MINISTRY OF HUMAN RESOURCES

INSTITUT MAKLUMAT DAN ANALISIS PASARAN BURUH (ILMIA),
KEMENTERIAN SUMBER MANUSIA

Assessment on the impact of corporatisation and consolidation of training institutes under the purview of MOHR on TVET workforce, quality of training and future TVET workforce

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Ministry of Human Resources
G07 G12, Right Wing, G-Floor, Block 2320
Century Square, Jalan Usahawan
Cyber 6, 63000 Cyberjaya
Selangor
Tel: +603-8318 2433
Fax: +603-8890 2739

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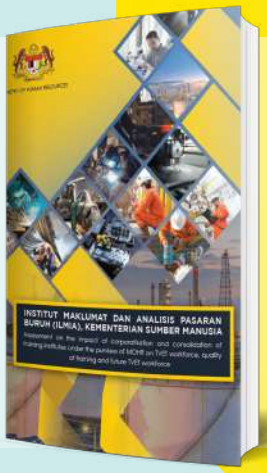

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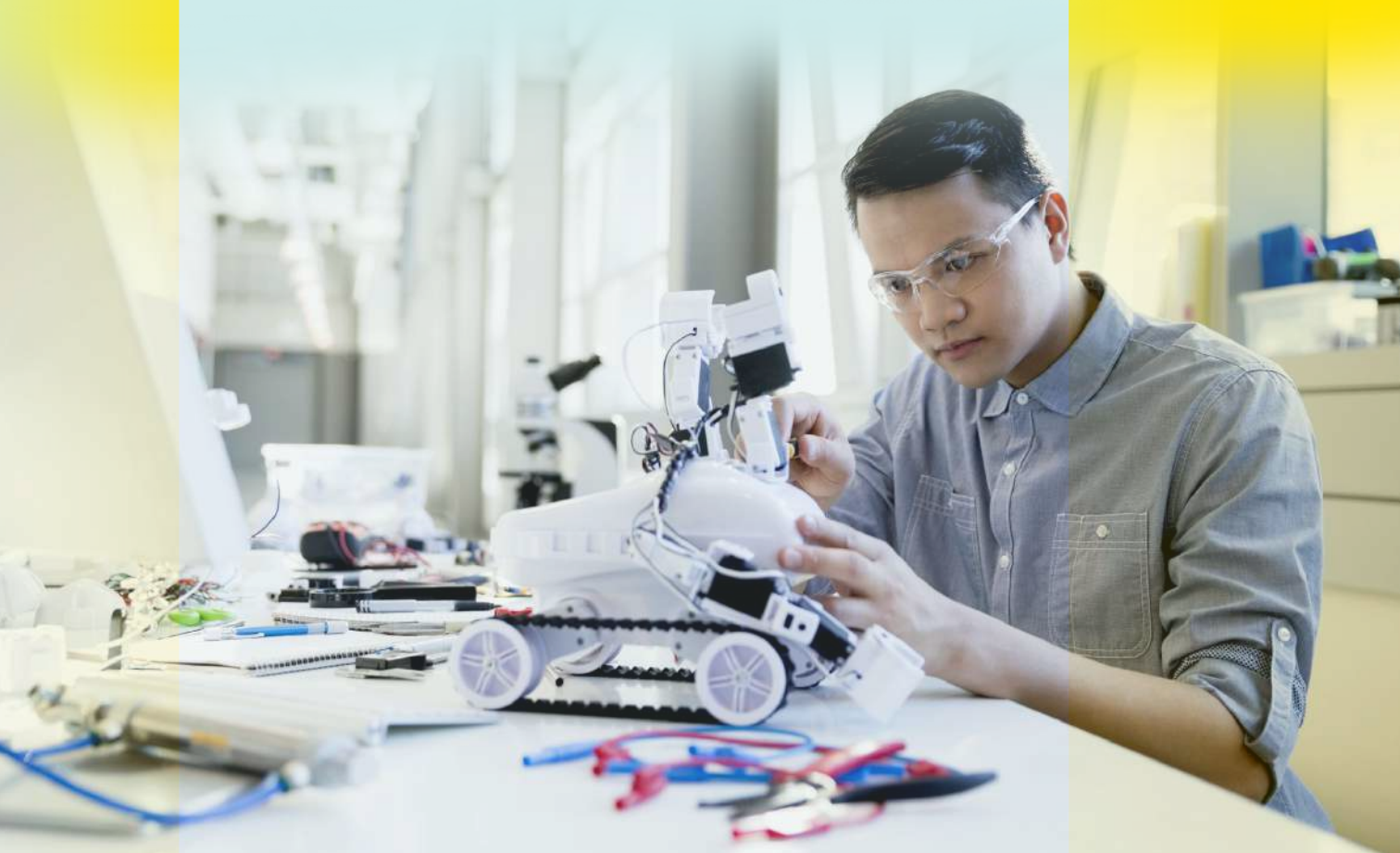
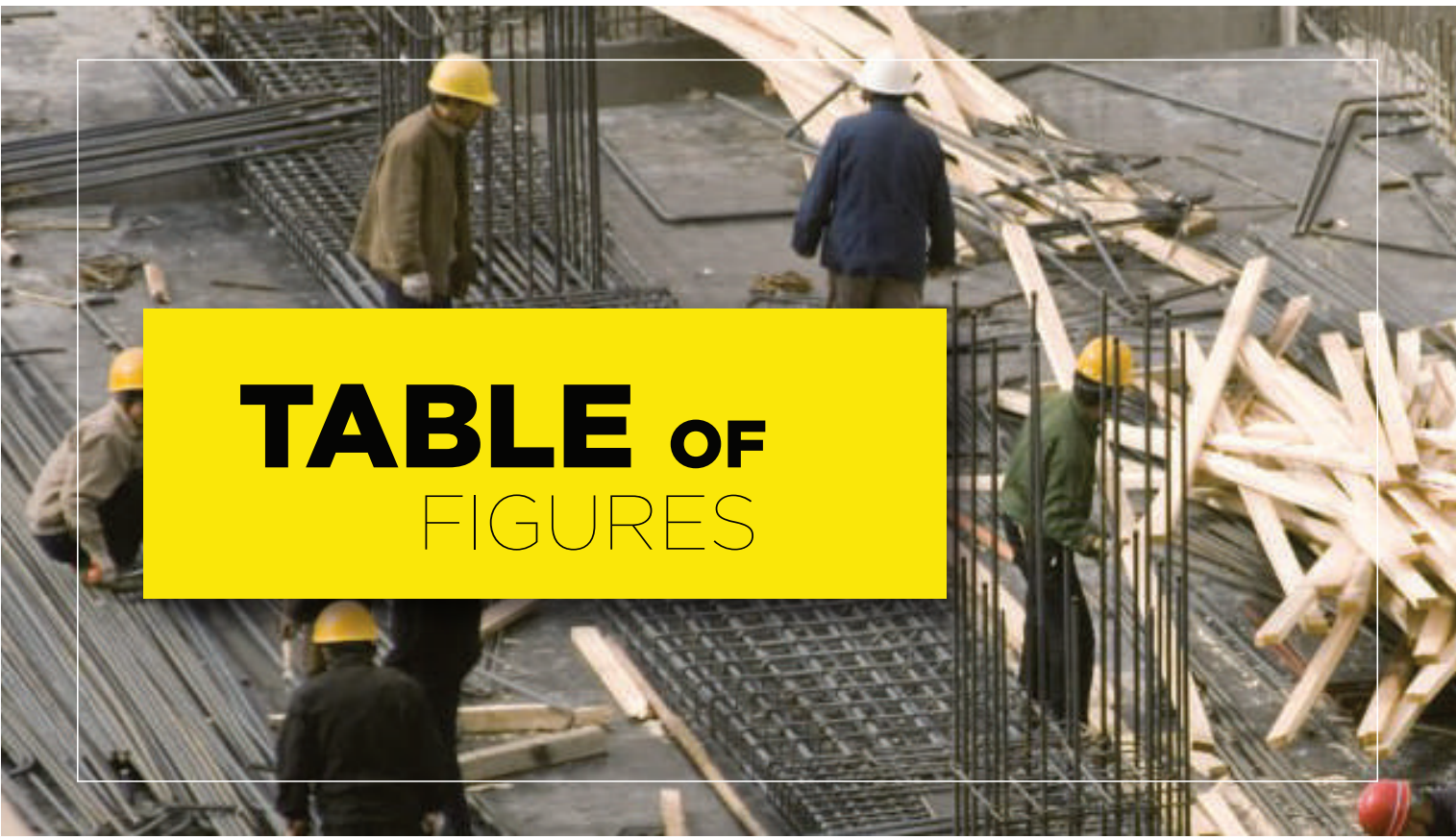
Assessment on the impact of corporatisation and consolidation of training institutes under the purview of MOHR on TVET workforce, quality of training and future TVET workforce

Report
January 2020





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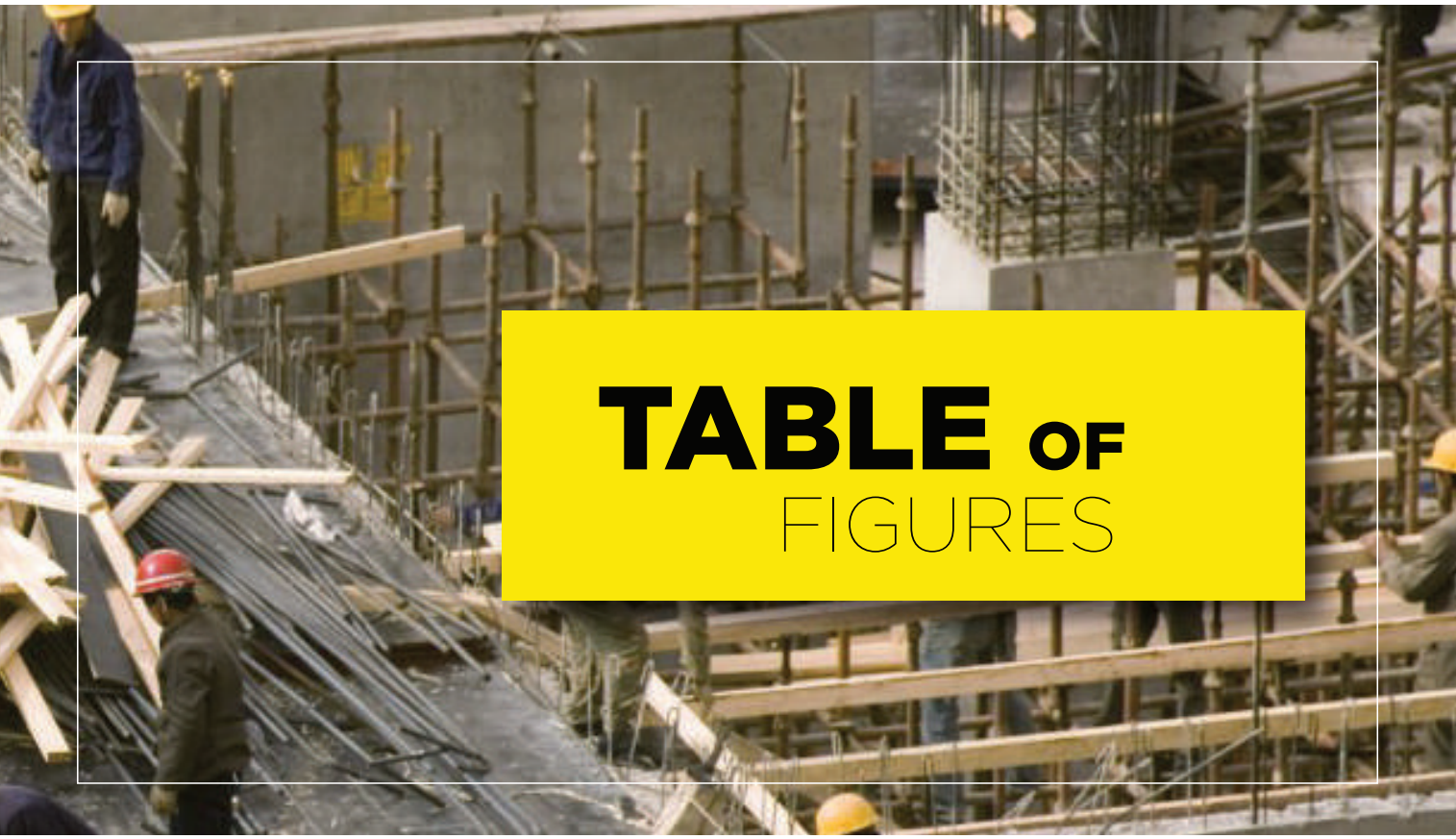

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Acronyms & Definitions

ABM	Akademik Binaan Malaysia
ADTEC	Advanced Technology Training Centre
BLKP	Bahagian Latihan Kemahiran Pertanian
CAGR	Compound Annual Growth Rate
CIAST	Centre for Instructor and Advanced Skill Training
CIDB	Construction Industry Development Board Malaysia
COS	Centre of Speciality
CSR	Corporate Social Responsibility
DE	Development Expenditure
DKM	Diploma Kemahiran Malaysia
DLKM	Diploma Lanjutan Teknologi Kejuruteraan
DSD	Department of Skills Development
DTK	Diploma Teknologi Kejuruteraan
ECRL	East Coast Rail Line
FGD	Focus Group Discussion
GMI	German Malaysian Institute
HQ	Headquarters
HRDF	Human Resource Development Fund
IKBN	Institut Kemahiran Belia Negara
IKM	Institut Kemahiran MARA
IKTBN	Institut Kemahiran Tinggi Belia Negara
ILB	Industry Lead Body
ILJTM	Institusi Latihan Jabatan Tenaga Manusia
ILMIA	Institute of Labour Market Information and Analysis
ITE	Institute of Technical Education
ITI	Industrial Training Institute
JMTI	Japan Malaysia Technical Institute
JPA	Jabatan Perkhidmatan Awam
JPK	Jabatan Perkhidmatan Kemahiran
JTM	Jabatan Tenaga Manusia
KKTM	Kolej Kemahiran Tinggi MARA
LSI	Industrial Training Attachment
MD	Manpower Department
MOA	Ministry of Agriculture and Agro-based Industry
MOD	Ministry of Defense
MOE	Ministry of Education
MOHR	Ministry of Human Resources
MORD	Ministry of Rural Development
MOU	Memorandum of Understanding
MOW	Ministry of Works
MOYS	Ministry of Youth and Sports
MQA	Malaysia Qualifications Agency
MQF	Malaysian Qualifications Framework
MRO	Maintenance, Repair and Overhaul
MTUN	Malaysian Technical University Network
MUET	Malaysian University English Test
MVET	Malaysia Vocational English Test
NOSS	National Occupational Skills Standard
OE	Operational Expenditure
PERHEBAT	Armed Forces Ex-Servicemen Affairs Corporation
PSD	Public Service Department
PSDC	Penang Skills Development Centre
PTPK	Perbadanan Tabung Pembangunan Kemahiran
RMK	Rancangan Malaysia Ke-
SDFC	Skills Development Fund Corporation
SKM	Sijil Kemahiran Malaysia
SLDN	Sistem Latihan Dual Nasional
SPM	Sijil Pelajaran Malaysia
TVET	Technical and Vocational Education and Training
UniKL	Universiti Kuala Lumpur

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EXECUTIVE SUMMARY

Manpower Department (JTM)'s main objective is to produce skillful workforce in our nation by providing quality Technical and Vocational Education and Training (TVET) education. However, in recent times there are several challenges faced by Manpower Department to achieve this objective.

Strong competition with other TVET institutes and courses which are not aligned with nearby industries have resulted in Government undertaking various measures. One of the measures is to assess on the impact of corporatisation and consolidation of training institutes under the purview of Manpower Department on TVET workforce, quality of training and future TVET workforce.

TVET institutes in Malaysia

TVET institutes in Malaysia providing multiple programmes across Malaysian Qualifications Framework (MQF) level one to six. There are seven ministries and 17 TVET agencies or Public TVET Institutes types in Malaysia, with two accreditation bodies, MQA and DSD.

According to Eleventh Malaysia Plan, Malaysia requires an increase of student intake in TVET institutes from 164,000 in 2013 to 225,000 by 2020.

The 32 JTM institutes exist in a highly competitive market consisting of 1,248 TVET institutes. Currently, 32 JTM institutes contribute 4% of total required annual intake of TVET students in Malaysia by 2020.

The largest pool of TVET student intake comes from Polytechnic and Community College under Ministry of Education (MoE) which contributes 20% of the required annual intake (44,301 new students in 2018).

UniKL, GMI, KKTM, IKM, GIATMARA under Ministry of Rural Development (MoRD) contributes 13% of the required annual student intake (29,878 new students in 2017). The estimated student intake in 2018 is between 205,000 and 210,000, based on the required student intake in 2020 (gradual increase).

225,000

Required annual intake of TVET students by 2020

9,132

Annual intake of JTM students, 2018

6,214

Annual graduates/output of JTM institutes, 2018

Types of Public TVET Institutes

1	JMTI
8	ADTEC
23	ILP
1	CIAST

Source: Malaysia Education Blueprint (Higher Education), 2015-2025, Laporan Tahunan MARA 2017, Informasi Politeknik 2018, ILMIA TVET Masterplan 2018

EXECUTIVE SUMMARY

In this study, 2,530 stakeholders were engaged through committee meetings, focus group discussions, and online surveys conducted since 15th March 2019. Focus group discussion and interviews were conducted to gather various stakeholders' views on the corporatisation and consolidation of the training institutes, whereas online surveys where carried out to gather views on the current performance of the 32 training institutes from various aspects.

Stakeholder Engagement

2,530
Total Stakeholders

- **1,030** Directors and trainers
- **1,439** Students and alumni of 32 JTM institutes
- **29** Representatives from Private Sector
- **32** Representatives from Government Sector

21 Site Visits

3 Focus Group Discussions

The report began with an online survey which was conducted to gather views on the current performance of the 32 training institutes from various lenses including students, alumni, and lecturers. A total of 2,439 responses were collected and it was discovered that job prospects, industrial linkages, and courses are the most important factors for students when choosing a preferred training institute.

Approximately 54% of students are satisfied with the job prospects and industrial linkages in JTM institutes. More than 50% of students are dissatisfied with the location and social aspects of JTM institutes, however, these are the least important factors when choosing a preferred training institute.

Next, to determine its readiness to be corporatised, site visits to 21 JTM institutes were carried out and a series of data was collected from all 32 JTM institutes for assessment based on four key areas, which are financial, market, human capital, and operations.

The capacity utilisation of 32 JTM institutes averaged at 79%, with enrolment growth rate declining by 12% CAGR since 2016 due to the decrease of budget allocation from the government. Combining and matching findings from data collected and survey analysis, gaps and opportunities were observed. Three focus group discussions were conducted to identify the root causes of issues and recommendations for 32 JTM institutes, other than gathering views on the idea of corporatisation and consolidation.

EXECUTIVE SUMMARY



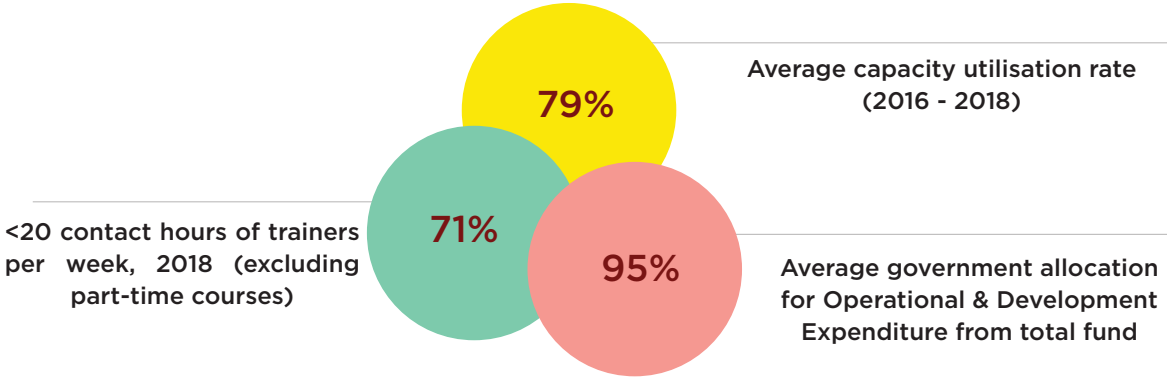
Based on the assessment, several common issues among the 32 JTM institutes were identified, which include aging equipment and facilities, courses not aligned with nearby industries, lack of marketing resources, strong competition with other TVET institutes, lack of instructors who have industry experience, institutes located in unpopular locations, lack of trainers and students lack of soft skills.

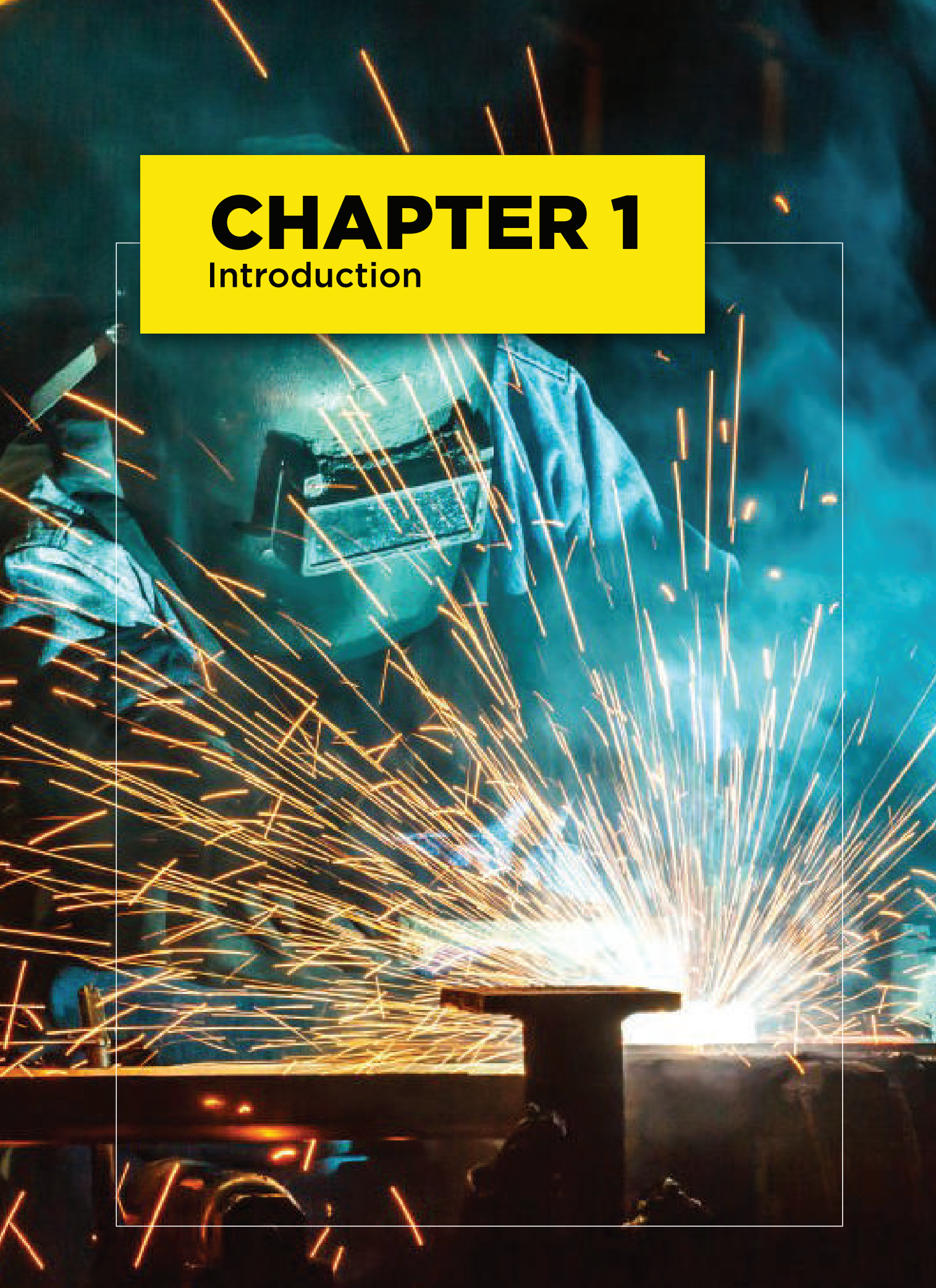
The future state design is guided by examining three scenarios:

i. Scenario 1: JTM institutes to be considered for corporatisation
ii. Scenario 2: JTM institutes to be considered for consolidation
iii. Scenario 3: JTM institutes will not be corporatised and consolidated, but needs to be strengthened

Overall, the 32 JTM institutes are not ready to be corporatised as they are unable to reach full or operational break-even point. Assessment has been done for three JTM institutes for pilot consolidation. The priority of 11 initiatives has been assessed by considering the level of impact and ease of implementation. Implementation roadmap has been identified by prioritising Quick Win initiatives such as strategies to enhance market position of JTM institutes and Phase 1 of Consolidation, followed by initiatives to strengthen human capital development and industrial collaboration.

Lastly, the preparation of 12 initiatives will start in 2020 in line with RMK-11 and implementation plan will be executed starting from 2021 for RMK-12 preparation.





CHAPTER 1
Introduction

There are 1,248 TVET institutes in Malaysia, of which 55% are private institutes and the remaining 45% are public

Northern Region

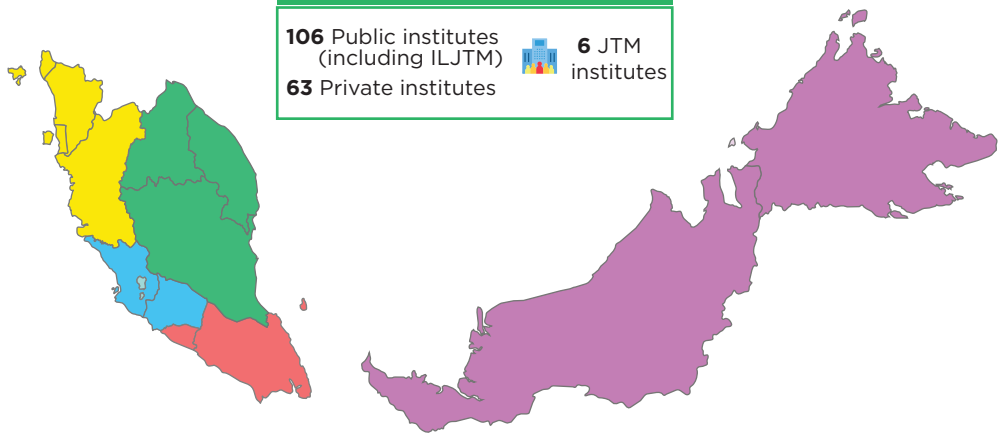
147 Public institutes (including ILJTM)
130 Private institutes
9 JTM institutes

East Malaysia

106 Public institutes (including ILJTM)
69 Private institutes
6 JTM institutes

East Coast Region

106 Public institutes (including ILJTM)
63 Private institutes
6 JTM institutes



Central Region

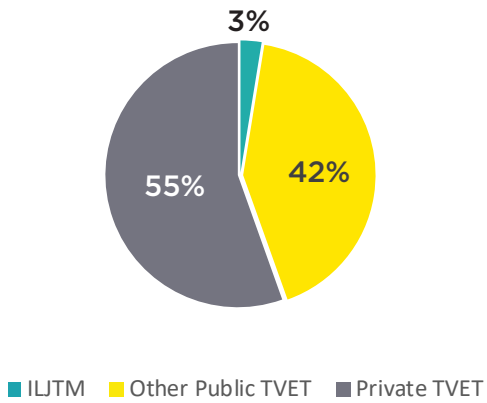
133 Public institutes (including ILJTM)
376 Private institutes
4 JTM institutes

Southern Region

64 Public institutes (including ILJTM)
54 Private institutes
7 JTM institutes

Types of JTM Training Institutes	No.
Institut Latihan Perindustrian (ILP)	23
Pusat Latihan Teknologi Tinggi (ADTEC)	8
Institut Teknikal Jepun Malaysia (JMTI)	1
Total	**32**

Figure 1.1: Total TVET Institutes by Percentage



As shown in Figure 1.1, JTM institutes (ILJTM) make up for 3% of total TVET institutes in Malaysia. The remaining 55% and 42% comprise of private and other public TVET institutes, respectively.

Note: *ILMIA TVET Masterplan considers Melaka as part of Central Region, however JTM institutes in Melaka are grouped in Southern region
Source: ILMIA TVET Masterplan 2018, JTM Enrolment Data, EY Analysis

According to the 11th Malaysia Plan, Malaysia requires a gradual increase of student intake in TVET institutes from 164,000 in 2013 to 225,000 by 2020

MoHR	MoE	MoRD	MoYS	MoA	MoW	MoD
JMTI - 1	MTUN	UniKL	IKTBN	BLKP	ABM(CIDB)	Perhebat
ADTEC - 8	Polytechnic	GMI	IKBN			
ITI - 23	Community College	KKTM				
CIAST - 1	Vocational College	IKM				
		GIATMARA				

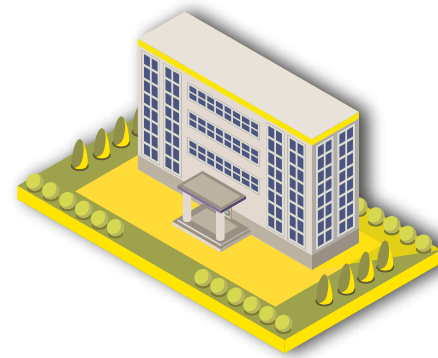
225,000	Required annual intake of TVET students by 2020
9,132	Annual intake of JTM students, 2018
6,214	Annual graduates/output of JTM institutes, 2018

Scope of Study: 32 JTM institutes under JTM (MoHR)

The scope of Study covers 32 institutes under the purview of JTM (MoHR), namely the 23 Industrial Training Institute (ITI), 8 Advance Technology Centers, and JMTI.

Currently, the 32 JTM institutes contribute approximately 4% of total required annual intake of TVET students in Malaysia. The largest pool of TVET student intake comes from MoE (Polytechnic and Community College) which contributes approximately 20% of the required (44,301 new students in 2018).

MoRD (UniKL, GMI, KKTM, IKM, GIATMARA) contributes approximately **13%** of the required annual student intake (29,878 new students in 2017). Based on the required student intake by 2020 (gradual increase), the estimated student intake in 2018 would be between **205,000 and 210,000.**



Source: Malaysia Education Blueprint (Higher Education), 2015-2025, Laporan Tahunan MARA 2017, Informasi Politeknik 2018, ILMIA TVET Masterplan 2018

The programmes under JTM institutes are accredited by either MQA or DSD, with the former giving access to higher levels of education

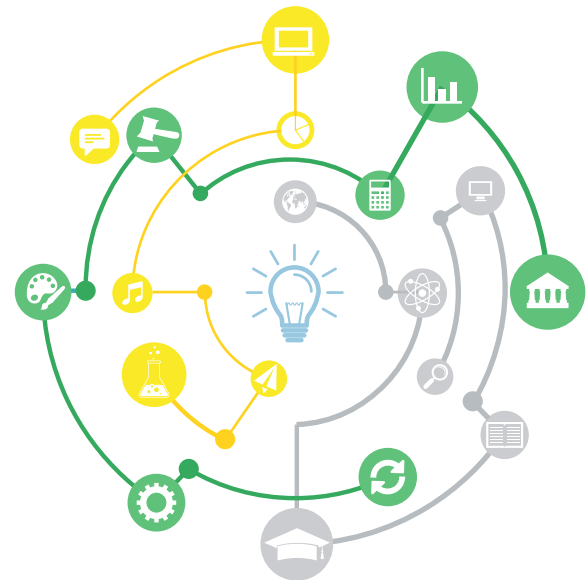
Figure 1.2: JTM Programme Accreditations

Programme Accreditation	DSD			MQA
Programme Type	Sijil Teknologi / Sijil Kemahiran Malaysia (SKM)	Diploma Teknologi / Diploma Kemahiran Malaysia (DKM)	Diploma Lanjutan Teknologi Kejuruteraan (DLKM)	Diploma Teknologi Kejuruteraan (DTK)
Level	**Level 1 – 3**	**Level 4**	**Level 5**	**Level 4**
Duration	**66 – 108 weeks***	**60 – 65 weeks**	**100 weeks**	**120 - 125 weeks**
Price (in RM)	**Free**	**3,000 / year**	**3,000 / year**	**3,000 / year**
ITI	44 courses	15 courses	-	1 course
ADTEC	-	13 courses	-	22 courses
JMTI	4 courses	8 courses	4 courses	5 courses

ADTEC's and JMTI's Diploma in Technology and Diploma in Engineering Technology programmes are usually both DSD and MQA accredited.

The minimum admission requirement for MQA-accredited DTK Level 4 programmes is Sijil Pelajaran Malaysia (SPM), whereas DSD-accredited DKM Level 4 programmes usually require SPM and SKM Level 3 as prerequisites. DTK programmes have more stringent entry requirements for SPM leavers and are more selective. This is because they provide better opportunities for students who are interested to further their studies, as most public universities are MQA accredited.

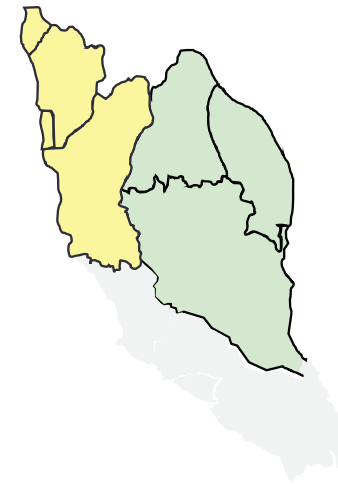
Harmonisation between the two agencies is still in progress, implying that credit transfers are difficult at the moment.



Note: * Depending on course
Source: Jabatan Tenaga Manusia website and Programme Data received from respective ILJTM , Focus Group Discussion, EY Analysis.

The top programme of JTM institutes in Northern and East Coast region is Refrigeration and Air-Conditioning, potentially indicating interest areas of students in the locality

JTM institute	2016 – 2019 Top Courses(s)
Northern Region	
ADTEC Kulim	• Electronic Technology • Mechatronic Technology
ITI Jitra	• Automotive Technology • Heavy Trade Vehicle Technology
ADTEC Taiping	• Computer Technology (System) • Microelectronic Engineering Technology • Quality Assurance Engineering Technology
ITI Ipoh	• Refrigeration & Air Conditioning Technology • Gas & Arch Welding Technology
ITI Kangar	• Mechanical Maintenance Technology • Industrial Electronic Technology
ITI Arumugam-Pillai Nibong Tebal	• Printing Technology (Graphic)
ITI Kepala Batas	• Refrigeration & Air Conditioning Technology
ITI Perai	• Automotive Technology • Computer Technology (System)
JMTI	• Mechatronic Engineering Technology
East Coast Region	
ADTEC Jerantut	• Industrial Product Design Technology • Welding Technology
ITI Kuantan	• Gas & Arch Welding Technology
ADTEC Kemaman	• Refrigeration & Air Conditioning Technology • Automotive Technology • Electric Power Technology
ITI Kuala Terengganu	• Refrigeration & Air Conditioning Technology • Electric Technology (PW2 Certificate) • Mechanical Maintenance Technology
ITI Marang	• Automotive Technology
ITI Kota Bharu	• Automotive Technology • Mechanical Maintenance Technology



Northern Region

East Coast Region

Automotive and Gas & Arch Welding courses provided by JTM institutes in Central and Southern Region are consistently outperform others in terms of enrolment

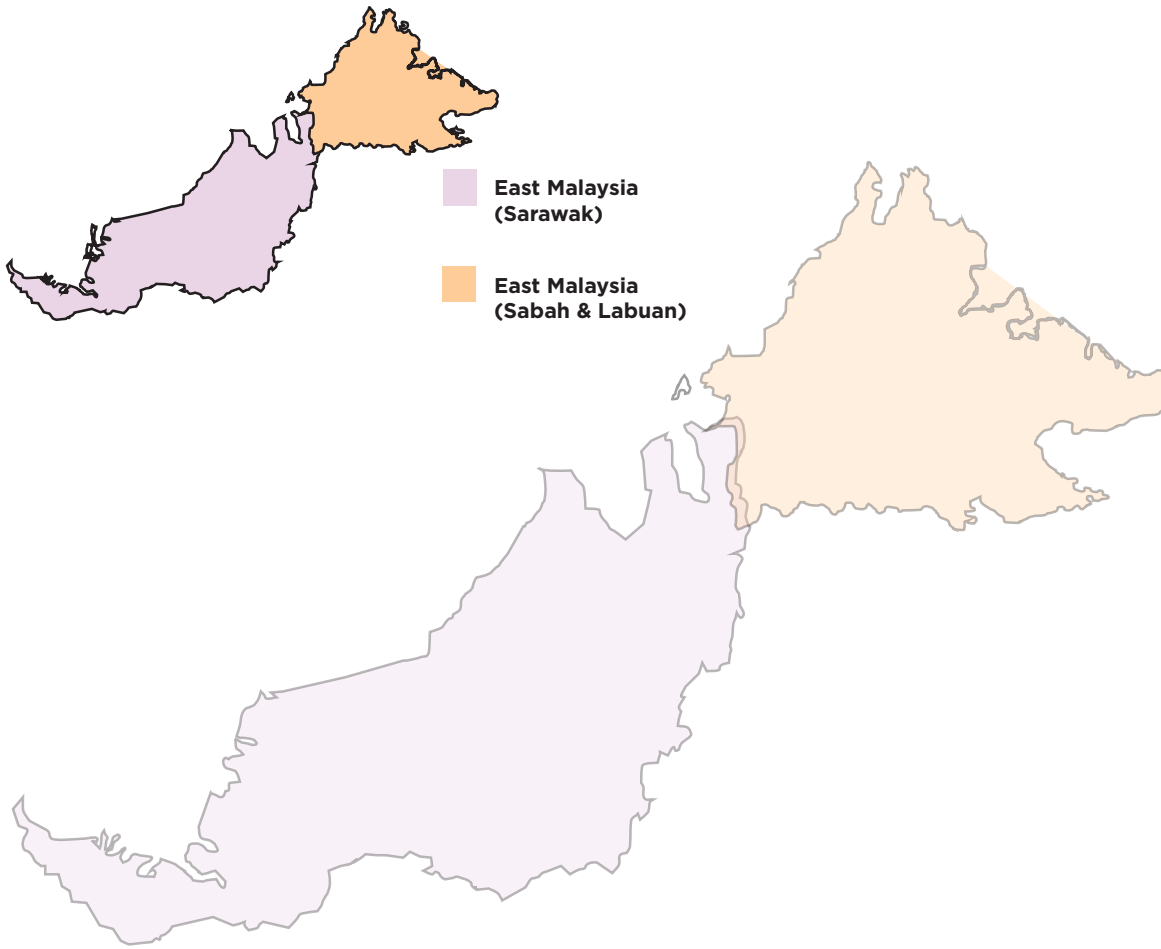
JTM institute	2016 – 2019 Top Courses(s)
Central Region	
ITI Kuala Lumpur	• Automotive Technology
ITI Pedas	• CADD & Architectural Technology • Gas & Arch Welding Technology
ADTEC Shah Alam	• Aircraft Maintenance
ITI Kuala Langat	• Computer Technology (Networking) • Software Technology (Multimedia)
Southern Region	
ADTEC Melaka	• Computer Technology (System) • Automotive Technology
ITI Bukit Katil	• Mechanical Maintenance Technology • Gas & Arch Welding Technology • Industrial Instrument Technology
ITI Selandar	• Computer Technology (System)
ADTEC Batu Pahat	• Welding Technology • Electronic Technology
ITI Mersing	• Automotive Technology • Gas & Arch Welding Technology
ITI Pasir Gudang	• Electric Technology (PW4 Certificate) • Gas & Arch Welding Technology
ITI Tangkak	• Computer Technology (Networking) • Gas & Arch Welding Technology

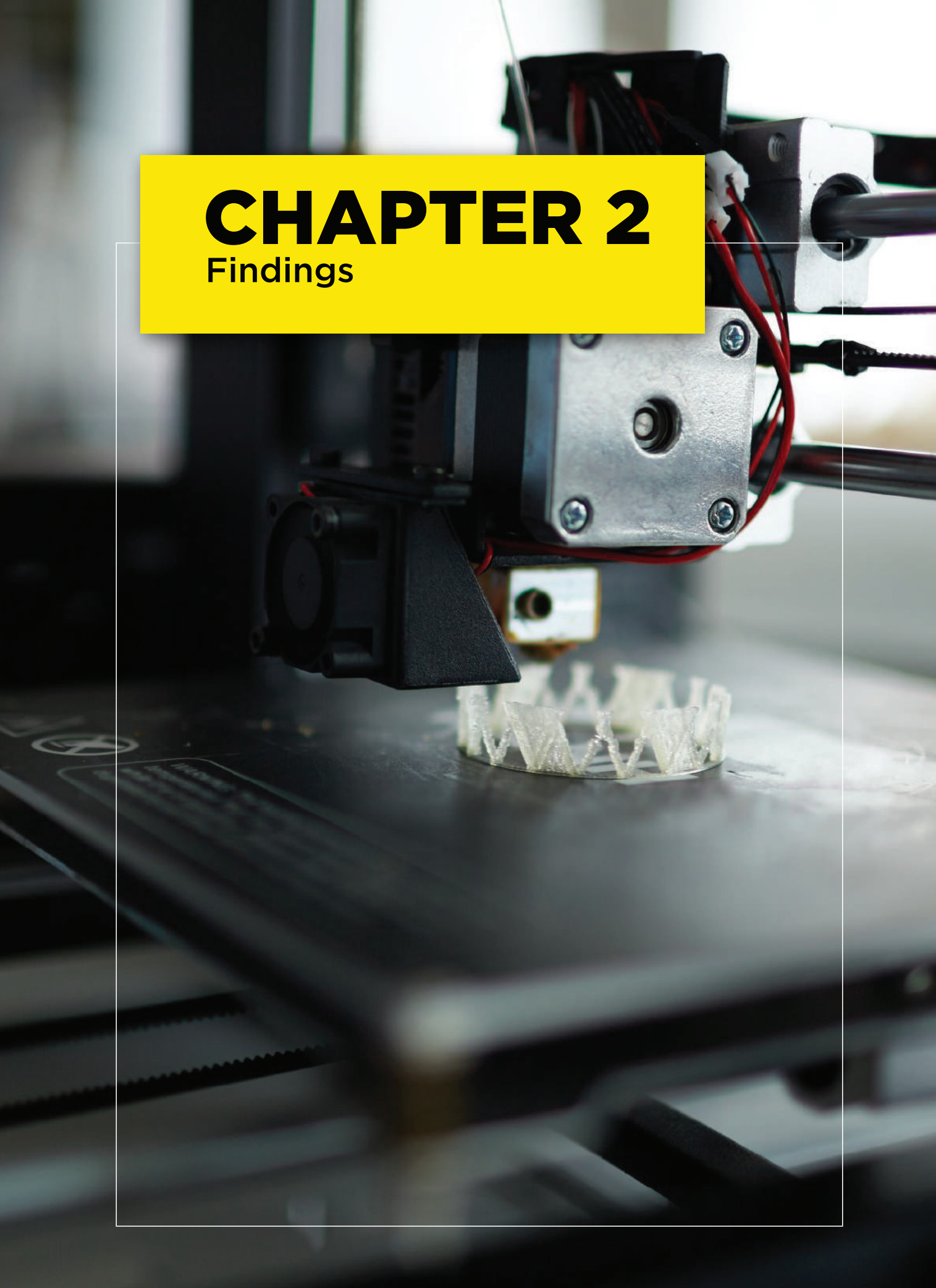
Central Region

Southern Region

In East Malaysia, Gas & Pipe Installment Technology and Electric Technology courses have attracted students to enroll in JTM institutes from 2016 to 2019

JTM institute	2016 – 2019 Top Courses(s)
Sarawak	
ADTEC Bintulu	• Electric Power Technology • Welding Technology
ITI Kota Samarahan	• Gas & Pipe Installment Technology • Electric Technology (PW2 Certificate) • Gas & Arch Welding Technology
ITI Miri	• Gas & Pipe Installment Technology • Electric Technology (PW2 Certificate)
Sabah & W.P. Labuan	
ITI Kota Kinabalu	• Automotive Technology • Computer Technology (Networking)
ITI Sandakan	• Gas & Arch Welding Technology • Computer Technology (Networking)
ITI Labuan	• Electric Technology (PW2 Certificate) • Gas & Arch Welding Technology





CHAPTER 2
Findings

In this Study, several common issues among the JTM institutes were identified based on the 4 main pillars

Market

- **Strong competition** from neighbouring TVET institutes under other Ministries
- **Students still lack technical skills** after training as insufficient hands on experience in the real working environment
- Students **lack soft skills** (communication skills and English proficiency) and **professionalism** (withdraw from programmes)
- **Poor perception** of TVET pathway

- **Instructors lack industry experience**
- **Instructors lack relevant educational background,** especially when they are assigned to teach courses outside their expertise
- **Restrictions on staffing process,** which is organised centrally by Suruhanjaya Perkhidmatan Awam (SPA)
- **Lack of resources for 'unpopular' locations,** resulting in difficulty to adapt to local market demand

Human Capital

Operation

- **Aging building and machinery** are not conducive for learning
- **Lack of autonomy** to make operational changes
- **Not proactive in approaching industry players** and **limited industry collaboration** especially in sharing assets, resources and training placement
- **Slow curriculum review and updates** (Five-year-cycle) may result in outdated or irrelevant curriculum
- **Overlapping** certification accreditation bodies

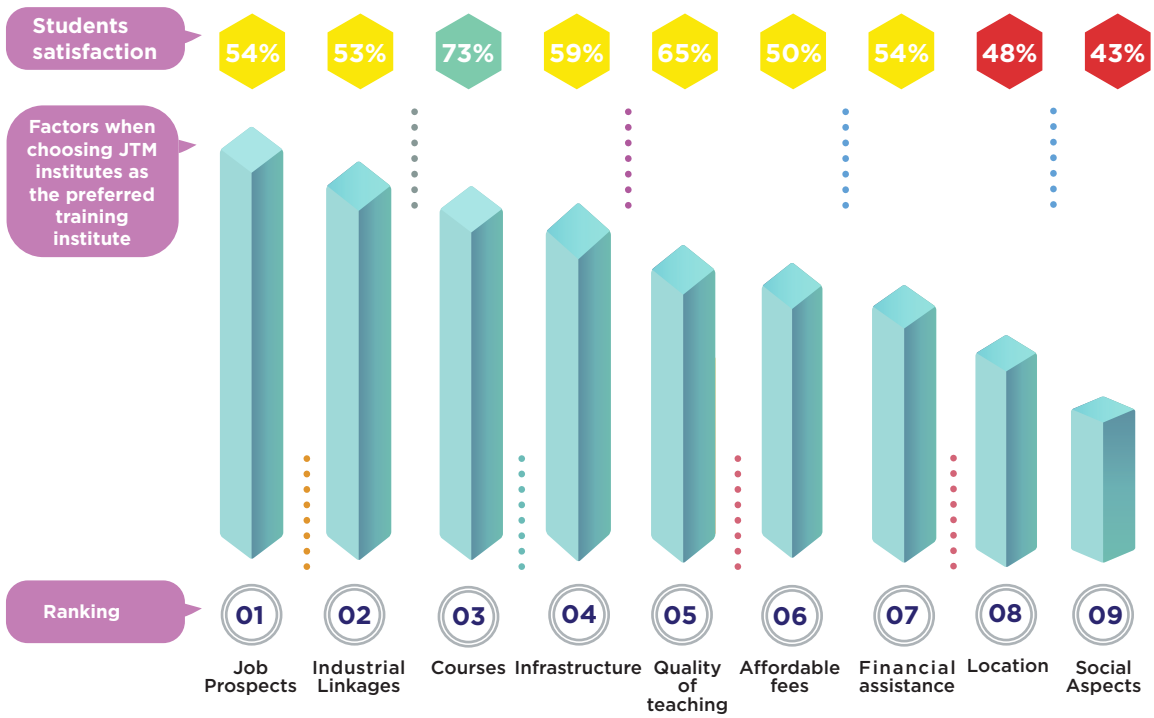
- **Decreasing, input-based budget allocation** affects intake of new students and maintenance of equipment
- **Heavy dependence on government budget allocation,** with minimal funds from non-Government sources
- **Long and complicated process** to obtain funds from HQ (JTM)
- **High operations cost** due to expensive equipment maintenance and staff wages

Finance

Source: Focus Group Discussion, EY Analysis.

Findings: Market

Figure 2.1 Factors When Choosing JTM Institutes as The Preferred Training Institute



LEGEND

- Total Score
- Percentage of students satisfied with the factors during their experience in ILJTM: **>70%**
- Percentage of students satisfied with the factors during their experience in ILJTM: **50% to 70%**
- Percentage of students satisfied with the factors during their experience in ILJTM: **< 50%**

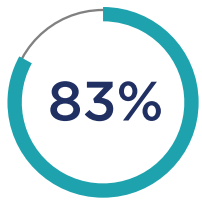
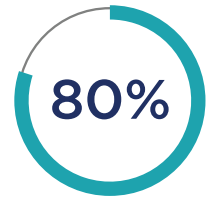
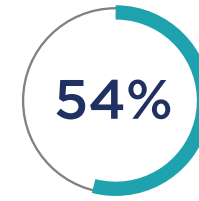
Job prospects, industrial linkages, and courses are the most important factors for students when choosing a preferred training institute.

Approximately 54% of students are satisfied with the job prospects and industrial linkages in JTM institutes.

More than 50% of students are dissatisfied with the location and social aspects of JTM institutes, however, these are the least important factors when choosing a preferred training institute.

Majority of students enrolled in JTM institutes come from B40 background

Figure 2.2: Profile of JTM Students and Overall Students Household Income

ITI	ADTEC	JMTI
		
19 year-old full-time student studying **Certificate** in Automotive Technology in ITI Jitra	22 year-old full-time student studying **Diploma** in Industrial Product Design in ADTEC Jerantut	24 year-old full-time student studying **Advanced Diploma** in Mechatronics
PROFILE		
1. Household income: <RM3,000 2. Cost of programme: 0 3. Monthly allowance: RM100	**1. Household income: <RM3,000** 2. Cost of programme: RM10,000 3. Monthly allowance: RM400 (PTPK loan)	**1. Household income: RM3,000 – RM5,000** 2. Cost of programme: RM6,000 3. Monthly allowance: 0
Overall students household		
Household income of ITI students Percentage of students	**Household income of ADTEC students** Percentage of students	**Household income of JMTI students** Percentage of students
		
of students come from family with household income of less than RM3,000	of students come from family with household income of less than RM3,000	of students come from family with household income of less than RM3,000

Certificate programmes offered in ITI are fully subsidised by the government and do not charge student fees. Moreover, a monthly student allowance of RM100 is provided by ITI.

Diploma programmes offered in JMTI and ADTEC, as well as a few ITI which currently charge student fees of RM3,000 per year. Students who are eligible may take up study loan from the Skills Development Fund (PTPK).

As TVET pathway is not a popular education option, the programmes are mainly catered towards B40 students who do not qualify for other higher learning programmes, are unable to afford fees, and are dependent on student allowance provided by the institutes.

The industry is changing too rapidly rendering the courses offered should be updated, as the course review is done by DSD once in five years

Figure 2.3 Comparison on TVET Programme Review

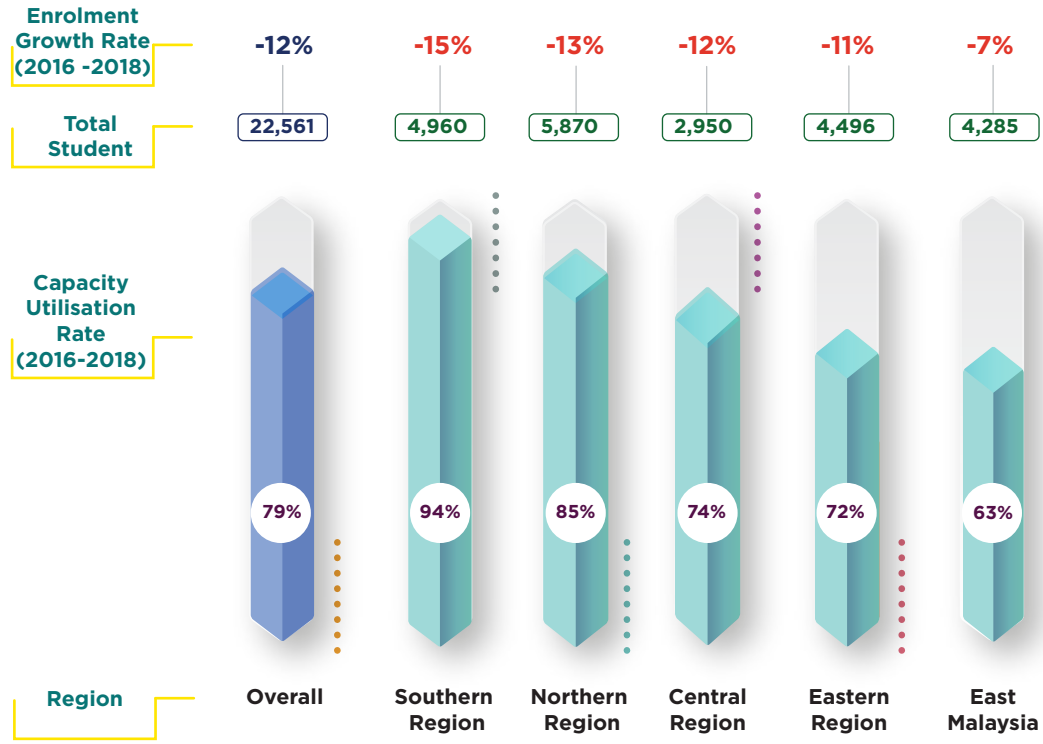
	Malaysia	Australia	Germany
Years between Review	**Every five years**	**Annually**	**Annually**
Key Observations	The overseeing body of the programme framework are **Department of Skills Development and National Skills Development Council**	The overseeing body of the programme framework are **Department of Industry** and **National Skills Industry**	Programme innovation and modernisation triggered by the **industry players, state and federal government**
	The framework is developed by facilitators, consultants and Industry Lead Body (ILB)	The programme framework is developed by the Industry Skills Council	State and federal government updates academic content of new/modernised training

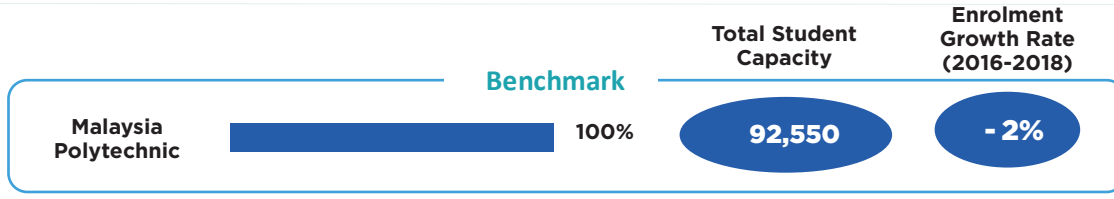
More than **40%** of students/alumni want to change field due to the skills gaps by the time they enter the industry

Note: Respondents answering "Don't know" are not included
Source: EY Survey, Vocational Education and Training in Germany, Konrad-Adenauer-Stiftung

Capacity utilisation of 32 JTM institutes averaged at 79%, with enrolment growth rate declining by 12% CAGR since 2016

Figure 2.4 Capacity Utilisation Rate and Enrolment Growth Rate





Southern region had the highest capacity utilisation rate, followed by Northern region. However, the enrolment growth rate of both regions has declined greater as compared to other regions. Compared to Malaysia Polytechnic, JTM institutes were underperforming in terms of capacity utilisation and enrolment growth rate due to the decrease of budget allocation from the government in 2017.

Source: EY Survey; EY Analysis, Statistik Pendidikan Tinggi 2017 & 2018 : Kementerian Pendidikan Malaysia, Informasi Politeknik Edisi October 2018

Graduate employability has generally increased across all regions as more students opt to enter the workforce as opposed to furthering their studies

Figure 2.5: Graduates Currently Employed or Have Received an Offer as of June, 2016 and 2018

Percentage, %

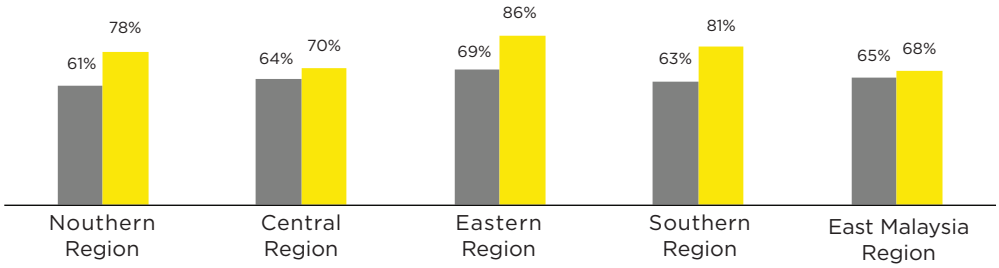


Figure 2.6: Graduates Furthering Their Studies as of June, 2016 and 2018* (%)

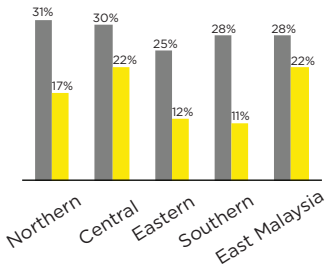


Figure 2.7: Graduates Unemployed as of June, 2016 and 2018 (%)

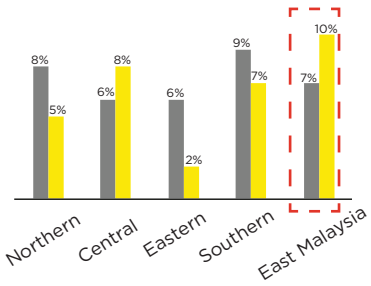
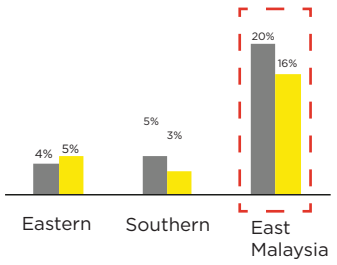


Figure 2.8: Oil & Gas Graduates in 2016 and 2018 by Region (%)**



Legend: 2016 2018

Most of the JTM training institutes in East Malaysia Region offer programmes related to the Oil & Gas Industry, which went through difficult times in recent years, thus the increase in percentage of graduates who were unemployed in 2018.

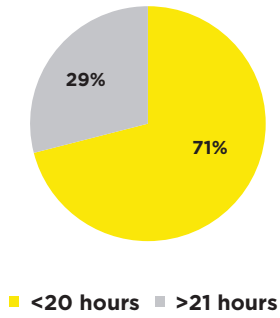
Furthermore, some of the training institutes are not located nearby industrial areas, which make collaboration with industry players a challenge in terms of industrial training and job placements for students.

Note:
*No data received for ADTEC Jerantut, ADTEC Kemaman, and ILP Marang in 2016 as these were new institutes, therefore, figures from 2017 was used instead
**Not applicable in Northern and Central Region as no Oil & Gas related programmes are offered in the region
Source: JTM Tracer Study 2015 – 2018

Findings: Human Capital

Figure 2.9: Overall Contact Hours of Trainers Per Week (Full-Time Courses Only)

Number of trainers



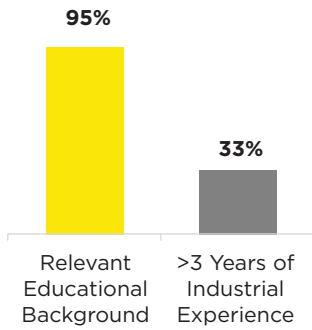
As shown in Figure 2.9, 71% of TVET instructors in JTM training institutes have spent less than 20 contact hours per week for theoretical and practical classes for full-time courses, compared to a benchmark value of 24 hours (PSDC, Malaysia)*.

There are several key activities during non-contact hours:

1. Student evaluation and review current syllabus
2. Involve in administration, asset and store management
3. Plan for extra-curricular activities and workshops e.g. CSR activities and English workshop
4. Act as advisors of students' competition in robotics and career development

Figure 2.10: JTM Trainers Educational Background and Industrial Experience

Percentage of Trainers %



Only 33%** of trainers had more than three years of industrial experience which is the typical minimum requirement in international TVET institutes (refer to Figure 2.10).

In 2018, only 3% of JTM Instructors who underwent industrial attachment under CIAST Shah Alam.

Hence, more efforts should be done to enhance trainers; industrial experience.

Singapore | ITE

Minimum 3 years of industrial experience

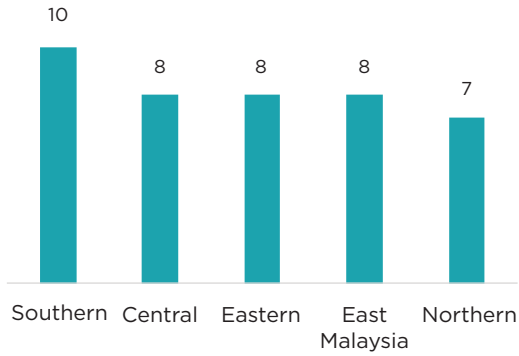
Malaysia | PSDC

Minimum 2 years of industrial experience

Note:
*The contact hours of trainers from PSDC include part-time courses offered to industries
**An average of 95% was used as the percentage of trainers with relevant educational background for institutes that did not provide the data
Source: Programme Data received from respective ILJTM, Phone interview with PSDC, Human Capital Data received from respective ILJTM, Data received from CIAST, Respective institute website for benchmarks, EY Analysis

Findings: Operations & Finance

Figure 2.11: Average Student to Faculty Ratio by Region, 2018



Operations

Figure 2.11 shows the average student to faculty ratio of 8:1 for 32 JTM Training Institutes in 2018, whereby it is a significant gap as compared to benchmark value ratio of 14:1 (ITE, Singapore).

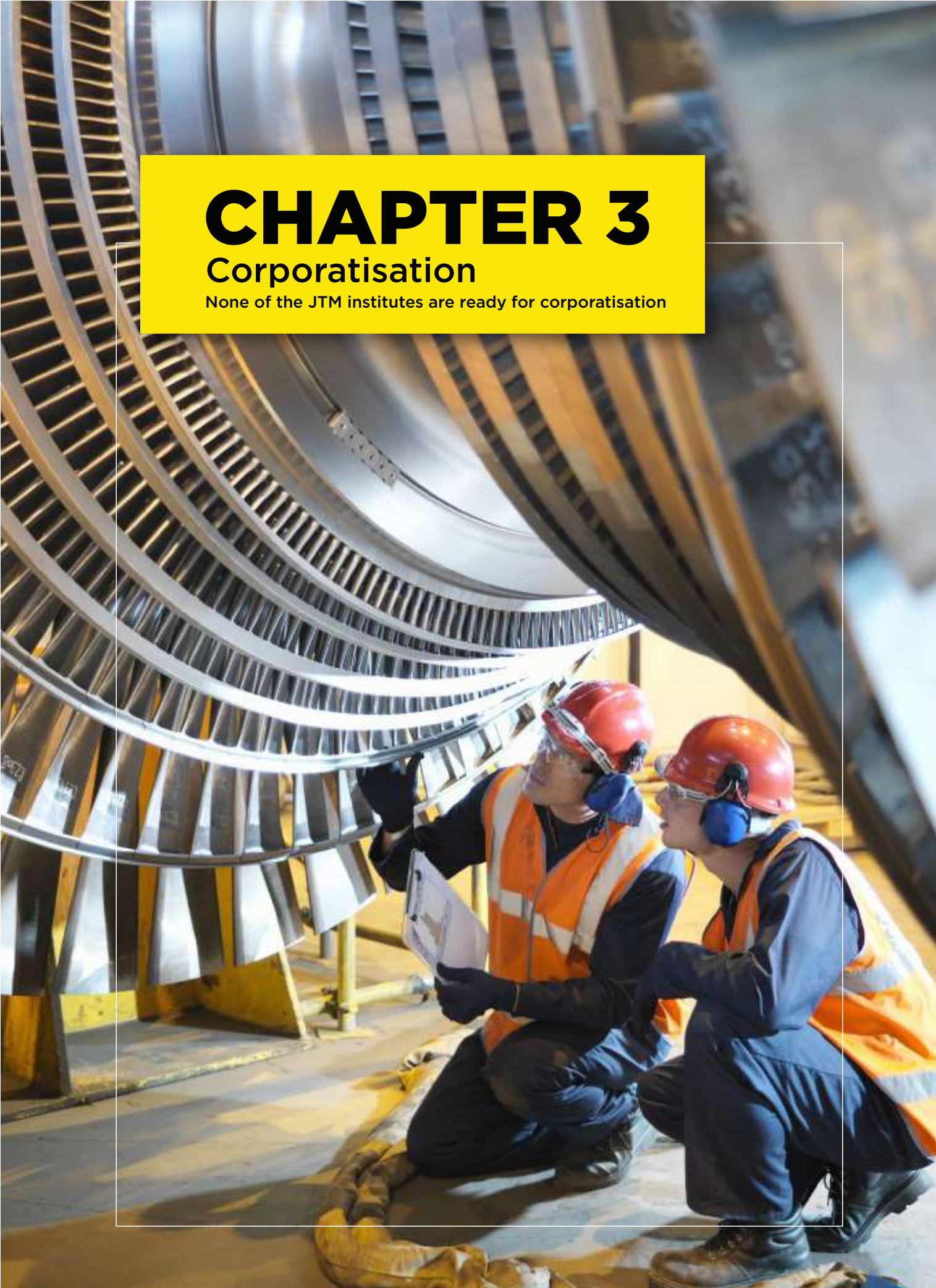
By region, Southern region ranked as the first highest average student to faculty ratio which was 10:1 among all regions in 2018.

Finance

92% of total fund for all JTM institutes is made up by government allocation for operational and development expenditure

The overall operational cost has averaged at **91%** out of total cost for all JTM institutes from 2016 to 2018, with 11 institutes showing growth in operational cost

Note: The student to faculty ratio does not include number of students for part-time courses
Source: Programme Data received from respective ILJTM, ITE Highlights 2013, Financial Data received from respective ILJTM, EY Analysis



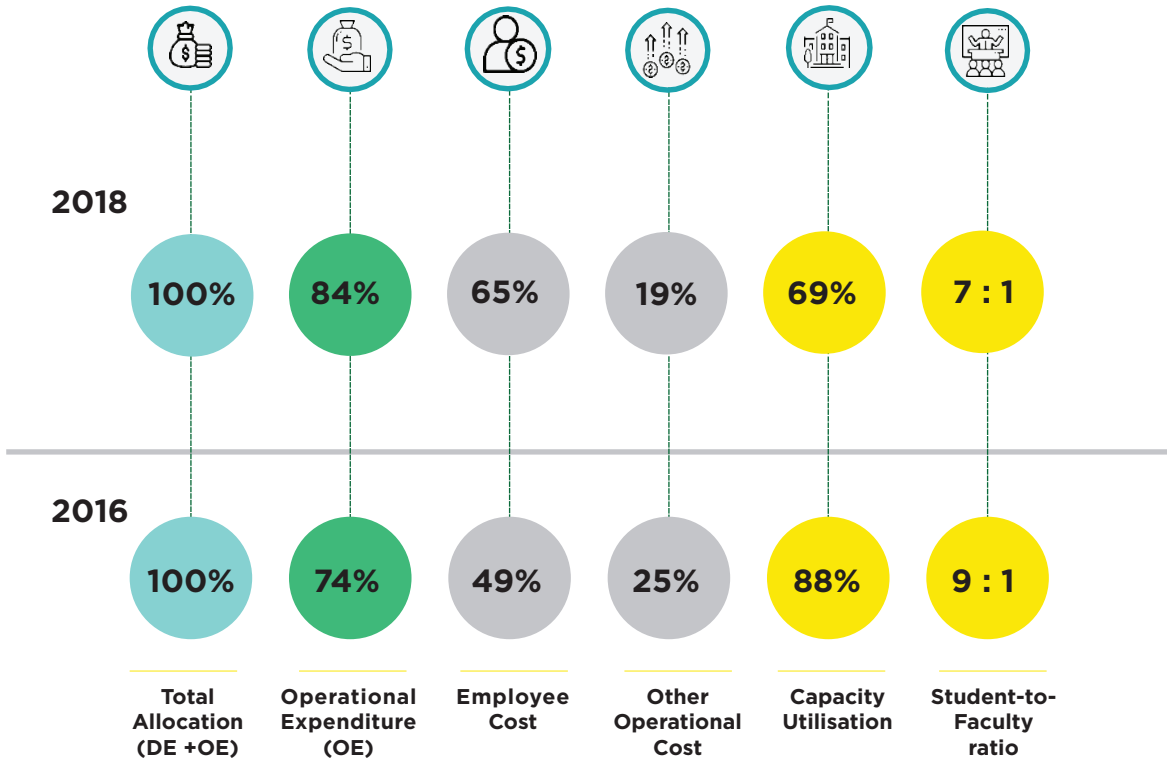
CHAPTER 3

Corporatisation

None of the JTM institutes are ready for corporatisation

The percentage of operational cost out of total allocation for JTM institutes has increased since 2016, whereas capacity utilisation has decreased from 88% in 2016 to 69% in 2018

Figure 3.1 Overall Performance of All JTM Institutes



The overall performance of all JTM institutes is shown in Figure 3.1, with the financial ratios and efficiency ratios. The government allocation is made up of Development Expenditure (DE) and Operational Expenditure (OE). Percentage of operational expenditure has increased from 74% in 2016 to 84% in 2018. Operational expenditure includes employee costs and other operational costs such as lease and rental payments, teaching supplies and equipment maintenance, student subsidies, utilities and other miscellaneous costs.

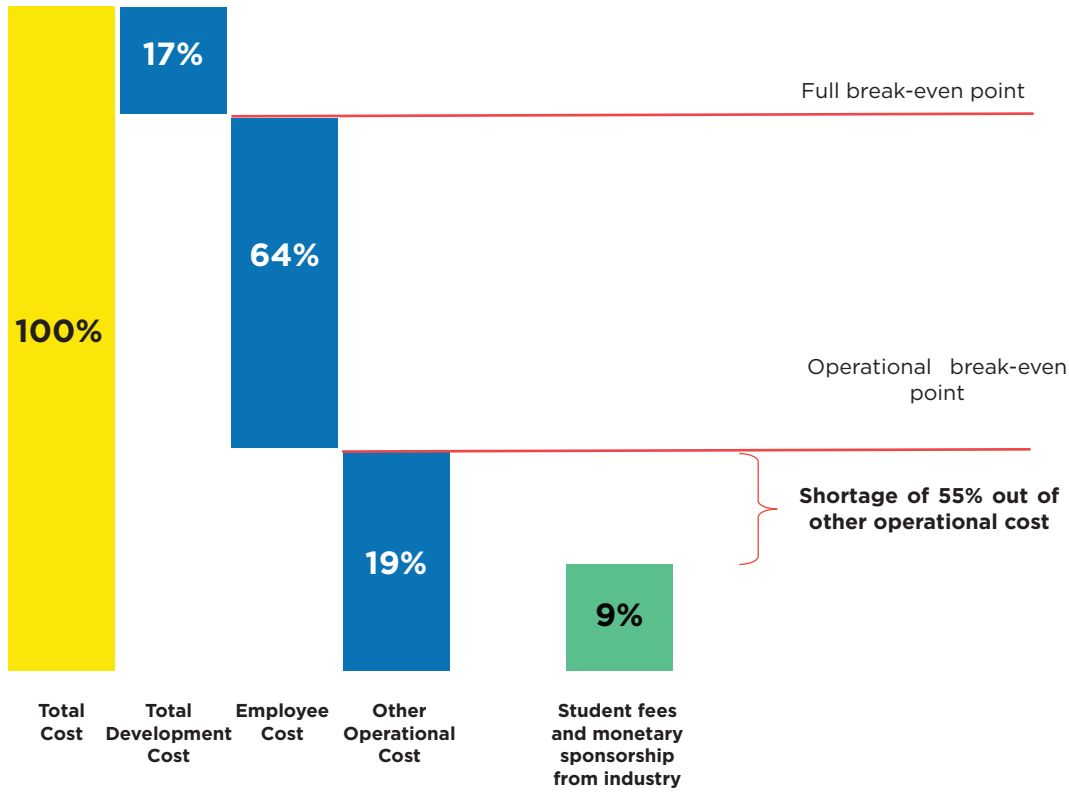
The percentage of employee cost has increased from 49% in 2016 to 65% in 2018, whereas percentage of other operational costs has declined from 25% in 2016 to 19% in 2018.

In addition, capacity utilisation and student-to-faculty ratio have declined since 2016 due to the decline in students enrolment of all JTM institutes. This may be due to the decrease in government allocation in 2017.

Note: Development Expenditure (DE) is allocated based on the proposed assets and infrastructure required by JTM institutes
Source: Financial data received from JTM, EY Analysis, FGD session with ILJTM

Overall, the 32 JTM institutes are able to cover 45% of other operational cost by utilising student fees and funding from industry in 2018

Figure 3.2: Overall Breakdown For 32 JTM Institutes by Total Cost vs Overall Student Fees and Monetary Sponsorships From Industry in 2018 (Percentage, %)



As shown in Figure 3.2, total cost in 2019 is made up of 17% development cost, 64% employee cost, and 19% other operational costs. Other operational costs include lease and rental, teaching supplies & equipment maintenance, student subsidies, utilities and other miscellaneous costs. The 32 JTM institutes are able to cover approximately 9% of its' total cost by utilising fees and charges from students and funding from industry, mainly through short courses. The 32 JTM institutes face a shortage of approximately 55% of other operational costs toreach the operational break-even point.

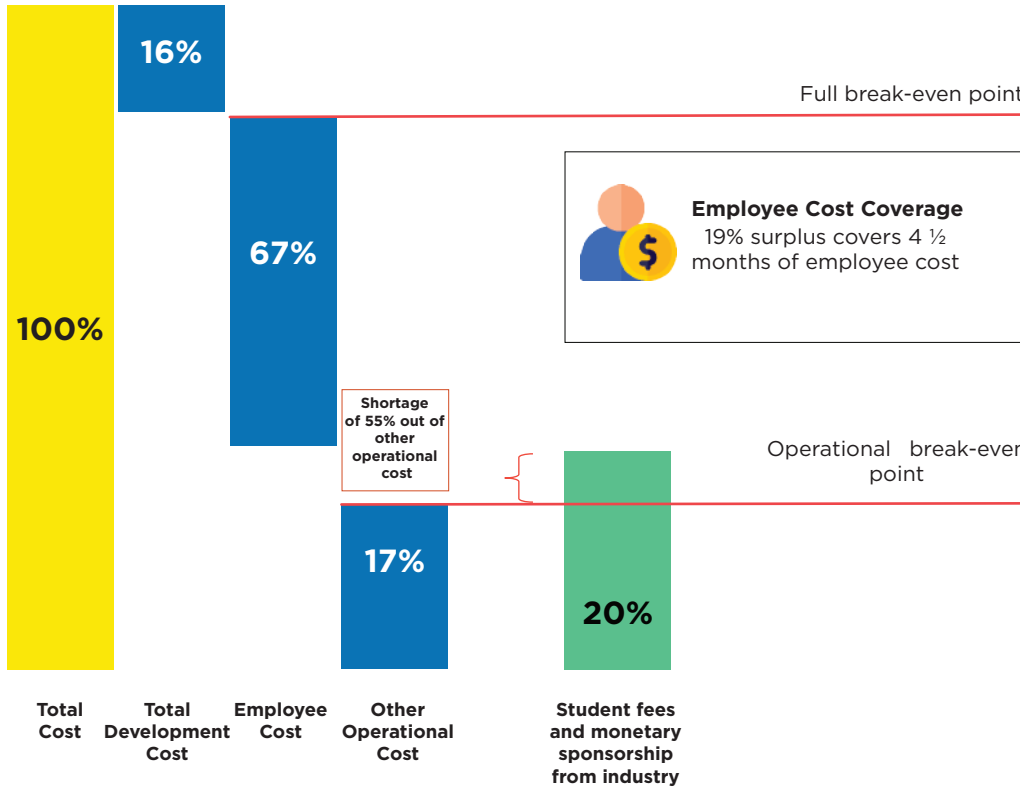
23 ITIs offer Certificate programmes that are fully subsidised by the government, therefore they do not charge student fees.

As a whole, the 32 JTM institutes are not ready to be corporatised as they are **unable to reach full or operational break-even point.**

Note: Development Cost is the approved budget for assets and infrastructure development required by JTM institutes
Source: Financial data received from respective JTM institutes, EY Analysis, FGD session with ILJTM

4 ADTECs are able to cover other operational costs, excluding emoluments, through student fees and charges and funding from industry

Figure 3.3: ADTEC & JMTI's Breakdown by Total Cost vs Overall Student Fees and Monetary Sponsorships From Industry in 2018 (Percentage, %)

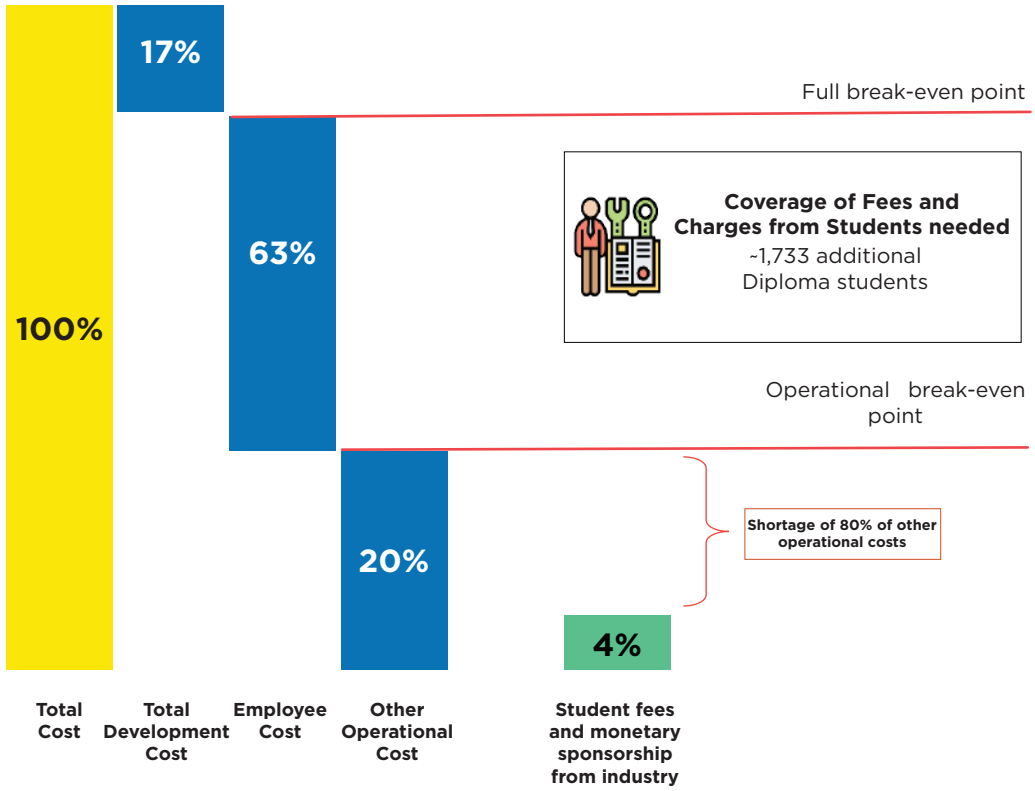


As shown in Figure 3.3, only 4 ADTECs are able to reach operational break-even point to cover other operational costs which include lease and rental, teaching supplies & equipment maintenance, student subsidies, utilities and other miscellaneous costs. The surplus of 19% from student fees and funding from industry is able to cover the other operational costs. The student fees of JTM institutes are generated from Diploma courses whereas funding from industry is generated through short-term courses and sponsorships. However, the surplus of student fees and funding from industry are able to cover employee cost per institute for only four and a half months. Therefore, ADTEC and JMTI are not ready to be corporatised as they are **unable to reach full break-even point.**

Note: Development Cost is the approved budget for assets and infrastructure development required by JTM institutes
Source: Financial data received from respective JTM institutes, EY Analysis, FGD session with ILJTM

ITIs have a shortage of 55% to cover other operational costs after utilising student fees and funding from industry in 2018

Figure 3.4: ITI Breakdown by Total Cost vs Overall Student Fees and Monetary Sponsorships From Industry in 2018 (Percentage, %)



As shown in Figure 3.4, total cost in 2019 is made up of 17% development cost, 63% employee cost, and 20% other operational costs. The 23 ITIs are able to cover approximately 4% of its' total cost by utilising fees and charges from students and funding from industry, mainly through short courses. They have a shortage of 80% of other operational costs in 2018 and are unable to reach operational break-even point.

Currently, seven out of 23 ITIs offer Diploma programmes and are able to charge student fees. All 23 ITIs offer short courses for industry workers.

To reach operational break-even, these seven ITIs would need to increase its Diploma student intake by 19 times or short term courses by seven times. The seven ITIs would need additional 1,733 Diploma students, which may not be possible due to limited capacity and infrastructure of the institutes.

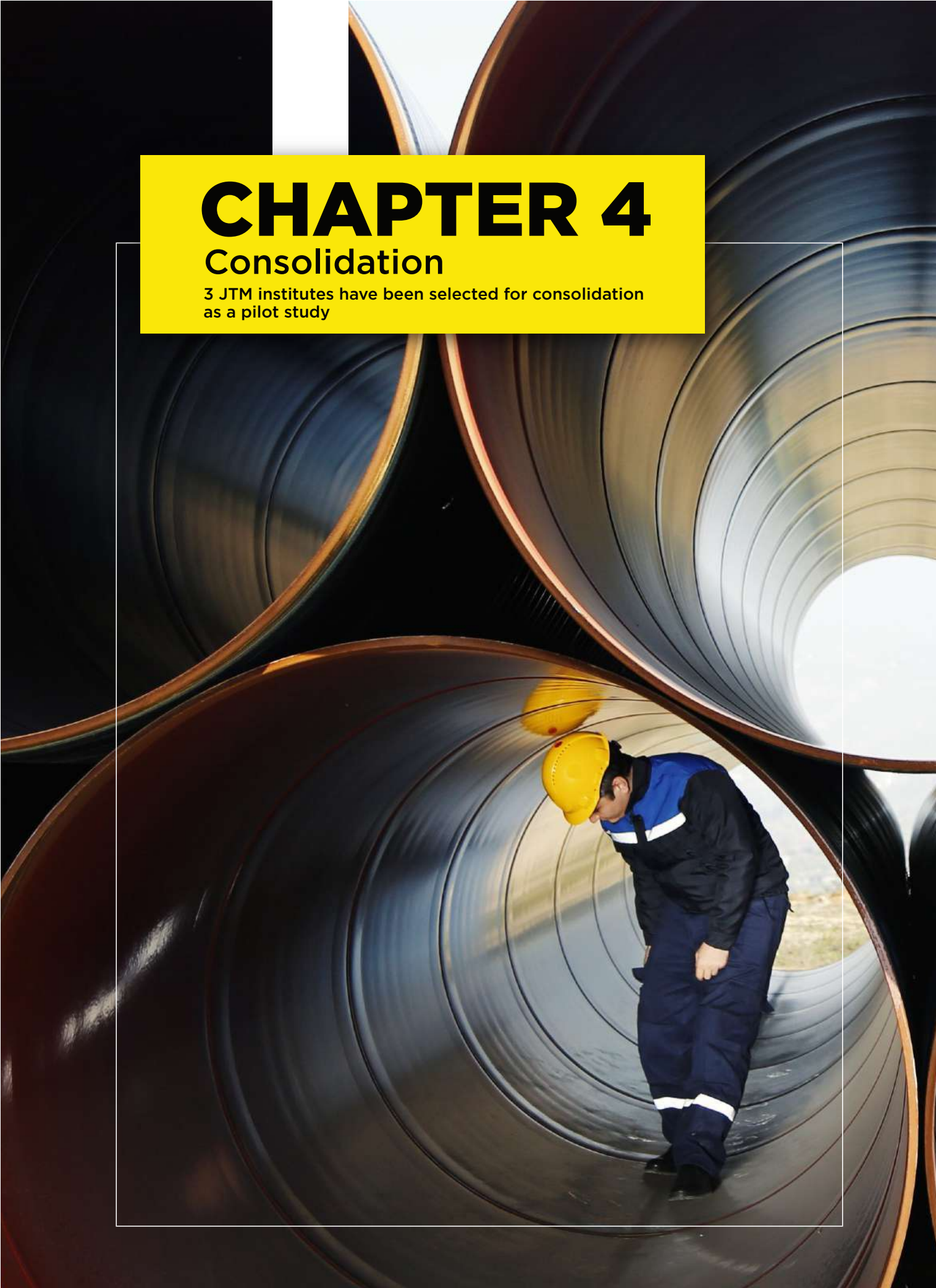
Therefore, ITIs are not ready to be corporatised as they are unable to reach full or operational break-even point.

Note: Development Cost is the approved budget for assets and infrastructure development required by JTM institutes
Source: Financial data received from respective JTM institutes, EY Analysis, FGD session with ILJTM

CHAPTER 4

Consolidation

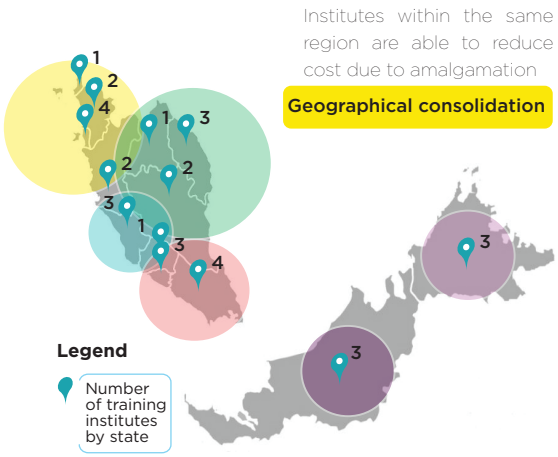
3 JTM institutes have been selected for consolidation as a pilot study



Three JTM institutes have been selected for a pilot study for consolidation

The idea of consolidation is defined as consolidating JTM institutes by identifying consolidation candidate and potential acquirers. It can be implemented by combining the programmes offered to fulfill industry needs nearby the selected JTM institutes, strengthening the potential acquirers and reducing operational costs. As shown in Figure 4.1, the consolidation assessment has been done by region by calculating the locational proximity and other key considerations as shown in Figure 4.2 .

Figure 4.1 Consolidation Considerations

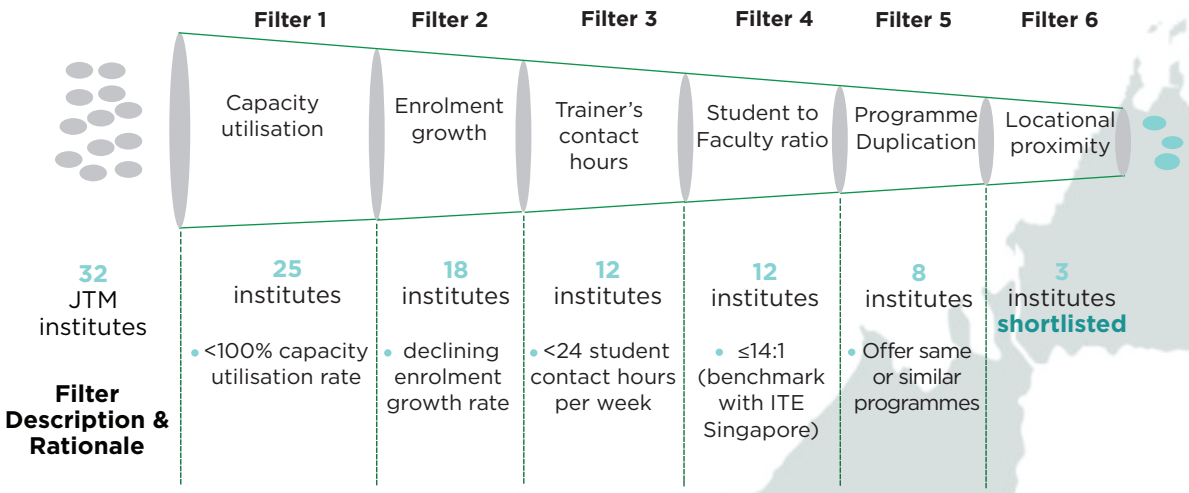


The main objectives of consolidation of JTM institutes are to enhance the effectiveness of management and establish cost-saving model at Ministry level. The selected JTM institutes for pilot consolidation will be monitored to examine the effectiveness of cost-saving model. This model can be replicated for other public TVET institutes if there are proven positive outcomes.

The results of assessment based on the 4 key areas (Market, Human Capital, Operations, Financial) have shown that there is a need to improve the management structure of JTM institutes. For instance, low capacity utilisation, low student-to-faculty ratio and high operational cost of certain JTM institutes.

The 3 JTM institutes that were shortlisted have underwent 6 stages of filtration process, as shown in Figure 4.2 below.

Figure 4.2 Filtration Process



To enhance efficiency, there are 3 JTM institutes can be considered for consolidation

Consolidation candidate

Institute A

Potential acquirers

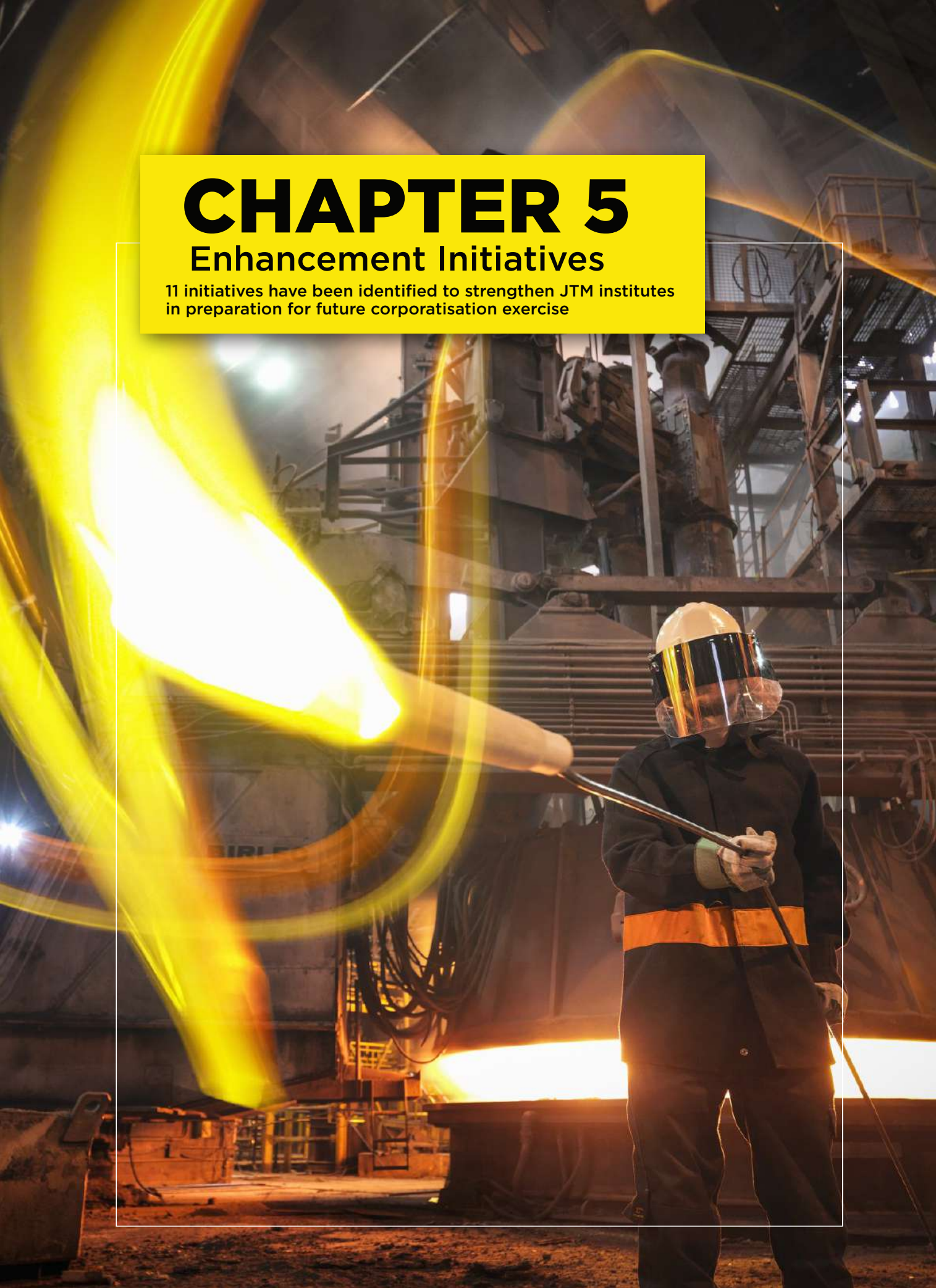
1. Institute B
2. Institute C

Institute A has been chosen as a consolidation candidate. The institute is located in a non-strategic area which hinders industry participation. In addition, Institute A has to compete with other public TVET institutes in the area such as GiatMARA and Polytechnic. The average capacity utilisation of Institute A between 2016 to 2018 was 28%, with declining enrolment growth rate of 1% CAGR. Moreover, 95% of trainers have less than 20 contact hours with students per week*. It's student-to-faculty ratio stood at 3:1 in 2018, significantly below the benchmark of 14:1**.

Institute B and **Institute C** were selected as potential acquirers of Institute A. Consolidation is ideal for these institutes due to course duplications and location proximity. Course duplications for Institute B include Welding & Automotive Technology. Moreover, Institute B has capacity utilisation of 92% on average, with declining enrolment growth rate of 6% from 2016 to 2018. Similarly, course duplication for Institute C include Welding Technology. Institute C has capacity utilisation of 84% with declining enrolment growth rate of 22%. Both of these institutes have existing equipment and machineries, as well as the capacity to increase student enrolment. Institute A, B and C are located within 100km radius of a central district in one of the state in Malaysia. The expected impact of consolidation, from the institute's perspective include an annual saving of approximately RM8 million, which is the cost of running Institute A. With the savings, JTM may focus on improving efficiency for Institute B and Institute C in terms of capacity utilisation, which in turn would increase its' student-to-faculty ratio. Human resources will be re-assigned by the Public Service Department. JTM have the option to sell, rent or lease, or move Institute A's equipment and machineries to the acquiring institute.

Consolidation may occur in two phases. The first phase would be to cease student intake in Institute A while strengthening Institute B and Institute C. Second phase would be to begin the consolidation exercise.

Notes:
* Student contact hours do not include short-term courses
** ITE Singapore used as benchmark



CHAPTER 5

Enhancement Initiatives

11 initiatives have been identified to strengthen JTM institutes in preparation for future corporatisation exercise

Initiative #1: Rebrand individual ADTECs to ADTEC Malaysia with single administration

One ADTEC System, Eight Branch Institutes

Initiative 1

ADTEC Malaysia shall have a single administration office for all 8 branch institutes; this **will** be cost-efficient as it will centralise the back-office operations that are used by the 8 ADTECs and eliminate redundancy.

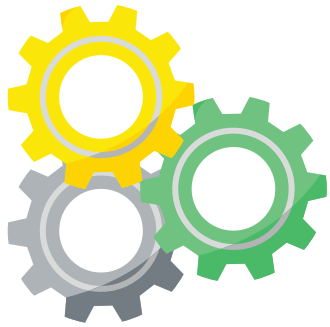
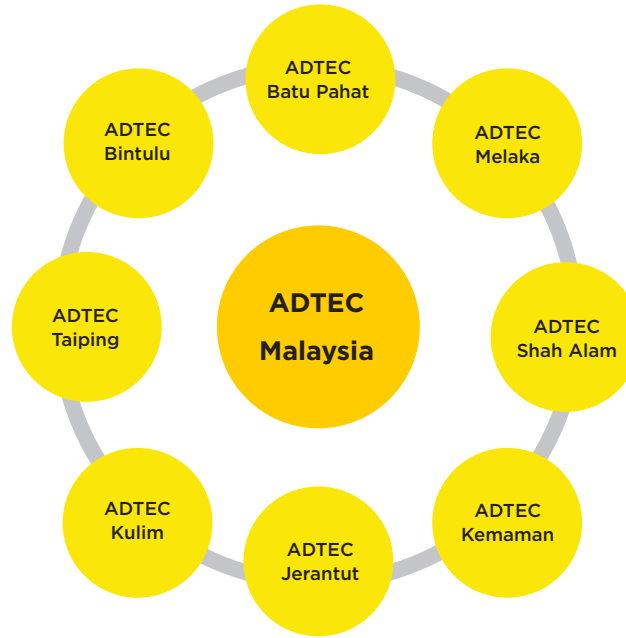


Figure 5.1 One ADTEC System, Eight Branch Institutes



Rationale

Currently, each ADTEC branch institute identifies themselves as an individual institute. Each also has its own administration team. After rebranding to **ADTEC Malaysia,** the institutes would share a single administration office based in JTM HQ to centralise back-office operations to become more cost-efficient. The institutes would position themselves as **ADTEC Malaysia.**

To ensure success, marketing research and branding campaigns will be conducted, as well as engaging key stakeholders.

To promote **ADTEC Malaysia,** the institutes would have their own platform to engage with surrounding industries for technology knowledge transfer.

Initiative #2: Rebrand ILP to ITI Malaysia

One ITI System, 23 Institutes

Figure 5.2 One ITI System, 23 Institutes

Initiative 2

Centralising back-office operations that are used by 23 ITIs would be cost-efficient and eliminate redundancy.

To ensure success, marketing research and branding campaigns will be conducted, as well as engaging key stakeholders. In order to promote ITI Malaysia, each institute would have own platform to engage with surrounding industries for technology knowledge transfer.

Rationale

Currently, each ITI institute identifies themselves as an individual institute. Each also has its own administration team. After rebranding to ITI Malaysia, the institutes would share a single administration office based in JTM HQ to centralise back-office operations to become more cost-efficient. Centralising back-office operations that are used by 23 ITIs would be cost-efficient and eliminate redundancy.

To ensure success, marketing research and branding campaigns will be conducted, as well as engaging key stakeholders.

To promote ITI Malaysia, each institute would have own platform to engage with surrounding industries for technology knowledge transfer.

Initiative #3: Specialise JTM institutes for relevant industries and create Centres of Speciality (CoS) by each region

Initiative 3

Create Centre of Speciality (CoS) by region, which focuses on course specialisation. Each ADTECs and ITIs should create their own course specialisation by identifying potential industries nearest to their institutes.

Apart from that, courses in each region may be consolidated to reduce duplication, as well as closing down of unproductive courses such as Ceramic and Printing technology by considering four consecutive student intakes and employability.

JTM shall be more proactive in identifying and offering courses that are in demand by relevant industries in surrounding areas.

Rationale

Currently, the CoS for certain ADTEC and ITIs is not well-known by industry players to form industrial collaboration for training purposes and equipment sponsorships.

Course specialisation can be done by fulfilling the industry demand and work aligned with current and future development of the states in Malaysia. For instance,

i. **Northern region:** Kedah has future projects e.g. to establish manufacturing industries and logistics hub in Sidam near Kulim and a petrochemical industrial park in Gurun. Hence, ADTEC Kulim may specialise their courses in Aerospace and ITI Jitra may specialise Petrochemical.

ii. **Southern Region:** ITI Pasir Gudang may specialise in Automotive (Electric Vehicle) industry due to the potential growth of industry players.

iii. **Central region:** 700,000 workers are needed in the field of Automotive from 2018 to 2020. ITI Kuala Lumpur may specialise in Automotive courses due to strategic location around Automotive industry.

iv. **East Coast region:** ITI Marang may target potential industries arose from East Coast Rail Link (ECRL) projects to prepare the future workforce.

v. **East Malaysia:** According to Hays Oil & Gas Global Salary Guide, there is 42% of labour shortages in Malaysia for Oil & Gas industry. Therefore, ADTEC Bintulu may specialise in Oil & Gas courses. As Sabah has potential of becoming an aerospace hub for Maintenance, Repair and Overhaul (MRO), ITI Kota Kinabalu may start to offer and specialise in Aerospace programmes.

Initiative #4: Target working adults and retirees for TVET courses to improve employment prospects and promote lifelong learning experience

Initiative 4

Target workforce aged between 20-40 years old, which makes up 42% of the total workforce. Furthermore, cater programmes that impart industry-relevant skills to improve employability of its participants. JTM institutes may provide short-term courses to cater retirees' needs for lifelong learning experience, e.g. computing, mobile repair course, air-conditioning repair and maintenance.

Reskilling and upskilling programmes have consistently helped improve upward mobility and employment prospects of its participants. Furthermore, formal lifelong learning as part of professional development is becoming a necessity to maintain, and prepare for employment in the global economy.

Rationale

Automation such as rise of robots, artificial intelligence, big data, the internet of things have raised concerns about the widespread substitution of machines for labour.

Retirees do not have sufficient network to socialise with others with lifelong learning activities, therefore they will become lonely and loneliness will lead to anxiety, forgetfulness and many other disease.

Currently, there has been an increase in demand by 5% in the last 3 years for short term courses.

Additionally, according to 2017 report by Khazanah Research Institute, it is estimated that more than half of all current jobs in Malaysia are at high risk of being affected by automation in the next one to two decades.

Hence, there is a need for Malaysians to meet the changing skill needs of a high-income economy and maximise the potential of individuals through reskilling and upskilling.

Initiative #5: Enhance sustainable partnership with local and foreign TVET institutes to improve educational collaboration

Initiative 5

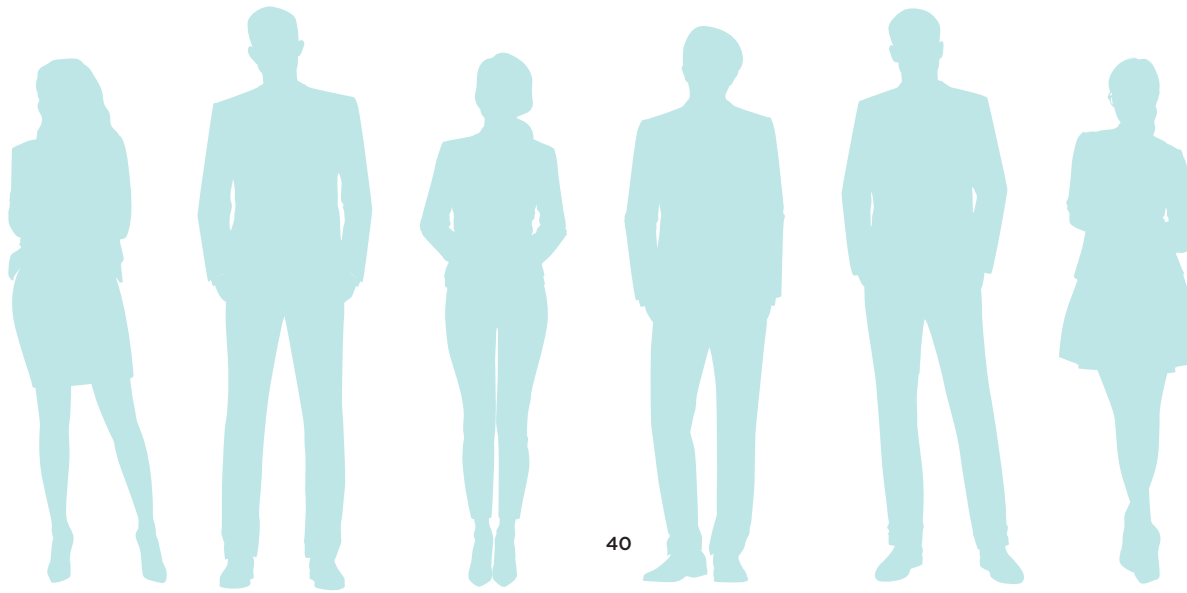
JTM institutes may collaborate and form Memorandum of Understanding (MoU) with local TVET institutes e.g. IKBN for curriculum modernisation. In addition, form partnership with foreign TVET institutes in countries such as China, Vietnam, India and even Australia for: knowledge transfer (cross-country exchange programmes for students, training programmes for trainers).

Rationale

ADTEC and ITIs under JTM have limited collaboration with foreign TVET institutes. This results in lack of exposure to latest trend of technology to fulfill the industry needs for students and trainers.

Furthermore, there are no internal MoU between all public TVET institutes to attain mutual benefits. This results in lack of communication and collaboration for future development of TVET institutes.

Students from five Community Colleges and 19 polytechnics have participated SEA-TVET Student Exchange Programme with foreign TVET institutes in Indonesia, Philippines, Thailand and Vietnam.



Initiative #6: Hire retired industry experts or member of industry association as adjunct instructors and English tutors to students and trainers

Initiative 6

Hire adjunct part-time instructors such as retired industry practitioners and experts from industry associations. As the retirees have working experience and skillsets in their respective fields, their knowledge can be transferred to the young generation to develop better skillsets before entering the job market.

Aligned with ILMIA's previous study on reactivating aging workforce, retirees may also opt to teach English courses to students and trainers of JTM institutes.

Rationale

Although the trainers in 32 JTM training institutes may possess many years of teaching experience, they do not have sufficient industry experience as many are employed through Jabatan Perkhidmatan Awam (JPA) as university graduates without the need to check for any relevant industry experience.

TAFE Australia and ITE Singapore employ part time instructors to enhance the programme delivery for students.

The instructors have flexible working hours to ensure the work-life balance of the retirees.

Initiative #7: Performance-based funding for JTM institutes based on several criteria

Initiative 7

Design performance-based funding for ADTEC Malaysia & JMTI, and regionally for ITI based on several criteria:

i. Quality of trainers (e.g. number of trainers who undergo training, feedback received from students etc)
ii. Quality of students (e.g. employability of graduates)
iii Short courses enrolment and industry collaboration
iv. Number of industrial engagements and quality of industrial collaboration measured by indicators such as but not limited to student placements and equipment sponsoring

Rationale

ADTEC and ITI under JTM have high dependency on government funding, as the average government allocation for OE & DE from total fund is 92%.

The current input-based funding system for budget allocation for ADTEC and ITI under JTM does not enhance financial management efficiency, as 12 out of 32 institutes have exceeded the overall average cost per student at RM5,063 from 2016 to 2018.

Output based funding models are implemented for TVET institutes in Australia based on several criteria, e.g.:

1. **Quality of trainers**
2. **Quality of students**
3. **Quality of learning equipment**

Initiative #8: English course modification to establish Malaysia Vocational English Test (MVET) for Diploma students

Initiative 8

Establish Malaysia Vocational English Test (MVET) as an exit requirement for Diploma students (ADTEC & JMTI) to enhance their employment prospects. Furthermore, enhance the practice of English communication by mandating English command in certain courses e.g. English course and practical training course.

JTM shall tailor its current English course structure to prepare students to sit for the MVET:

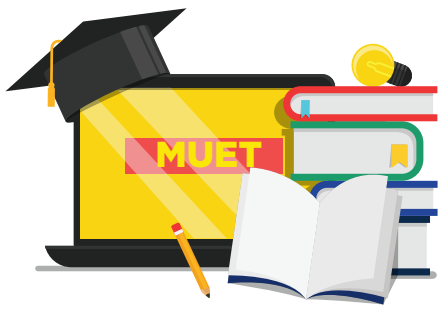
- Reading, writing, listening, and speaking sections should be included in the course structure
- Applicable only for Diploma students (ADTEC & JMTI)

Industry players will have the confidence to hire graduates with strong technical skills and good communication skills.

MUET
MALAYSIAN UNIVERSITY ENGLISH TEST

MVET will be a modification of the Malaysian University English Test (MUET), a test of English proficiency in applying for admissions into all public universities and colleges in Malaysia.

JTM may benchmark the course structure of MUET to prepare students for the MVET in JTM institutes.



Rationale

Currently, the 32 JTM institutes provide English subject as a value-added course as part of its programmes, however it does not serve as an indicator for students' English proficiency and prepare students to communicate during inter-views or in the workplace.

Students and graduates lack communication skills that are essential in the workplace, which hinders partnerships with industry players.

Initiative #9: Promote SLDN and equipment sponsorship by reinforcing tax incentives for industry players

Initiative 9

Tax incentives for companies which provide SLDN apprenticeship programmes to students, monetary and equipment sponsorship e.g. equipment tax allowance, apprenticeship tax allowance through double deduction schemes.

With SLDN, government doesn't need to invest in machineries for industry players.

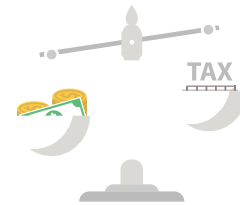
This can potentially improve industrial collaboration with ILJTM to enhance students' employability as they have experience in the real working environment.

Australia

Czech Republic

Australia: Taxation system has an apprenticeship tax allowance and an apprenticeship tax credit to promote company participation

Czech Republic: Allowance for companies covers education and upskilling training, where the maximum deductible sum of twice the cost



Rationale

Industry players are not attracted to the current tax incentives e.g. Companies Income Tax deduction (single tax deduction) provided by JPK for companies which are carrying out Sistem Latihan Dual Nasional (SLDN) training or sponsor equipment and machineries.

SLDN mimics the German vocational and education system whereby students spend part of each week at a TVET institute to learn theories and the other part at a company for practical training, or they may spend longer periods at each place before alternating.

Currently, companies carrying out SLDN training are entitled to the following benefits:

a) Claim of the levy for companies that contributed to the Human Resource Development Fund (HRDF). (Employer Circular no.1/2008)

b) Companies Income Tax deduction (single tax deduction) under the provisions of subsection 34(6)(n), Income Tax Act (ITA) 1967.

Initiative #10: Enhance programme delivery in ADTEC

Initiative 10

ADTEC to cater to changing needs of technology by providing the right tools for blended learning through virtual, flipped and online environment. It is essential to customise the programmes to tailor to NOSS and adapting efficient learning tools in order to meet the industry needs.

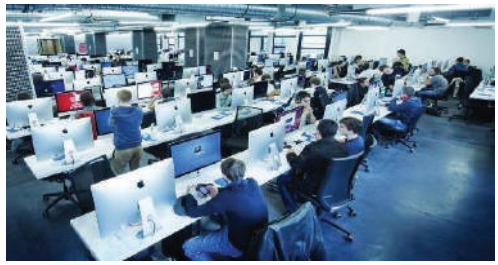
For instance,

- **Virtual learning environments** reduce actual training time spent in physical environments, and thus reduce risk in the workplace
- **3D learning** use is also proven to improve learner attention levels and knowledge retention
- Shifts focus from trainer to **learner-centric class activities**, and promotes active knowledge acquisition and construction

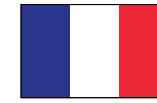
Rationale

Gen-Z is shaping the future of education, by using technology as not just a tool, but a way of life. As such, JTM institutes should cater to the learning styles of Gen-Z.

There is a need to enhance delivery to make the courses attractive to Gen-Z.



Germany



France

Germany: Digital Capability Centre (DCC) serves as a digital technology transformation hub to assists manufacturer to prepare and scale up their digital manufacturing capabilities as well as digital workforce training.

France: École 42 is a coding school which students are given full autonomous to decide and manage their own learning.

Initiative #11: Establish flexi-positions of trainers and enhance their multidisciplinary skills by mandating industrial attachment and offering training courses to teach other fields

Initiative 11

Establish flexi-positions to allow trainers to stay in current institutes instead of transferring to a different institute when they are promoted.

In addition, mandatory industrial attachment for existing trainers by promoting "Latihan Sangkutan Industri (LSI)" in different fields.

Trainers may take up additional training courses in learning other related field of studies to enhance their multidisciplinary skills e.g. Electrical Engineering and Electronic Engineering.

JTM may design the training courses by phases:

- Analyse (Training requirement)
- Plan (Content of training)
- Design (Strategies & Involvement)
- Conduct (Training & Assess)
- Review (Evaluate)

This can potentially improve the quality of teaching and avoid the mismatch of skillsets of the trainers.

Rationale

Most trainers are required to teach other courses which are out of their expertise when they are promoted and transferred to other institutes.

Trainers face time constraints to acquire the teaching techniques as they lack of teaching experience in the new field.

CHAPTER 6
Implementation Roadmap and Plan

The priority of initiatives has been assessed by considering the level of impact and ease of implementation

Figure 6.1 Prioritisation Matrix

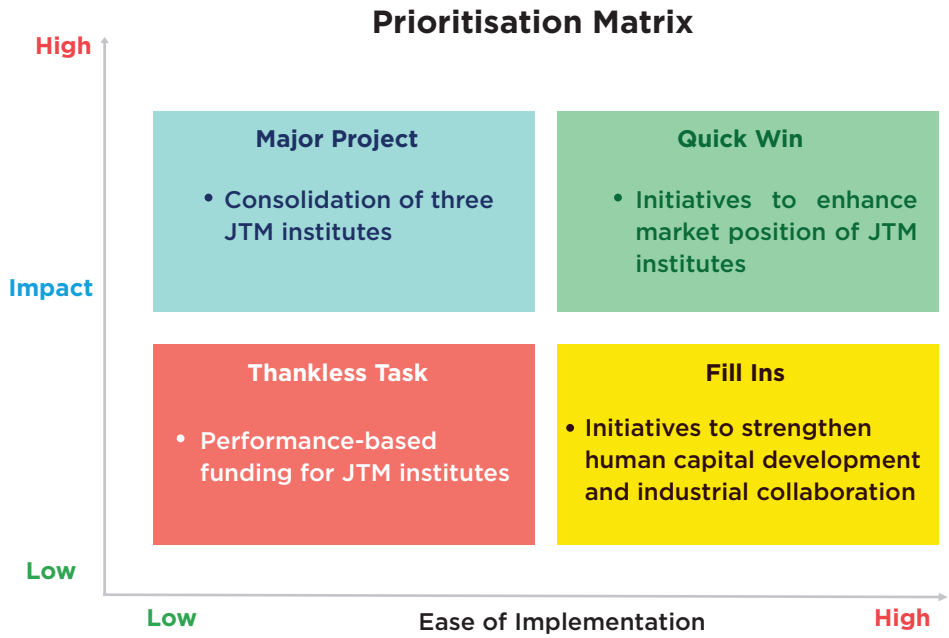
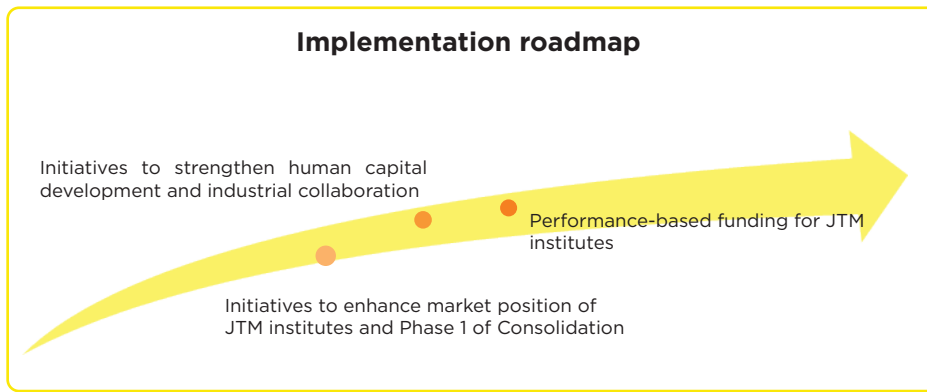


Figure 6.2 Implementation Roadmap



The priority of 11 initiatives has been assessed by considering the level of impact and ease of implementation.

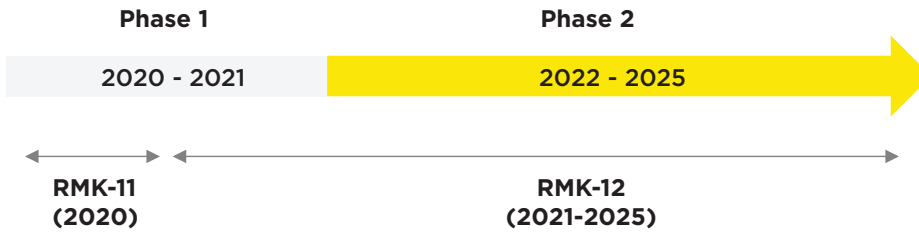
Implementation roadmap has been identified by prioritising Quick Win initiatives such as strategies to enhance market position of JTM institutes and Phase 1 of Consolidation, followed by initiatives to strengthen human capital development and industrial collaboration.

Performance-based funding for JTM institutes will be carried out after careful assessment in terms of financial readiness for all 32 JTM institutes.

Note: Impact level: Low (Impact on one party only), Medium (two parties), High (more than 2 parties)
Ease of implementation: High (1-2 years), Medium (3-5 years)

The preparation of 12 initiatives will start in 2020 in line with RMK-11 and implementation plan will be executed starting from 2021 for RMK-12 preparation

Figure 6.3 Implementation Plan and Timeline



Enhance market position and Phase 1 of Consolidation	Strengthen human capital development and industrial collaboration with establishing performance-based funding
• Rebrand ADTECs to ADTEC Malaysia with single administration	• Hire retired industry experts, member of industry association as adjunct instructors
• Rebrand ILP to ITI Malaysia to strengthen market position	• Target working adults and retirees for short-term TVET courses
• Specialise JTM institutes for relevant industries and create Centres of Speciality (CoS) by each region	• Enhance sustainable partnership with local and foreign TVET institutes
	• Establish flexi-positions of trainers and enhance their multidisciplinary skills by mandating industrial attachment and offering training courses to teach other fields
• Phase 1: Preparation for Consolidation	
• Establish Malaysian Vocational English Test (MVET) for Diploma level students	• Promote SLDN and equipment sponsorship by reinforcing tax incentives for industry players
• Enhance programme delivery in ADTEC	• Performance-based funding for JTM institutes
	• Phase 2: Consolidation

Note: Timeframe of RMK-11 is 2016-2020; RMK-12 is 2021-2025

Appendix A – List of Site Visit to 21 JTM Training Institutes

No	JTM Institute
01	ITI Kuala Lumpur, W.P. Kuala Lumpur
02	ITI Kuala Langat, Selangor
03	ADTEC Shah Alam, Selangor
04	ITI Marang, Terengganu
05	ITI Ipoh, Perak
06	ITI Bukit Katil, Melaka
07	ITI Selandar, Melaka
08	ITI Kuala Terengganu, Terengganu
09	ADTEC Kulim, Kedah
10	ITI Kepala Batas, Penang
11	ITI Perai, Penang
12	ITI Kangar, Perlis
13	ITI Jitra, Kedah
14	ADTEC Jerantut, Pahang
15	ITI Tangkak, Johor
16	ITI Kota Samarahan, Sarawak
17	ITI Miri, Sarawak
18	ITI Labuan, W.P. Labuan
19	ITI Kota Kinabalu, Sabah
20	ITI Sandakan, Sabah
21	ITI Mersing, Johor

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Institute of Labour Market Information and Analysis (ILMIA)
G07-G12, Right Wing, G-Floor, Block 2320
Century Square, Jalan Usahawan Cyber 6, 63000 Cyberjaya
Selangor
Tel: +603-8318 2433
Fax +603-8890 2739

Ernst & Young Advisory Services Sdn Bhd (811619-M)
Level 23A, Menara Milenium, Jalan Damanlela, Pusat Bandar Damansara, 50490 Kuala Lumpur

Editor
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(Designer)
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