSS for certain skills by CIDB (see below) might bring about a shift in their training emphasis. Feedback from four employers who have engaged ABM-leavers also reveal that retraining is necessary for them, a point conceded by all five of the latter spoken to. One weakness indicated is that they become familiar with only one trade only. One ex-trainee of MVI feels that he is just as good as his counterparts from ABM. So do several ITI

leavers spoken to. One ITI-leaver asserted that the hands-on training constituting 70 percent of course content prepared him for the working world. All of them agree that, course content aside, much of the trainees' abilities rest on the extent to which they make the most of the opportunities provided.

Another point of divergence is that while the ABMs allow existing workers in the construction industry to upgrade themselves through further training, established public formal vocational systems are structured to allow for late-developers to subsequently enter into the mainstream education system. ITI-leavers can take up a Diploma in Building Construction at the Kuala Terengganu ITI. Alternatively they can go to one of the four Advanced Technology Centres (ADTECs), or Japan Malaysia Technical Institute (JMTI), for their diploma education. MVI-leavers with good results can pursue a Diploma in Civil Engineering (Building) now offered at Pasir Mas MVI in Kelantan. Otherwise they can pursue their diplomas at Universiti Teknologi MARA, or Twintech College that has a collaborative arrangement with Universiti Teknologi Malaysia. As mentioned earlier, both these public universities were instrumental in designing the course structure and content for MVI's civil engineering (building) course. MVI administration is currently negotiating with UiTM and Twintech College to allow for credit transfers. GIATMARA ex-trainees have the option of entering MVIs, the sister training institution to GIATMARA. Hence, the ABMs and established public training centers offer different routes to career advancement. While the former allows for skills advancement, the latter provide connectivity to higher academic qualifications. At least one construction worker interviewed aspires to further his education through the conventional method.

Of late CIDB has taken on additional roles beyond providing training, accrediting newly-arrived foreign site operatives being one of them. These role are outside the preserve of established public training centres. Following discussions, NVTC has recently decided to hand over the tasks of accrediting training centers that offer construction-related courses to CIDB. Certificates issued by NVTC will in future be endorsed by CIDB as well. CIDB has on several occasions assisted NVTC in designing or amending NOSS

for certain trades, for example air-conditioning, which previously catered to buildings, vehicles and refrigerators collectively. Similarly, upon recommendation by CIDB, NOSS for building construction has been disaggregated so that it loses its multi-trades feature. Instead CIDB has come up with NOSS for bricklaying (Levels 1 and 2), tiling (Levels 1 and 2), civil and structural supervision, mechanical and electrical supervision and many more. So far, CIDB has produced 43 NOSS for the construction industry in association with NVTC and the industry. There is a possibility that all these changes will eventually feed into the established public vocational centers that will result in them being less multi-skilled in nature.

This section would not be complete if the possible causative factors behind the diminution of local site operatives in Malaysia are not mentioned. The consensus among everyone whom the author has met in a previous study (notably officers in the Ministry of Human Resources, representatives of construction trade organisations such as Master Builders Association of Malaysia, Association of Bumiputera Contractors and construction executives) is that local youths today are not attracted to the heavy, outdoor, manual work that construction activity entails (Abdul-Aziz, 1996). In contrast, factory work that has expanded tremendously as Malaysia races to achieve industrial status offer more attractive employment package (e.g., paid leave, medical coverage, controlled working environment, job security, etc.). This point was even voiced at the *Construction Industry Dialogue* organised by CIDB for the first time in September 2000 in which various representative organisations were allowed to air their views about the industry's performance. Some of the employers spoken to for the purpose of the present paper had resorted to seeking the cooperation of the Department of Manpower and vocational centers in search of local site operatives.

Analytically, a survey in the United Kingdom on 16-19 year olds found that inadequate anticipated earnings to low-level vocational qualifications compared with higher qualifications or no qualifications may discourage individuals from engaging in some forms of vocational training (Bennett and Glennerster, 1995).

Attempts to increase the esteem of, and participation in, vocational studies may actually be hampered by contradictory market signals and incentives to individual's choices. In fact Willis and Rosen (1979) and Willis (1986) among others have indicated that the demand for training can best be understood in terms of social and cultural factors that affects individual preferences. The expected return from training that depends on perceived benefits (e.g., lifetime earnings, probability of future employment, job satisfaction and enjoyment of learning itself) must be weighed by its costs (e.g., relocation costs and foregone earnings). Hence in the present context, having observed the people around them and the work they do, youths then decide whether to participate in the construction labour market via the formal training transition route. Because of the unattractiveness of manual construction work in comparison to other jobs, it is quite understandable that Malaysian youths choose not to enrol in construction training programmes nor to become construction apprentices. Coming up with alternative vocational training schemes alone with not solve the local labour shortage.

In recognition of this, CIDB has initiated several initiatives in the hope of reducing the pool of foreign site operatives in the country. These have been mentioned previously (Abdul-Aziz, 1996) but are worth repeating here. The industry has been encouraged to adopt industrialised building systems that rely much on modular coordination, prefabrication and mechanisation. An industrialised building system strategic plan was formulated. But as experiences of developed countries have shown, and borne out by the local industry, there is a limit to how far industrialised building systems can be promoted. Clients, often using buildings as landmarks and statement of tastes, still prefer bespoke design and construction. Modular coordination is also being promoted by CIDB in the hope of improving productivity and accelerating industrialisation. Again, this idea has not particularly caught on in the industry because of the constraints it poses. An attempt to elevate the status of site operatives through the accreditation scheme has received poor response. CIDB has introduced the green card programme to ensure that construction sites are safe to work in. Every one who enters and works on construction sites are required to have the card which can only issued after a safety induction

course is attended. Except on the issue of safety, imposing better terms and conditions pose difficulty due to industry resistance. One employer suggested instituting minimum wage level that others feel is unrealistic presently. Besides, such a move would only lead to higher construction cost escalation. The industry has long opted for mechanisation, provided it makes economic sense. Already tower cranes, ready mixed concrete lorries, excavators, passenger hoists, mobile cranes, concrete pumps and such like are indispensable on most construction sites. Further mechanisation would only escalate construction costs beyond what the clients are willing to absorb. It is not through lack of effort that CIDB has yet to come up with really effective measures to reduced foreign labour utilisation in the industry. While these initiatives in combination may not resolve foreign workers dependency, they do go some way to reduce it.

CONCLUSION

In tandem with enterprise-based vocational training that exist in Malaysia, there also exist an array of institution-mediated training processes, both of which serve to generate skilled local construction workforce. The latter serves to provide an avenue for those who find it hard to gain entry into the traditional apprenticeship arrangements. While the establishment of ABM in the already saturated public skills formation systems in the country might appear wasteful on first impression, closer scrutiny reveals that, on one level, they provide complementary roles to existing training centres, and on the other, they perform regulative functions not carried out by the rest. Each public vocational training system has its own features. Whether these features are strengths or weaknesses very much depend on the person making the judgment. While the industry may prefer courses with short duration, some trainees may feel that the exposure to skills formation is insufficient. While the industry may feel that training provision should be occupation-oriented only, some trainees may actually aspire to join the conventional education system at a later date and therefore value training approaches that allow them to do that. Some might appreciate formal training settings focusing on multi-skills training while others uni-skill. Also, much depends on

the quality of the trainers as well as the extent to which the trainees are able to make the most out of the training opportunities provided. Local labour shortage, however, cannot be addressed simply by augmenting training facilities and courses, a fact recognised by CDIB. CIDB has implemented various initiatives which, together with training intervention, while not entirely eradicating foreign labour in Malaysia do help in reducing it to a degree.

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