

Technical and Vocational Education and Training

Final Report

*Kajian Pembangunan Pelan Induk
Kebangsaan Latihan Teknikal Dan
Vokasional (TVET) Ke Arah Negara Maju*

.....
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Table of Content

Title	Page
1.0 Executive summary	4
2.0 About the Study	27
3.0 Introduction	34
4.0 Overview of Current State	42
5.0 TVET Masterplan	59
5.1 Aspiration 1: Robust and effective governance	62
5.2 Aspiration 2: Efficient and productive operating model	79
5.3 Aspiration 3: World class quality of learning	93
5.4 Aspiration 4: Harmonised and seamless learning pathways	117
5.5 Aspiration 5: Sustainable TVET funding model	130
5.6 Aspiration 6: Work esteem and branding of TVET	148
6.0 Appendix	164
6.1 Assumptions and limitations of the Study	165
6.2 List of stakeholders engaged	168
6.3 List of public TVET Institution types covered in DSD self-audit survey database	173
6.4 List of TVET Ministries and Institution types under DSD not covered in Self-Audit Survey	175
6.5 Institution Operational Framework (IOF)	178
6.6 List of Institutions visited for Institution Operational Framework	201
6.7 Resource Optimisation	203
6.8 Revised Programme Evaluation weightages	224
6.9 Data collection improvements	226
6.10 Suggested modular TVET programmes to address emerging technologies	230
6.11 International comparative analysis findings	236

1.0

Executive Summary



Introduction to TVET

Setting the stage: How is TVET defined globally and in Malaysia?

TVET definition

For the purpose of this Report, the following definition of TVET has been developed based on the definition of TVET provided by United Nations Educational, Scientific and Cultural Organisation (UNESCO).

*"Comprising of **education and training and skills development** relating to a wide range of occupational fields, production, services and livelihood. TVET as part of **lifelong learning** can take place at **secondary, post-secondary, tertiary** and includes **work-based learning** and **continuing training and professional development** that may lead to a qualification. It includes a wide range of skill development at the National and local context. It needs to consider literacy, numeracy skill, transversal skills and citizen skills which form the integral part of TVET."*

Adapted from UNESCO's Definition of TVET in UNESCO General Conference 2015

In the context of Malaysia, TVET is defined as an education and training process that has occupational direction with major emphasis on Industry practices. It aims to produce a competent workforce in related fields to meet the socio and economic objectives of the Country.

TVET population included in this Study's scope

For the purposes of this Study, it was assumed that TVET refers to TVET Institutions¹ that focus on Malaysian Qualifications Framework (MQF) Level 1 to 6 (i.e. Skills Certificate 1 to 3, Diploma, Advanced Diploma and Bachelors Degree).

The following TVET Institutions were included in the Study analysis²:

- Public TVET Institutions with programmes accredited by DSD (MQF Level 1 to 5).
- Public TVET Institutions with programmes accredited by Malaysian Qualifications Agency (MQA) (MQF Level 1 to 6).
- Malaysian Technical University Network (MTUN) Institutions with TVET programmes accredited by MQA (MQF Level 6).
- Private TVET Institutions with more than 5 programmes with a rating of at least three (3) stars as per star rating by DSD (MQF Level 1 to 5).
- State skills development centres (MQF Level 1 to 5).

Note: 1. For the purpose of this Study, TVET Institutions refer to both public and private TVET Institutions unless stated otherwise.

2. The above scope of TVET Institutions are based on the DSD Self-audit survey data year 2018. However, under the Malaysia Qualifications Framework, TVET qualifications only covers up to MQF level 5 (Advanced Diploma).

Why is TVET important to Malaysia?

Vocational education and training is an engine for economic growth and a vehicle for social mobility

TVET is the cornerstone of success for Malaysia

The Government of Malaysia recognises that in order to fulfil the aspiration of being an advanced economy and an inclusive Nation, it will need to make improvements to its human capital base¹. With the acceleration of global economic assimilation, the emerging need of a highly-skilled workforce is becoming more prominent. As of 2017, Malaysia's workforce was made up of 27.5% high-skilled workers². Meanwhile, semi-skilled and low-skilled workers represented 59.7% and 12.8% of the workforce respectively².

The shift from a low-skilled and low productive workforce to a high-skilled, highly productive and Industry focused workforce is at the heart of the Government's NKEA strategy.

Education will play a pivotal role in fulfilling Malaysia's human capital requirements. Evidence from around the world shows that in order for a country like Malaysia to progress from middle to high income, it needs to make drastic improvements in terms of the quality of education provided to the people, especially at the secondary and tertiary levels.

One of the cornerstones of this aspiration is the availability of quality TVET graduates, which is one of the 10 shifts detailed in the Malaysia Education Blueprint 2015-2025 (Higher Education)³. Furthermore, transforming TVET is one of the game changers in the Eleventh Malaysia Plan to meet the demand of the Industry and contribute to achieving the overall vision of the Nation.

Key highlights

1.5 mil jobs

are projected to be created by 2020¹

.....

60%

of which will require TVET-related skills¹

.....

27.5% of the Malaysian workforce are comprised of high-skilled workers as of 2017²

.....

164,000 to 225,000

is the required increase in annual intake of TVET students from 2013 to 2020¹

Source: 1. Eleventh Malaysia Plan 2016-2020

2. Key Figures from TalentCorp Malaysia based on Labour Force Survey data year 2017

3. Malaysia Education Blueprint 2015-2025 (Higher Education)

1.0: Executive Summary

The current state of TVET in Malaysia

The current TVET Malaysian landscape is poised to produce the right number of graduates, but at varying qualities

In 1964, the very first public TVET Institution was created to provide training for youth.

Since then, the Malaysian TVET ecosystem has come a long way and has seen several notable developments. Currently, there are more than 500 public and state-owned TVET Institutions providing multiple programmes across MQF levels 1 to 6.

These public TVET Institutions reside under the purview of various Ministries and States. All public TVET Institutions are funded by the Malaysian Ministry of Finance (MoF) and Economic Planning Unit (EPU).

7 Ministries and **17 TVET Agencies** or **Public TVET Institution types** in Malaysia¹

2 accreditation bodies, **MQA** and **DSD**

556 public TVET Institutions²

692 private TVET Institutions³

Accreditation Bodies

Malaysian Qualifications Agency (MQA)

Department of Skills Development (DSD)

TVET Ministries and Agencies / Public TVET Institution types in Malaysia

MoHR	MoE	MoRRD	MoYS
CIAST JMTI ADTEC ILP	MTUN Vocational Colleges Polytechnic & Community Colleges	UniKL GMI KKTM IKM GIATMARA	IKBN IKTBN

MoD	MoW	MoA
PERHEBAT	CIDB	NATC

Legend: Ministries TVET Agencies / Institution Types

Source: 1. Eleventh Malaysia Plan, 2016-2020 Strategy Paper 9: Transforming Technical and Vocational Education and Training to Meet Industry Demand
 2. Figure based on DSD Self-audit survey data year 2018. However, based on the DSD Statistic Report 2017, we note that there are other public TVET Institutions which are not covered in the table above (Refer to Appendix 6.4)
 3. 2017 DSD statistics report on private sector

1.0: Executive Summary

The ideal TVET ecosystem

To address strategic goals of the TVET ecosystem, we have developed a holistic framework to evaluate the current TVET landscape

As a potential game-changer, TVET can address the challenges of skillset gaps and unemployment. However, for TVET to address current and future requirements, transformation needs to happen across the key aspects that impact the TVET ecosystem.

Based on the analysis of international practices, Eleventh Malaysia Plan aspirations, and previous TVET studies, it is proposed that the Malaysia's TVET ecosystem's objective should be to **“Advance Technical and Vocational Education and Training to create lifelong learners in order to drive the needs of a high-income economy”** to help achieve National aspirations.

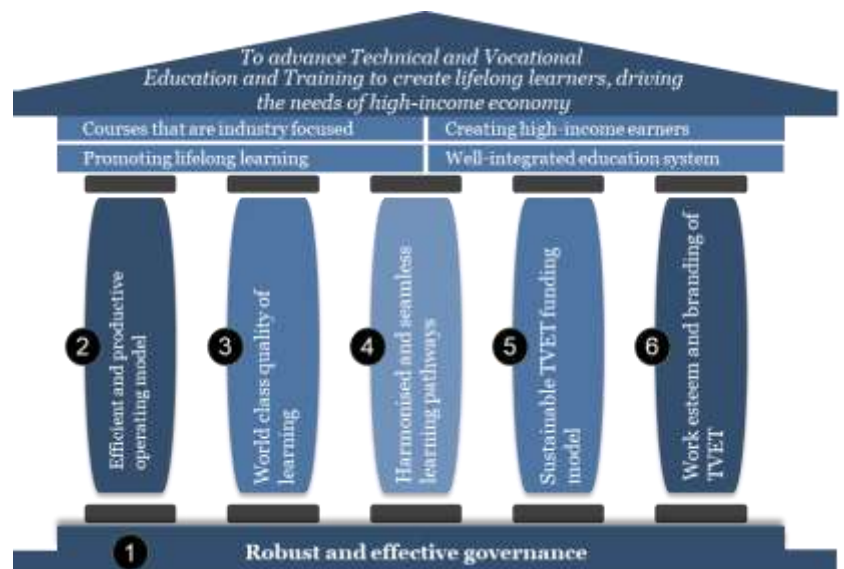
To achieve this objective, the strategic goals of this TVET ecosystem should be the following:

- Courses that are Industry focused
- Creating high-income earners
- Promoting lifelong learning
- Well integrated education system

The objective and strategic goals of TVET Malaysia can only be achieved if it is supported by the *“5 pillars of TVET”* and is built on a strong foundation of a robust and effective governance, with strong collaboration between TVET providers (public and private) Government, Industry and community.

The five (5) pillars and the foundation of TVET are further explained in the following pages of this report.

Figure 1.1: TVET Malaysia Objectives and Supporting Pillars



Legend:

n Key Aspirations

1. Robust and effective governance

The backbone supporting a sustainable ecosystem is achieved in part by ensuring accountability, transparency and equity

Challenges



Fragmented TVET delivery hindering collaboration

- TVET delivery in Malaysia is fragmented as it is offered by seven (7) Government Ministries and 17 agencies with varying agendas.
- Absence of a common coordinating body to link the various stakeholder groups in the TVET ecosystem.
- As a result, public TVET Institutions find it difficult to collaborate and share information with one another as different protocols would have to be adhered to.
- Some key implications arising from lack of collaboration are duplication of programme offering in close proximity with no differentiating factors and inconsistent engagements between TVET Institutions and Industry players.



Disparate systems to evaluate performance of public TVET Institutions

- Currently, there is no standardised system to evaluate performance of public TVET Institutions in Malaysia.
- Tracer studies are also conducted across various Ministries and agencies with different parameters being captured.
- Significant amount of effort required to collect and cleanse Institution data.
- This has led to inefficiencies in conducting analysis on performance of public TVET Institutions to identify improvement opportunities.

Notable developments

Establishment of industry-led bodies to facilitate curriculum development

Establishment of TVET Empowerment Committee

2. Efficient and productive operating model

Spearheading a model which drives efficiency and effective operations throughout the TVET ecosystem

Challenges



Sub-optimal student capacities and underutilisation of equipment

- Based on analysis of the 2018 DSD self-audit survey data, almost 40% of TVET Institutions offer less than three (3) programmes on average.
- Collaboration across public TVET Institutions have been cited as the main hindrance as information and resource sharing is not a common practice.



Limited flexibility in staffing and resourcing arrangements

- Public TVET Institutions have limited autonomy in decisions pertaining to staffing arrangements (e.g. hiring of part-time instructors) as staffing arrangements are organised centrally by their respective agencies. Sharing of instructors across Institutions under different Ministries are also restricted due to policy red tapes.
- This has resulted in limited flexibility for public TVET Institutions in adapting to students and local market requirements.



Traditional training delivery methods

- Most TVET Institutions indicated they rely heavily on traditional delivery methods although they have the relevant technology for modern delivery methods.
- Fragmented data collection tools are still prevalent across TVET Institutions with limited use of digital platforms to ease collection of data.

Notable developments

Programme rationalisation and tracer studies enhancements have begun to a certain extent

Improving Business Efficiency and Programme Delivery via Industry 4.0 in some Institutions

Establishment of Collaboration Hubs & Centres of Excellence (COE), for example JMTI and ILPKL

3. **World class quality of learning**

Creating an education system which is equitable and relevant to nurture independent and resilient TVET graduates

Challenges



TVET instructors lack Industry experience and attachment

- Based on the findings, almost 30% of TVET instructors Nationally have less than 1 year of experience prior to teaching.¹
- Almost 50% of TVET instructors have less than one (1) month of Industry attachment.
- Industry attachment is not part of TVET instructors' KPIs for promotion .
- This may have resulted in TVET graduates being average or below Industry standards, which was suggested by more than 65% of Industry players whom we interviewed or surveyed.



Current curriculum lack emphasis on soft skills and work attitude

- Across engagements with Industry players and industry-led bodies, majority of Industry players highlighted concerns pertaining to soft skills of TVET graduates.
- Most critical soft skills quoted are teamwork, adaptability, leaderships, critical thinking and communication skills.
- Majority of Industry players also raised issues pertaining to the work attitude of TVET graduates.
- Core issues raised were tardiness, high attrition rates (primarily leaving for another higher paying job) and lack of commitment.

Notable developments

Establishment of Satellite Campuses by CIAST to train and upskill instructors

Establishment of e-Profiling to identify capability gaps of TVET instructors

Enhanced focus on work-based learning via the National Dual Training System (NDTS)

Source: 1. Analysis of DSD's Self-audit survey data year 2018

4. Harmonised and seamless learning pathways

Creating highly-permeable learning pathways, allowing students to seamlessly switch between academic and vocational streams

Challenges



Limited horizontal mobility across the Malaysian Qualifications Framework (MQF)

- Students face difficulties in transferring credit hours across different TVET programmes accredited by different accreditation bodies (i.e. DSD and MQA).
- This has resulted in different learning outcomes and curriculum standards across the TVET ecosystem with varying degrees.



Limited vertical mobility across the Malaysian Qualifications Framework (MQF)

- Only selected qualifications are recognised for students to enter higher education.
- Based on stakeholder engagements, a key bottleneck lies in the SPM requirement.
- Most higher education Institutions in Malaysia require SPM certification, which is a prerequisite for most if not all MQA-accredited programmes but not for DSD-accredited programmes.
- As a result, TVET graduates accredited by MQA have more accessibility to pursue higher education.
- This has resulted in difficulties for students to have a clear understanding of their education pathways into higher education, exacerbating the negative stigma of TVET being a “dead-end” stream.

Notable developments

Revision of Malaysian Qualifications Framework to 2nd Edition

Recognition of prior or experiential learning and achievement under lifelong learning

Establishment of Vocational Colleges and Malaysian Technical University Network (MTUN)

5. Sustainable TVET funding model

Ensuring sustainable TVET funding practices that incentivise the right behaviours, in line with National objectives

Challenges



Majority of funding for public TVET Institutions is provided by the Government

- The majority of funding for public TVET Institutions is provided by the Ministry of Finance (MoF) for Operational Expenditure and Economic Planning Unit (EPU) for Development Expenditure.
- Only limited number of public TVET Institutions' revenue are from sources outside the Government .



Budgets are largely input-based and do not incentivise innovation

- Budgets are primarily based on historical costs and enrolment figures and subsequently channelled to the various Ministries for disbursement.
- Current funding model does not necessarily incentivise the intended outcomes across the public TVET Institutions.



Funding channels are complex and multi-levelled

- There are seven (7) Government Ministries and 17 TVET agencies responsible for overseeing funding for over 556 public TVET Institutions.
- This may lead to increased costs due to increased administrative inefficiencies.
- Sector-wide reforms are difficult to implement, limiting responsiveness to demand.

Notable developments

Iskandar Malaysia Employment Grant (IMEG) model to support work-based learning

Shift from a semi-Government funded model to a self-funded model for selected Institutions

Leveraging on innovative ways to increase revenue (e.g. asset sharing with Industry by JMTI and PSDC)

6. Work esteem and branding of TVET

Enhancing value, improving perception and work esteem will cultivate society's interest and acceptance of TVET

Challenges



TVET perceived as a “last resort” education by students and parents

- TVET has always suffered from negative stigma where TVET is perceived to cater for students with average or below average academic capabilities.



Poor and inconsistent quality of TVET graduates

- Most Industry players raised concerns about the quality of TVET graduates (technical, soft skills & work attitude).
- Quality of TVET graduates from similar programmes may vary drastically by Institutions creating confusion on the true value of TVET qualifications.



Low salary offered to TVET graduates

- Based on self-audit survey data*, 28% of TVET graduates earn less than RM 1,000 and 45% earn between RM 1,000 to RM 1,500.
- Low wages offered to TVET graduates may stem from 2 perspectives:
 1. Majority of TVET occupations in the current market are low and semi-skilled
 2. Majority of Industry players do not see the correlation of TVET qualifications contributing to higher productivity or better quality of work

Notable developments

Establishment of SkillsMalaysia and participation in global skills competitions to raise awareness on TVET

Establishment of Malaysia Board of Technologists (MBOT) to recognise professional technologists

Recognition of Sijil Kemahiran Malaysia (SKM) qualifications into public service by JPA

*Based on PwC's analysis of DSD's 2018 self-audit survey

Key aspirations and initiatives to transform TVET in Malaysia

We utilised a hypothesis-based approach in designing a holistic and robust TVET ecosystem. We drew insights from a previous EPU TVET Study as well as engagements with various key stakeholders, which were further distilled to derive the following aspirations imperative to transform TVET in Malaysia.

Key aspirations and initiatives to transform TVET

1. Robust and effective governance

- 1.1 Consolidate and unify governance at Ministerial level
- 1.2 Establish an independent enforcement and inspectorate body

2. Efficient and productive operating model

- 2.1 Set up Hub-and-Spoke framework for localised collaboration

3. World class quality of learning

- 3.1 Enhance the curriculum design mechanism
- 3.2 Enhance the curriculum delivery mechanism
- 3.3 Enhance the curriculum review mechanism
- 3.4 Develop an integrated education management information system

4. Harmonised and seamless learning pathways

- 4.1 Develop a unified standard for TVET programme accreditation
- 4.2 Improve articulation between TVET and higher education, including developing a credit transfer framework
- 4.3 Expand TVET qualifications to include MQF levels 6 to 8

5. Sustainable TVET funding model

- 5.1 Develop funding matrix and policy
- 5.2 Develop performance-based funding methodology
- 5.3 Expand use of tender-contract for addressing training needs
- 5.4 Expand use of student loans
- 5.5 Review training fee policies and guidelines
- 5.6 Review current incentive packages for improvement opportunities

6. Work esteem and branding of TVET

- 6.1 Implement guidelines to promote positive descriptions of TVET in marketing and general public communication materials
- 6.2 Launch Nation wide campaign to promote TVET as a pathway of choice
- 6.3 Official recognition of selected high-value TVET related occupations

Note:

The first number indicates the Aspiration number. The second number indicates the initiative number for the respective Aspiration. (e.g. 1.2 indicates Initiative 2 of Aspiration 1)

Key design principles for aspirations and initiatives development:



Responsive to the economy, demand-driven and industry-led



Value for (public) money



Leverage on digital tools to make informed decisions



Governance with clear supportive policies and procedures



Enables life-long learning



Collaborative across ministries and agencies

Aspiration overview

1. Robust and effective governance

Objectives

- To streamline and create a unified governance system which facilitates collaboration and standardisation of vision, strategy, processes, standards, technology, resources, frameworks and tools utilised in the management, design, delivery and review of TVET education.

Initiatives

1. Consolidate and unify governance at Ministerial level

- **Summary:** This initiative entails streamlining and creating a unified governance system which facilitates collaboration and standardisation of vision, strategy, processes, standards, technology, resources, frameworks and tools utilised in the management, design, delivery and review of TVET education.
- **Outcome:** Lean governance model which drives efficient and high quality learning through standardisation, transparency and leverage on economies of scale.

2. Establish an Independent enforcement and inspectorate body

- **Summary:** This initiative entails creating an independent enforcement and inspectorate body which is independent from the TVET accreditation bodies (MQA and DSD). This body is to enforce, monitor and facilitate the development of improvement/remediation plans as well as track the progress of these plans.
- **Outcome:** An enforcement and inspectorate body which is independent from accreditation bodies which drive compliance to the various standards in place to ensure high quality TVET graduates are produced.

Aspiration overview (cont'd)

2. Efficient and productive operating model

Objectives

- To enable collaboration between TVET Institutions, Industry and Government agencies at a localised level - spearheaded by high performing public TVET Institutions (Hubs).
- To drive efficiency and potential cost savings via economies of scale.
- To facilitate streamlined and standardised business practices across the TVET ecosystem

Initiatives

1. Set up Hub-and-Spoke framework for localised collaboration

- Summary: Institutionalise collaborative models by utilising high performing TVET Institutions (i.e. Hubs) to support the propagation of TVET excellence across smaller TVET Institutions (i.e. Spokes) in their localised regions and respective sector-skill specialties.
- Outcome: TVET Institutions across the Nation will be subject to improved quality of standards and will have access to resources across the local network (including knowledge, assets and Industry connections). In addition, Industry players can be engaged in a more focused and localised manner.

Aspiration overview (cont'd)

3. World class quality of learning

Objectives

- To enhance and standardise the curriculum design process by implementing a set of standards which are developed closely with Industry as well as accessible to all.
- To enhance the curriculum delivery process by improving the quality of TVET instructors and enabling digital learning.
- To enhance the overall curriculum review mechanism to ensure the right outcomes are met (i.e. Industry satisfaction, graduate employability, student satisfaction etc.).

Initiatives

1. Enhance the curriculum design mechanism

- **Summary:** NOSS and Nationally-recognised Industry standards to be enhanced and used as the basis for developing TVET curriculum in Malaysia. NOSS (inclusive of Industry standards) will be approved by relevant ILBs and enforced through an independent enforcement and inspectorate body.
- **Outcome:** TVET curriculum tailored to Industry needs and driven by ILBs.

2. Enhance the curriculum delivery mechanism

- **Summary:** Improve quality of TVET instructors by upskilling the current instructors, mandating Industry experience, Industry attachment and hiring of Industry experts to bridge the skills gap. Additionally, enabling digital technology in curriculum delivery for non-technical training and other transferable skills.
- **Outcome:** High quality students are produced through capable instructors equipped with the right technical and transferable skills. Additionally, enabling standardised delivery of non-technical training through digital platforms (i.e. MOOC).

3. Enhance the curriculum review mechanism

- **Summary:** Improve the current review mechanism by creating additional feedback channels, implementing an accessible system and ensuring the feedback is addressed.
- **Outcome:** Create a self-improving mechanism by ensuring feedback from all stakeholders are heard and addressed.

Aspiration overview (cont'd)

3. World class quality of learning (cont'd)

Initiatives (cont'd)

4. Develop an integrated education management information system

- **Summary:** Implementing an integrated Education Management Information System (or EMIS) to become a one stop destination to capture, record and analyse all information pertaining to TVET graduates and workforce.
- **Outcome:** Integrated system which is accessible to all stakeholders backed by robust data analytics solutions.



Aspiration overview (cont'd)

4. Harmonised and seamless learning pathways

Objectives

- To support lifelong learning for learners to progress through the MQF via transferability of credits for skills competency certifications and recognition of prior learning for workers.
- To improve mobility of students and learners within the MQF via progression or inter-relation between qualifications.

Initiatives

1. **Develop a unified standard for TVET programme accreditation**

- **Summary:** A common standard would need to be adhered to for all TVET programmes across DSD and MQA for MQF levels 1 to 5.
- **Outcome:** Single quality assurance system and mechanism for TVET.

2. **Improve articulation between TVET and higher education, including developing a credit transfer framework**

- **Summary:** Improve access of TVET students into higher education and recognise prior learning arrangements in TVET programmes into academic / higher education programmes via a comprehensive credit transfer framework.
- **Outcome:** Facilitate accessibility of TVET students to pursue further studies at higher education Institutions.

3. **Expand TVET qualifications to include MQF levels 6 to 8**

- **Summary:** Expand the recognition of TVET qualifications under the MQF to include level 6 (Bachelor's Degree, Graduate Certificate / Diploma), level 7 (Masters Degree, Postgraduate Certificate / Diploma) and level 8 (Doctoral Degree).
- **Outcome:** Improved articulation for students to progress through the MQF up to level 8 under the TVET sector. TVET students are also encouraged to maintain their efforts in following their learning pathway, resulting in lower drop-out rates.

Aspiration overview (cont'd)

5. Sustainable TVET funding model

Initiatives

1. Develop funding matrix and policy

- **Summary:** Develop a funding matrix as a tool for efficient fund allocation – combining strategic top-down direction and bottom-up impact analysis based on type of public TVET Institutions (i.e. social obligation vs non-social obligation).
- **Outcome:** Fund controllers (e.g. MoF and EPU) will have a structured framework to determine fund allocation (e.g. how much to allocate to the pool of funds for input-based funding vs performance-based funding). Additionally, public TVET Institutions will have guidance on how they should seek sources of funding. For example, funding may be sought from a mix of performance-based funding (e.g. allocated by the Government) and student-loan funding (i.e. applied by students).

2. Develop performance-based funding methodology

- **Summary:** Develop a funding framework based on the performance of the programme rather than input-based budgeting (i.e. budgeting based on historical costs and expected student headcounts).
- **Outcome:** As funding will be based on the performance of programmes (e.g. input-based KPIs such as instructor-student ratios and outcome-based KPIs such as graduate employability), public TVET Institutions will be incentivised to drive up performance of programmes in a bid to secure funding.

3. Expand use of tender-contract for addressing training needs

- **Summary:** Utilise tender-contracts as a channel of disbursing TVET funds, which is awarded by the Government based on a combination of programme quality and cost.
- **Outcome:** This will allow the Government to spearhead human capital development in high priority sectors and skills requirement. The funding will be contested by both public and private TVET Institutions on the basis of quality and cost – thus incentivising TVET Institutions to drive better programmes with minimal investment.

Aspiration overview (cont'd)

5. Sustainable TVET funding model (cont'd)

Initiatives (cont'd)

4. Expand use of student loans

- **Summary:** Increase quantum of funds dedicated to income-contingent loans as opposed to direct Government allocation (i.e. OE and DE).
- **Outcome:** This allows the Government to recover some capital via repayment of loans. In addition, by virtue of being student-demand driven and contestable by both public and private TVET Institutions, it is expected that the competitiveness and thus quality of TVET programmes will increase.

5. Review training fee policies and guidelines

- **Summary:** Review policies and guidelines with regards to public TVET Institutions' TVET fee structure, including setting fee caps and a consistent programme-cost allocation framework across public TVET Institutions.
- **Outcome:** As the TVET funding model is expected to utilise a greater degree of “fee-for-service” mechanisms (e.g. funding provided on a per student basis such as via student loan application), there should be regulations on the fees charged on a per student basis. In addition, a consistent cost allocation framework (i.e. a framework to calculate total cost per programme per student, including overhead costs) is expected to provide public TVET Institutions with a greater degree of visibility of where their costs are incurred thus influencing the prices they should charge as training fees.

6. Review current incentive packages for improvement opportunities

- **Summary:** Review current list of incentives that encourage the Industry to financially support public TVET Institutions, and expand upon them where necessary.
- **Outcome:** Enhanced incentives for the Industry to collaborate and financially support the TVET ecosystem.

Aspiration overview (cont'd)

6. Work esteem and branding of TVET

Objectives

- To eliminate prejudice and negative connotations towards TVET qualifications and pathways and to elevate the public's perceived value of TVET by generating greater interest, acceptance and demand for TVET education and related occupations.

Initiatives

1. **Implement guidelines to promote positive descriptions of TVET in marketing and general public communication materials**
 - **Summary:** Encourages and enhances positive descriptions of TVET highlighting success stories, achievements and occupation opportunities to remove negative connotations from the minds of the public pertaining to TVET.
 - **Outcome:** Positive reforms of the branding and perception of TVET curated from all information points (media, institutions and government agencies) that will aid in nurturing the minds of the public in regards to the acceptance of TVET as a pathway of choice.
2. **Launch Nation wide campaign to promote TVET as a pathway of choice**
 - **Summary:** Increase collaboration between the Government and the Industry in organising awareness campaigns and targeted promotions at schools as well as to the local communities to highlight the viability of TVET as a pathway of choice associated with attractive employment and entrepreneurship opportunities. This is especially beneficial to students, parents and the existing workforce who are widely exposed to the mass media and electronic media (social platforms and content).

Sub-initiatives to support the strategy in improving TVET branding and perception includes:

- ✓ Promote TVET occupations (rather than skill sets and Institutions) in schools
- ✓ Conduct media campaigns including using digital and social media
- ✓ Conduct roadshows / outreach programmes
- ✓ Equip career counsellors, teachers and school management with informative materials pertaining to TVET

Aspiration overview (cont'd)

6. Work esteem and branding of TVET (cont'd)

Initiatives (cont'd)

3. Launch Nation wide campaign to promote TVET as a pathway of choice (cont'd)

- **Outcome:** Increase attention, interest and topic of discussions within the Nation especially students and parents in regards to the opportunities and benefits that TVET can offer. This is also to create the sense of urgency within the Nation on the importance of TVET as well as the sense of inclusiveness and pride to reflect on student, graduates and existing workforce whom have embarked on the TVET pathway.

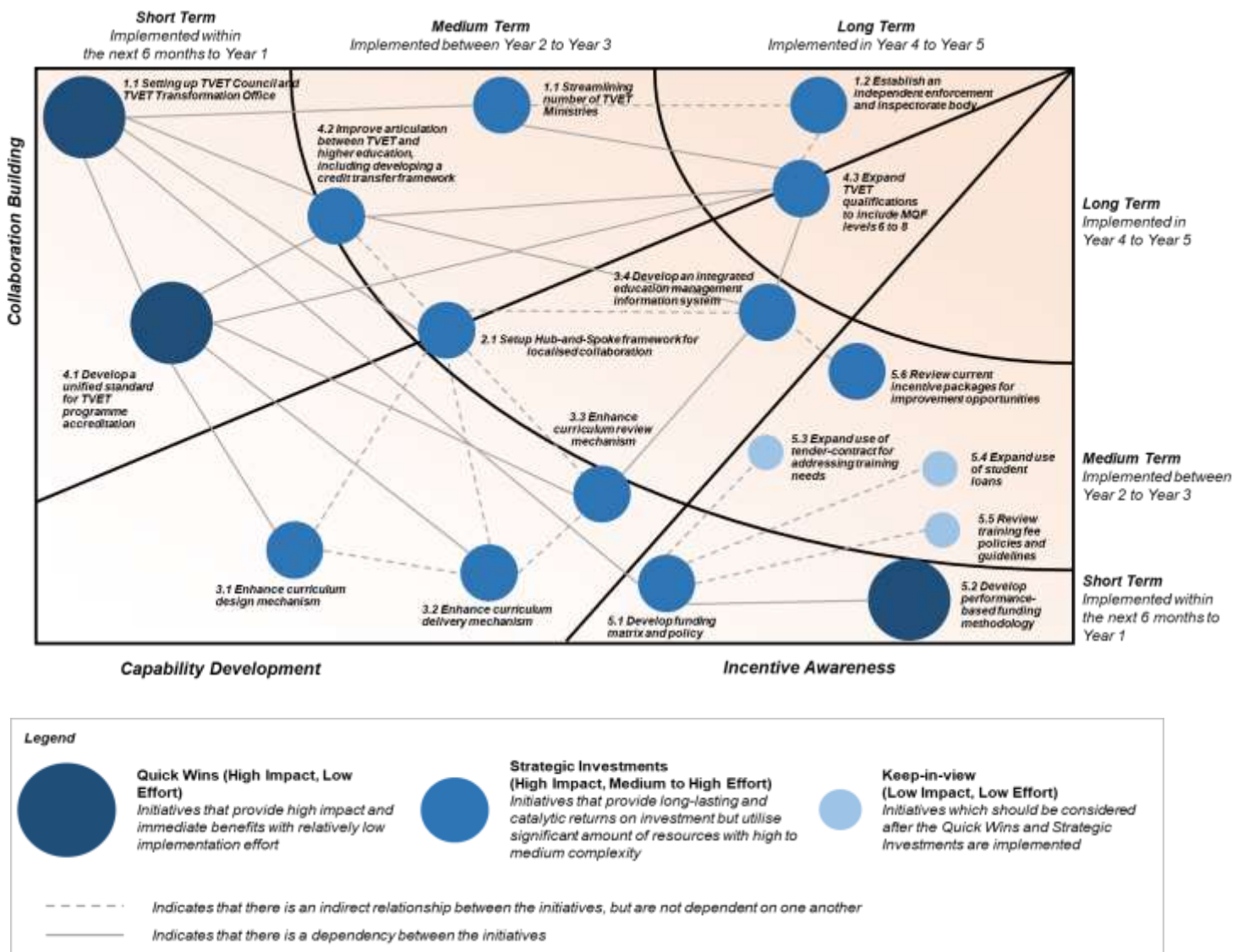
5. Official recognition of selected high-value TVET related occupations

- **Summary:** Officially recognise a list of selected high-value TVET related occupations in Malaysia via mandatory TVET certifications by Nationally-recognised bodies (e.g. ILBs, Government agencies). This initiative would require the active participation of Industry players and ILBs in reviewing the list on a regular basis. Also, general salary ranges offered by industries and career progressions of these professions can be further tabled out and reflected by Institutions and Ministries through existing official portals and communication mediums.
- **Outcome:** With the availability of this list across various touch points such as schools, Institutions and the media, opportunities of high-value TVET related occupations can be further informed and highlighted. Thus, increasing the awareness and interest of the public, reducing the reluctance of the public to embark on the TVET pathway especially students and parents.

Roadmap and high level implementation timeline

To ensure a well-coordinated and impactful implementation, a holistic roadmap was designed to illustrate the 19 key initiatives to be implemented over the short, medium and long-term. Each initiative has been prioritised based on the impact to Malaysia's TVET sector in relation to achieving the vision for TVET Malaysia and its implementation effort. The priority and sequence in which these initiatives should be implemented is subject to the several factors such as implementation cost, criticality, complexity of implementation and availability of resources.

Figure 1.2: Roadmap and implementation timeline



Note: Initiatives 6.1, 6.2 and 6.3 in Aspiration 6: Work esteem and branding of TVET will be implemented throughout the 5 years

Conclusion

TVET is a game changer.. only if we do it right from strategy to execution and enforcement



There is a strong need for Government, TVET Institutions and Industry to work together moving forward to create an ecosystem which is sustainable and achieves Malaysia's aspirations.

Malaysia currently has achieved much in developing the TVET landscape and the question now is not what we don't have but actually how well we can use the current resources we have today and build upon them.

We need to build an ecosystem which not only fosters good graduates but also one which encourages students and workers alike to enter this pathway and ultimately generate high income and move the Nation towards achieving its aspirations.



2.0

About the Study



Background of the Study

With the acceleration of globalisation, the emerging need of a highly-skilled workforce will become more prominent. This is recognised by the Malaysian Government and in order to sustain the Country's economic growth and fulfil the aspiration of becoming a high income economy, the Government will need to make improvements to its human capital base. The Government's commitment in improving its human capital is reflected in a number of recent policies, including the Economic Transformation Programme (ETP). The ETP identified 12 National Key Economic Areas (NKEAs), highlighting the Industry sectors that were likely to drive economic activity in Malaysia in the coming years. The shift from a low-skilled workforce to a high-skilled and knowledge-focused Industry is at the heart of the NKEA in the ETP.

To meet the demands of the NKEA, it is pertinent that the education system in Malaysia meets Industry demands and contributes towards the forecasted economic growth. In this journey, transforming TVET is one of the game changers which has been outlined in the Eleventh Malaysia Plan 2016-2020¹. As per the Eleventh Malaysia Plan, 1.5 million jobs are projected to be created by 2020, 60% of which will require TVET-related skills¹. Meeting this demand will require Malaysia to increase its annual intake of TVET students from 164,000 in 2013 to 225,000 in 2020.

To achieve this target, it is imperative that Malaysia moves from a higher education system with a primary focus on university based education as the sole pathway to success, to one where TVET pathways are equally valued and nurtured. This Study was designed with an objective to transform TVET as per the Eleventh Malaysia Plan and also to align TVET with the Malaysia Education Blueprint 2015-2025 (Higher Education), which also recommends increasing the availability of TVET graduates as one of its 10 shifts².

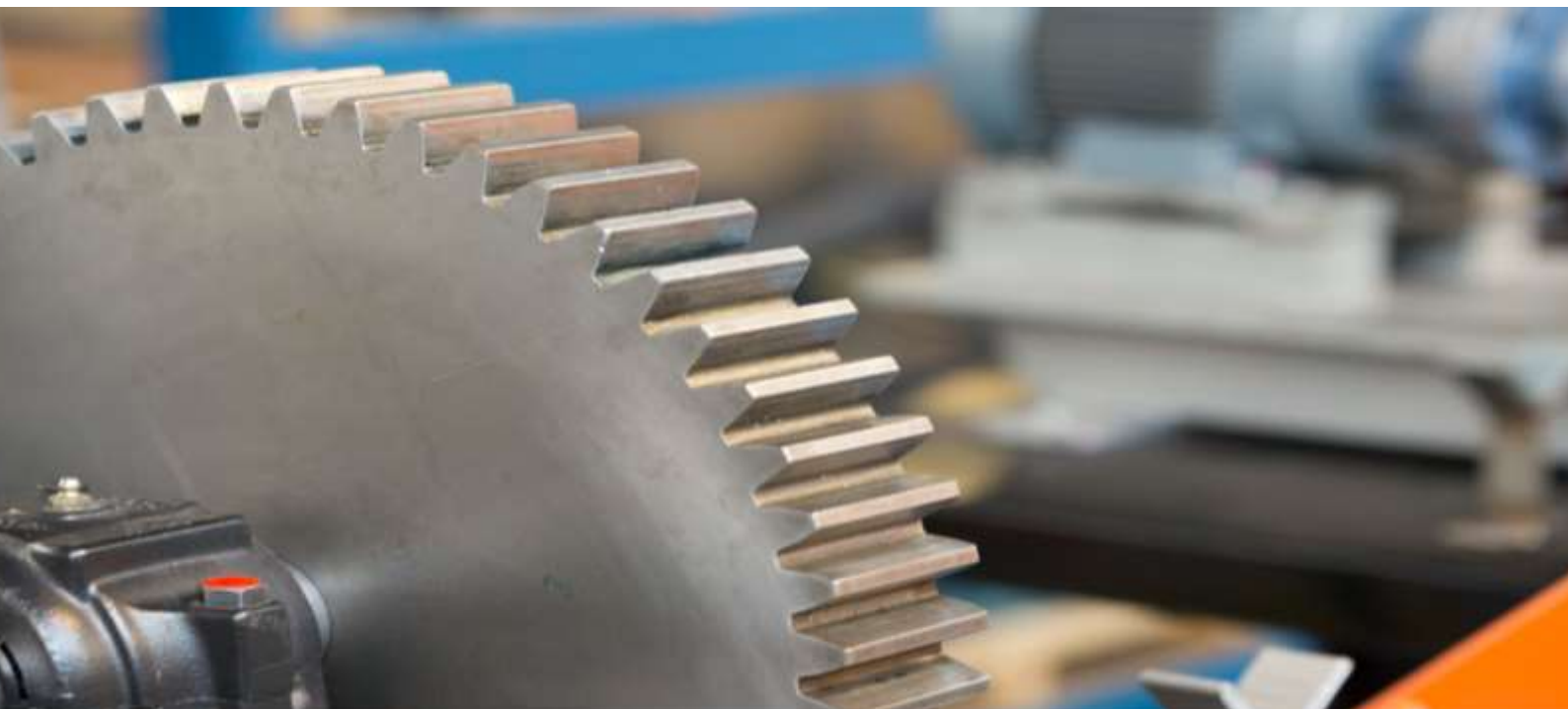


Source: 1. Eleventh Malaysia Plan 2016-2020
2. Malaysia Education Blueprint 2015-2025 (Higher Education)

Objectives of the Study

To achieve Malaysia's growth aspirations and to address some of the challenges identified, the Study aims to cover the following aspects:

- Develop a holistic Masterplan for TVET in Malaysia.
- Evaluation of TVET programmes offered for 2017 based on the eight (8) indicators (e.g. salary, employability, etc.).
- Develop a framework for optimal programme mix for public TVET Institution and Industry that takes into consideration demand and supply skills match and programme performance, including recommendations on rationalising or bringing in new programmes. This includes designing new modular programmes to meet Industry demands.
- Propose a funding model for TVET Institutions.
- Develop TVET programme assessment framework based on a set of identified outcome-based indicators.
- Propose a practical model for increasing efficiency of managing TVET programme offerings to encourage more effective operations and reduce costs at the TVET Institution level.



Principles of the Study

The following are the key guiding principles that governed the design and conduct of this Study:



Implementable Recommendations: Socially equitable and practical

The strategies and initiatives suggested in this Study were designed for Nationwide execution. The recommendations developed are practical and benchmarked with other countries (e.g. Germany, Switzerland and Australia).

Aspirations and objectives were designed with stakeholder collaboration



Inputs from key stakeholders across every level (i.e. Industry players, TVET Institutions and relevant Government agencies and bodies) were incorporated into the Study for a more holistic review of the TVET ecosystem. Throughout the Study, Industry players were engaged through surveys and interviews, TVET Institutions through site-visits and relevant Government agencies and bodies through face to face interviews to obtain buy-in on recommendations and initiatives.

Reimagining before creating



The recommendations in this Study capitalise on existing assets, resources and initiatives before attempting to create new ones, thus minimising the need for further resources and asset allocation / reallocation.

Contextualised to the Malaysian landscape



The Study was designed by referencing nations with leading TVET practices (e.g. Germany, Singapore, Australia, the United Kingdom and Switzerland). However, these findings were then aligned to the Malaysian context to ensure that the recommendations and initiatives were relevant and sustainable.

Complementary to other National or Regional plans and blueprints



This Study supplements other National or Regional plans and blueprints with regards to TVET. These include the Eleventh Malaysia Plan 2016-2020, Malaysia Education Blueprint 2013-2025 (Pre-school to post-secondary education), Malaysia Education Blueprint 2015-2025 (Higher education), Economic Transformation Programme and *Pelan Strategik Kementerian Sumber Manusia 2016-2020*.

What has been achieved in the previous Reports

Throughout the course of this Study, a total of four (4) Reports (i.e. Inception, Interim, Draft Final, and Final Report) were completed. The objectives and key contents of these Reports are as follows:

Inception Report

The first of four (4) Reports, the Inception Report contained details of the strategy, action plan, approach methodology and project plan for this Study.

The Inception Report comprised the introduction of the TVET landscape in Malaysia, factoring aspects from global trends as well as other Nation plans. Several key challenges related to achieving the strategic objectives were highlighted and the ideal state of the Malaysian TVET ecosystem was envisioned and drawn out. The Inception Report also detailed preliminary findings based on available data, outline of the Study approach based on five (5) main workstreams, mapping of stakeholders and engagement plan (demand and supply side), preliminary international comparative analysis as well as Study limitations associated with the findings.

Interim Report

The Interim Report contained preliminary findings from the various workstreams. It depicted the detailed gap analysis, programme evaluation, programme optimisation and approach to the funding rationalisation methodology. Key analyses done were primarily based on the provision of self-audit data collected from TVET Institutions by the Department of Skills Development (DSD).

The Report focused on preliminary findings of TVET programme evaluation results utilising the eight (8) agreed performance indicators, proposal of a new set of weightages for the eight (8) indicators in the programme evaluation framework as well as the preliminary findings and analyses of the current Operating and Funding Model at the Federal level. The Interim Report also provided an overview of the approach to obtain a comprehensive view from all stakeholders to understand the skills gaps within the TVET workforce as well as the key challenges and key initiatives undertaken by stakeholders to advance the TVET landscape. An initial overview of the six (6) Key Aspirations derived from the findings, key challenges and stakeholder inputs were also outlined in the Interim Report.

What has been achieved in the previous Reports (cont'd)

Draft Final Report

The third of four (4) Reports, the Draft Final Report focused on the six (6) Key Aspirations, which were first introduced in the Interim Report. These Key Aspirations were further detailed into key initiatives to transform the TVET landscape in Malaysia.

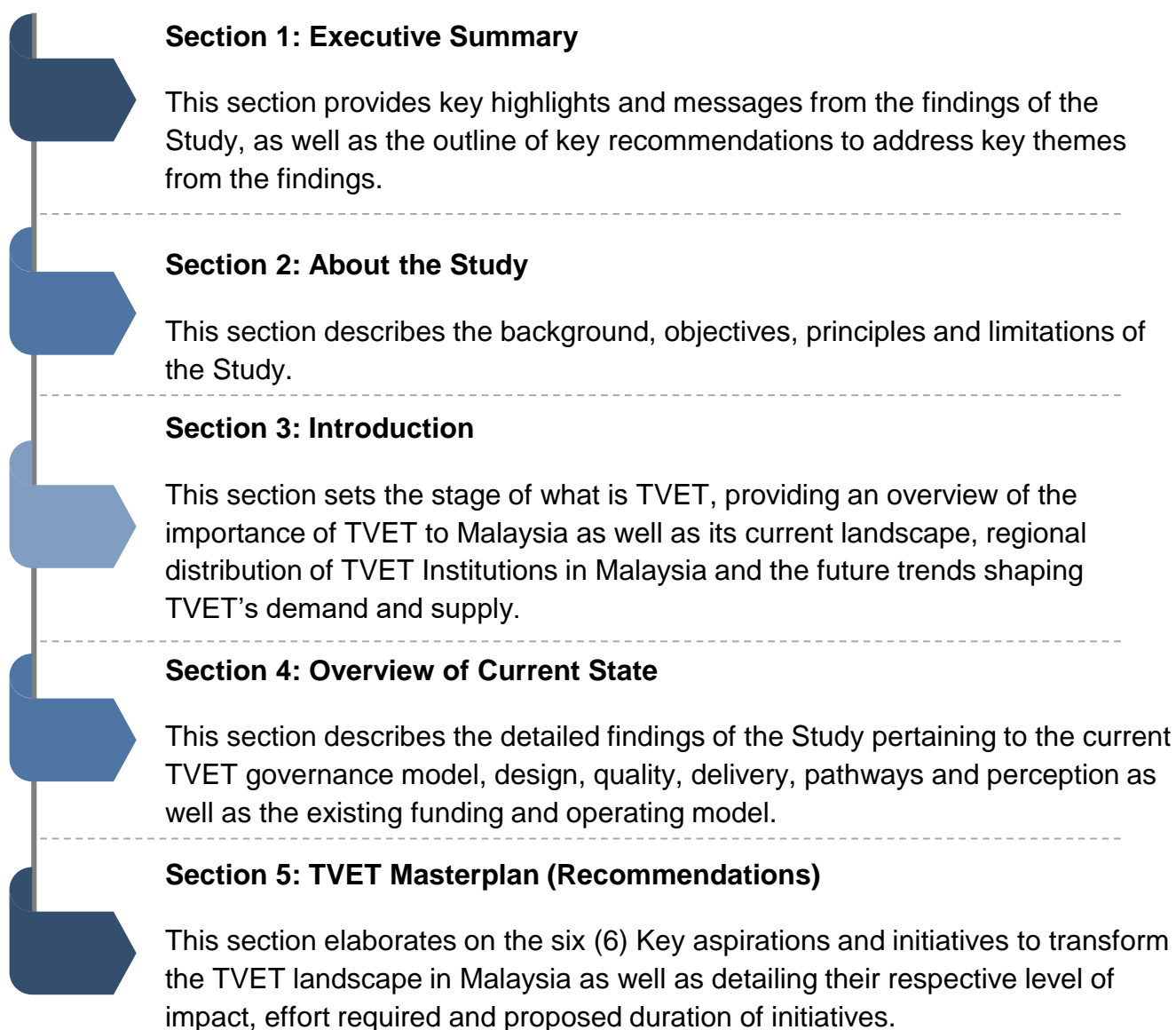
In the Draft Final Report, key findings were consolidated and analysed to obtain a set of recommendations and initiatives, leveraging off past survey reports, existing initiatives and economic plans, key stakeholder interviews, as well as public TVET Institutions deep-dives. All the aspirations presented in the Draft Final Report were further enhanced with international comparative analysis via desktop research.

Additionally, the Draft Final Report provided insights into the current state of the TVET ecosystem where key initiatives and existing challenges were further elaborated. The Draft Final Report included the Institution Operational Framework (IOF), which was developed in order to raise the operational efficiency of public TVET Institutions. This section detailed the feedback obtained pertaining to good practices adopted at six (6) selected public TVET Institutions that were visited across three (3) Regions and economic corridors (i.e. Central, Northern and Southern Corridors). Based on the feedback obtained, the public TVET Institutions' maturity levels were determined and key improvement areas were identified. Lastly, findings from the programme evaluation framework were also detailed, supplemented by the Resource Optimisation Implementation Toolkit (ROIT) in the Resource Optimisation section.

Key contents of the Final Report

This Report represents the fourth (4th) Report to be submitted and comprises findings from the various stages of the Study as well as suggests key strategic recommendations based on the findings. The key focus of this Report is the recommendations, which will then be incorporated in the Master Plan after a thorough review process with the Project Technical Committee and the Project Steering Committee.

The following depicts the structure of this Report:



3.0

Introduction



Introduction to TVET

Setting the stage: How is TVET defined globally and in Malaysia?

TVET definition

For the purpose of this Report, the following definition of TVET has been developed based on the definition of TVET provided by United Nations Educational, Scientific and Cultural Organisation (UNESCO).

*"Comprising of **education and training and skills development** relating to a wide range of occupational fields, production, services and livelihood. TVET as part of **lifelong learning** can take place at **secondary, post-secondary, tertiary** and includes **work-based learning** and **continuing training and professional development** that may lead to a qualification. It includes a wide range of skill development at the National and local context. It needs to consider literacy, numeracy skill, transversal skills and citizen skills which form the integral part of TVET."*

Adapted from UNESCO's Definition of TVET in UNESCO General Conference 2015

In the context of Malaysia, TVET is defined as an education and training process that has occupational direction with major emphasis on Industry practices. It aims to produce a competent workforce in related fields to meet the socio and economic objectives of the Country.

TVET population included in this Study's scope

For the purposes of this Study, it was assumed that TVET refers to TVET Institutions¹ that focus on Malaysian Qualifications Framework (MQF) Level 1 to 6 (i.e. Skills Certificate 1 to 3, Diploma, Advanced Diploma and Bachelors Degree).

The following TVET Institutions were included in the Study analysis²:

- Public TVET Institutions with programmes accredited by DSD (MQF Level 1 to 5).
- Public TVET Institutions with programmes accredited by Malaysian Qualifications Agency (MQA) (MQF Level 1 to 6).
- Malaysian Technical University Network (MTUN) Institutions with TVET programmes accredited by MQA (MQF Level 6).
- Private TVET Institutions with more than 5 programmes with a rating of at least three (3) stars as per star rating by DSD (MQF Level 1 to 5).
- State skills development centres (MQF Level 1 to 5).

Note: 1. For the purpose of this Study, TVET Institutions refer to both public and private TVET Institutions unless stated otherwise.

2. The above scope of TVET Institutions are based on the DSD Self-audit survey data year 2018. However, under the Malaysia Qualifications Framework, TVET qualifications only covers up to MQF level 5 (Advanced Diploma).

Why is TVET important to Malaysia?

Vocational education and training is an engine for economic growth and a vehicle for social mobility

TVET is the cornerstone of success for Malaysia

The Government of Malaysia recognises that in order to fulfil the aspiration of being an advanced economy and an inclusive Nation, it will need to make improvements to its human capital base¹. With the acceleration of global economic assimilation, the emerging need of a highly-skilled workforce is becoming more prominent. As of 2017, Malaysia's workforce was made up of 27.5% high-skilled workers². Meanwhile, semi-skilled and low-skilled workers represented 59.7% and 12.8% of the workforce respectively².

The shift from a low-skilled and low productive workforce to a high-skilled, highly productive and Industry focused workforce is at the heart of the Government's NKEA strategy.

Education will play a pivotal role in fulfilling Malaysia's human capital requirements. Evidence from around the world shows that in order for a country like Malaysia to progress from middle to high income, it needs to make drastic improvements in terms of the quality of education provided to the people, especially at the secondary and tertiary levels.

One of the cornerstones of this aspiration is the availability of quality TVET graduates, which is one of the 10 shifts detailed in the Malaysia Education Blueprint 2015-2025 (Higher Education)³. Furthermore, transforming TVET is one of the game changers in the Eleventh Malaysia Plan to meet the demand of the Industry and contribute to achieving the overall vision of the Nation.

Key highlights

1.5 mil jobs

are projected to be created by 2020¹

60%

of which will require TVET-related skills¹

27.5% of the Malaysian workforce are comprised of high-skilled workers as of 2017²

164,000 to 225,000

is the required increase in annual intake of TVET students from 2013 to 2020¹

Source: 1. Eleventh Malaysia Plan 2016-2020

2. Key Figures, TalentCorp Malaysia based on Labour Force Survey data year 2017

3. Malaysia Education Blueprint 2015-2025 (Higher Education)

What does success look like?

A successful TVET ecosystem will be able to contribute towards meeting the human capital requirements of the Nation

As per the Eleventh Malaysia Plan, a successful TVET ecosystem will require the following to be achieved:



Enrolment in TVET programmes would need to increase 2.5 fold by 2025 to ensure supply matches demand across all key industries.



Robust quality control mechanisms must be present to ensure all TVET Institutions meet quality standards.



Collaboration between Industry and TVET providers across the entire value chain from student recruitment, through to curriculum design, delivery, enhancing cost efficiencies and expanding funding for TVET Institutions to increase enrolment.



Students are well-informed of the opportunities that TVET can offer and view TVET as an attractive career pathway. Students also have access to a variety of innovative, Industry-led programmes that better prepare them for the workplace, thus improving TVET graduates' employability.



Source: Eleventh Malaysia Plan 2016-2020

3.0: Introduction

The current state of TVET in Malaysia

The current TVET Malaysian landscape is poised to produce the right number of graduates, but at varying qualities

In 1964, the very first public TVET Institution was created to provide training for youth.

Since then, the Malaysian TVET ecosystem has come a long way and has seen several notable developments. Currently, there are more than 500 public and state-owned TVET Institutions providing multiple programmes across MQF levels 1 to 6.

These TVET Institutions reside under the purview of various Ministries and States. All public TVET Institutions are funded by the Malaysian Ministry of Finance (MoF) and Economic Planning Unit (EPU).

7 Ministries and **17 TVET Agencies** or **Public TVET Institution types** in Malaysia¹

2 accreditation bodies, **MQA** and **DSD**

556 public TVET Institutions²

692 private TVET Institutions³

Accreditation Bodies

Malaysian Qualifications Agency (MQA)

Department of Skills Development (DSD)

TVET Ministries and Agencies / Public TVET Institution types in Malaysia

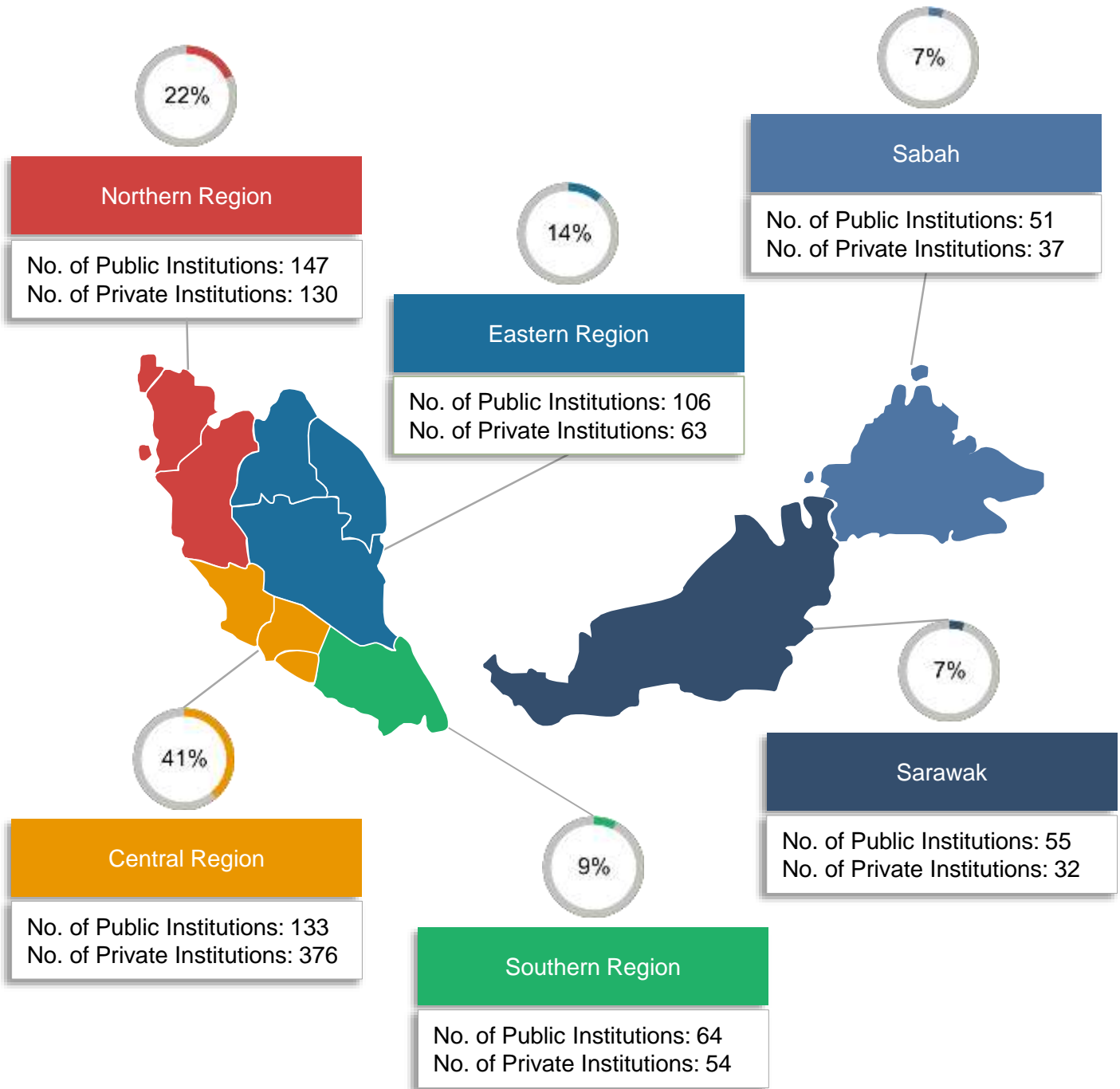
MoHR	MoE	MoRRD	MoYS
CIAST JMTI ADTEC ILP	MTUN Vocational Colleges Polytechnic & Community Colleges	UniKL GMI KKTM IKM GIATMARA	IKBN IKTBN

MoD	MoW	MoA
PERHEBAT	CIDB	NATC

Legend: Ministries TVET Agencies / Institution Types

Source: 1. Eleventh Malaysia Plan, 2016-2020 Strategy Paper 9: Transforming Technical and Vocational Education and Training to Meet Industry Demand
 2. Figure based on DSD Self-audit survey data year 2018. However, based on the DSD Statistic Report 2017, we note that there are other public TVET Institutions which are not covered in the table above (Refer to Appendix 6.4)
 3. 2017 DSD statistics report on private sector

Regional distribution of TVET Institutions in Malaysia



Legend:



% of public and private TVET Institutions in the respective regions out of the total population

Total Public TVET Institutions: 556¹

Total Private TVET Institutions: 692²

Source: 1. 2018 DSD self-audit survey data
2. 2017 DSD statistics report on private sector

Global trends shaping the needs of Malaysia

The current state of TVET is not only impacted by local industrial trends but is also subject to Global megatrends

The demand for skills is a given in any developing economy. Current trends directly dictate the type of skills required from a Nation's human capital.

TVET is one of the means of developing Malaysia's current and future workforce to one which can successfully contribute to the economic, social, political, environmental and cultural status of Malaysia. To better understand what is expected of the workforce of the future, the three (3) main driving forces that are shaping the needs of Malaysia need to be taken into consideration:



Globalisation

Globalisation provides limitless opportunities, blurring the divide between economies and geographies. One downside to globalisation is a potential skills shortage in Malaysia due to the higher possibility of talent migration to countries with a greater appetite for talent (e.g. China or India).



Economic Uncertainty

The uncertainty that exists within any economy in this world causes lower business confidence and also a lower capacity to invest in skills. Thus, there exists great competition for specialised skillsets across Industries, resulting in talent poaching from Malaysian shores by neighbouring countries.



Productivity Imperative

There is a higher expectation from talent, focusing on efficiency (i.e. do more with less), transitioning away from a traditional to a more progressive and technology driven approach. This requires talent to be adaptive and continuously develop their skills.

Industry 4.0 and the skills of tomorrow

Emerging technologies will also revolutionise TVET jobs and create more high-value opportunities

Emerging technologies around the world will inevitably bring changes to the labour market in Malaysia. As this new phase of changes known as Industry 4.0 begins, new jobs will also begin to emerge. Conversely, some existing jobs will undergo significant changes or become redundant.

Research has highlighted the following “essential eight” technologies that will directly impact education for the future as well as the future of work, hence warranting a specific focus from a TVET perspective^{1,2}.



Artificial Intelligence

Software algorithms that are capable of performing tasks that normally require human intelligence.



Augmented Reality

Addition of information or visuals to the physical world to improve user experience for a task or product.



Robots

Electro-mechanical or virtual agents that automate, augment or assist human activities, autonomously or according to set instructions.



Internet of Things

Network of objects embedded with sensors, software, network connectivity and computation capability that can collect and exchange data over the internet.



Virtual Reality

Computer generated simulation of a 3-dimensional image or a complete environment that viewers can interact with in realistic ways.



Drones

Air or water-based devices and vehicles that fly or move without an on-board human pilot.



Blockchain

Distributed electronic ledger that uses software algorithms to record and confirm transactions with reliability and anonymity.



3D Printing

Additive manufacturing techniques used to create 3D objects based on digital models by layering or ‘printing’ successive layers of material.

Source: 1. *Tech breakthroughs megatrend: How to prepare for its impact* (PwC, 2016)
2. *Framing Malaysian Higher Education 4.0: Future-Proof Talents*

4.0

Overview of the current state



4.0: Overview of current state

The ideal TVET ecosystem

To address strategic goals of the TVET ecosystem, we have developed a holistic framework to evaluate the current TVET landscape

As a potential game-changer, TVET can address the challenges of skillset gaps and unemployment. However, for TVET to address current and future requirements, transformation needs to happen across the key aspects that impact the TVET ecosystem.

Based on the analysis of international practices, Eleventh Malaysia Plan aspirations, and previous TVET studies, it is proposed that the Malaysia's TVET ecosystem's objective should be to **“Advance Technical and Vocational Education and Training to create lifelong learners in order to drive the needs of a high-income economy”** to help achieve National aspirations.

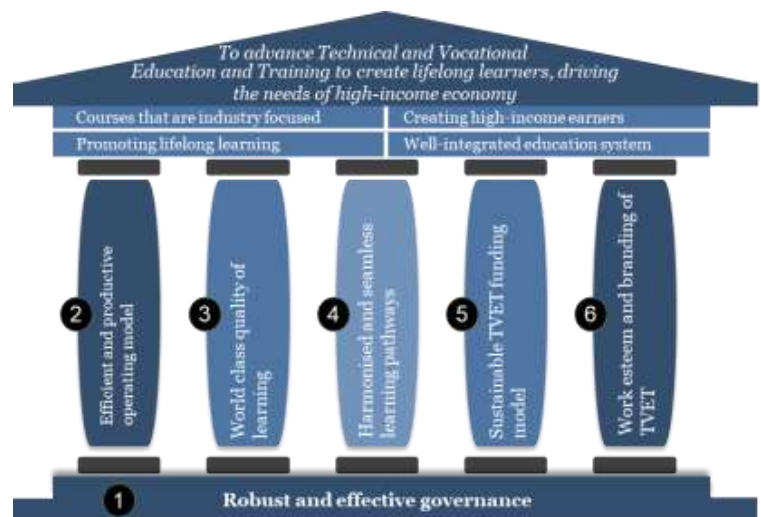
To achieve this objective, the strategic goals of this TVET ecosystem should be the following:

- Courses that are Industry focused
- Creating high-income earners
- Promoting lifelong learning
- Well integrated education system

The objective and strategic goals of TVET Malaysia can only be achieved if it is supported by the *“5 pillars of TVET”* and is built on a strong foundation of a robust and effective governance, with strong collaboration between TVET providers (public and private) Government, Industry and community.

The five (5) pillars and the foundation of TVET are further explained in the following pages of this report.

Figure 4.1: TVET Malaysia Objectives and Supporting Pillars

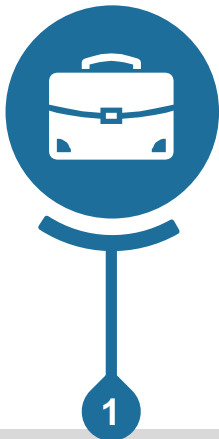


Legend:

① Key Aspirations

1. Robust and effective governance

Key achievements



Establishment of Industry-led bodies by DSD to facilitate the development of TVET curriculum

During the Tenth Malaysia Plan, 22 Industry-led bodies were formed to develop the National Occupational Skills Standard (NOSS) to ensure TVET standards were up to the Industry's requirements.

From 2011 to 2015, a total of 1,142 NOSS and 48 Occupational Analysis were developed for reference. The NOSS is reviewed on a regular basis and approved by the *Majlis Pembangunan Kemahiran Kebangsaan* (MPKK) to ensure Industry relevance.



Establishment of TVET Empowerment Committee

The current TVET ecosystem comprises a large number of stakeholders, such as Government Ministries and agencies, Industry players, Industry-led bodies, employers associations and TVET providers, to name a few. These stakeholders have different aspirations and expectations from TVET.

The TVET Empowerment Committee was set up to elevate the level and standards of TVET in Malaysia. It also aims to have more emphasis on rebranding TVET to be the pathway of choice for school leavers and existing workforce.

Note: The above are selected key achievements and not an exhaustive list

1. Robust and effective governance (cont'd)

Key Challenges



Fragmented TVET delivery hindering collaboration

TVET delivery in Malaysia is fragmented as it is overseen by seven (7) Government Ministries and 17 agencies with varying agendas.

Public TVET Institutions find it difficult to collaborate and share information with one another as different protocols would have to be adhered to.

This fragmented delivery is largely due to the absence of a common coordinating body to link the various stakeholder groups in the TVET ecosystem - Industry players, Ministries, agencies, Industry-led bodies and public TVET Institutions.

Interests of stakeholders are not aligned, resulting in different aspirations and expectations from TVET.

Key implications arising from this are as follows:

- Duplication of programme offerings in close proximity with no differentiating factors.
- Limited and inconsistent collaboration between public TVET Institutions and Industry players.
- Economies of scale that is not optimised, thus limiting efficiency and effectiveness.



Disparate systems to evaluate performance of public TVET Institutions

Currently, there is no standardised system to evaluate performance of public TVET Institutions in Malaysia. For example, the Star rating system is only adopted by DSD-accredited TVET Institutions and is not used for other public TVET Institutions like polytechnics and college communities.

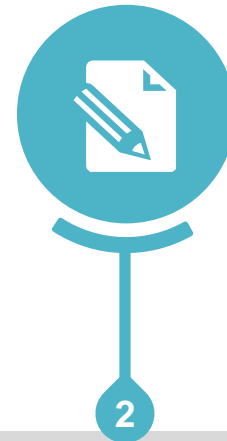
Furthermore, tracer studies are also conducted across various Ministries and agencies with different parameters being captured.

Significant amount of time is required to collect, cleanse and analyse TVET Institution data as the process is relatively manual.

This has led to inefficiencies in conducting analysis on performance of TVET Institutions.

2. *Efficient and productive operating model*

Key achievements



Programme rationalisation and consolidation

There has been a push at the National and agency-level for TVET programme rationalisation to eliminate low impact programmes and reduce duplication of programme offerings in close proximity.

Various studies have been conducted to constantly review the relevance of TVET programmes in Malaysia leveraging on the Resource Optimisation Model (ROM). Agencies and Ministries have taken steps to review and validate findings from these studies. However, programme review and rationalisation have largely been driven top-down (i.e. from agency and Ministry to public TVET Institutions) and are reactive in nature.

Additionally, utilising the Star rating system, TVET Institutions with less than a 2 Star rating are discontinued.

Enhancements to tracer studies conducted by TVET Institutions

Notable steps have been taken by various agencies and Ministries to streamline this process by leveraging on digital tools.

Some examples include:

1. Development of e-Tracer Study Online System (eTOS) under *Jabatan Tenaga Manusia* to transition away from physical tracer Study forms into an online platform for better data management.
2. Dedicated website for Graduate Tracer Study under Ministry of Higher Education. All graduates are required to fill up an online questionnaire before receiving their graduation slip.
3. DSD self-audit Survey Database which acts as a centralised database to capture information on TVET Institutions.

Note: The above are selected key achievements and not an exhaustive list

2. Efficient and productive operating model (cont'd)

Key achievements (cont'd)



Establishment of Collaboration Hubs and Centres of Excellence (CoEs)

In recent years, various initiatives have been put in place to recognise CoE and collaboration hubs across the Nation to elevate the operational efficiency of TVET:

Some examples include:

1. Skills Johor had set up a collaboration hub that aims to facilitate engagements between public TVET Institutions and Industry players while leveraging on modern teaching equipment.
2. Japan Malaysia Technical Institute (JMTI) has been recognised as the CoE for courses in Mechatronics and Manufacturing due to active engagements with Industry players.



Improving Business Efficiency and Programme Delivery via Industry 4.0

The Penang Skills Department Centre (PSDC) was able to retrofit and upgrade their outdated machines to be Industry 4.0 compliant by leveraging on their relationship with Industry partners.

New technology and sensors were added to outdated machines as opposed to investing in newer ones, resulting in significant cost savings. A dedicated task force was set up to facilitate sharing of knowledge and technology with Industry partners.

As a result, PSDC was one of the pioneers for Industry 4.0 related courses in Malaysia and was able to generate additional revenue by leasing their equipment to Industry partners.

Note: The above are selected key achievements and not an exhaustive list

2. Efficient and productive operating model (cont'd)

Key challenges



Sub-optimal student capacities and underutilisation of equipment

Based on the analysis of the 2018 DSD self-audit survey data, almost 40% of TVET Institutions offer less than three (3) programmes on average. Collaboration across TVET Institutions have been cited as the main hindrance as information and resource sharing is not a common practice.

As a result, TVET programmes do not achieve optimal student capacity and teaching equipment are underutilised.



Traditional training delivery and data collection methods

Most TVET Institutions indicated that they relied heavily on traditional delivery methods (e.g. classroom training and workshops in TVET Institutions) even though they have the relevant technology for modern delivery methods¹.

Fragmented data collection tools are still prevalent across TVET Institutions with limited use of digital platforms to ease collection of data. For example, tracer studies and student satisfaction surveys are largely conducted via physical forms or Microsoft Excel.

TVET Institutions highlighted that they lacked the required skills and tools to effectively transform programme content into alternative digital mediums¹.



Limited flexibility in staffing and resourcing arrangements

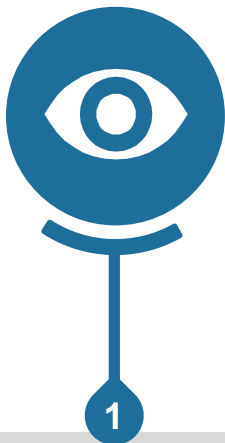
For many public TVET Institutions, staffing is organised centrally by their respective agencies and Ministries.

This has resulted in limited flexibility for public TVET Institutions in adapting to local market demand and Industry requirements.

Feedback from public TVET Institutions also suggest that this may impact the quality of available instructors, particularly in rural areas.

3. World class quality of learning

Key achievements



Establishment of Satellite Campuses by Centre for Instructor and Advanced Skill Training (CIAST) to train and upskill instructors

The role of CIAST was expanded by establishing 16 new satellite campuses in existing public and private TVET Institutions, resulting in an increase in the number of TVET instructors with the following certifications:

- Vocational Education & Training (Level 5)
- Vocational Education & Training Implementation (Level 4)
- Vocational Training Operation (Level 3)

CIAST also developed eProfiling which is a single database to capture information on TVET instructors and their respective skillsets to help identify improvement opportunities.

For example, the “Ability Checklist” and “Ability Map” was rolled out to determine competency gaps across TVET instructors as part of their training needs analysis.

National Dual Training System (NDTS) by MoHR

The NDTS is an Industry-oriented training programme that combines workplace and institutional training. It was introduced to provide school leavers or existing workers with the opportunity to be hired as apprentices by a sponsoring company.

The training focuses on hands-on experience (i.e. 70-80% practical training in real work situations) and the apprentice is expected to undergo various assessments throughout the programme

Successful apprentices will be awarded with a Nation skills qualification by DSD.

Note: The above are selected key achievements and not an exhaustive list

3. World class quality of learning (cont'd)

Key challenges



TVET instructors lack Industry experience and attachment

Programme Evaluation findings indicated that almost 30% of TVET instructors Nationally have less than one (1) year of Industry experience prior to teaching¹.

Furthermore, almost 50% of TVET instructors have less than one (1) month of Industry attachment¹. Hence, instructors may not be up-to-date with the latest Industry trends and developments.

It was noted that Industry attachment is not part of TVET instructors' KPIs when being considered for promotion. Industry attachments are typically on a rotational basis and dependent on teaching schedule and workload for the year.



Current curriculum lacks emphasis on soft skills and work attitude

Across various engagements with Industry players and Industry-led bodies, majority of Industry players highlighted concerns pertaining to soft skills of TVET graduates.

Although soft skills requirement is part of the NOSS elective, these are the top three (3) most critical soft skills which are currently lacking among TVET graduates:

1. Teamwork and adaptability to working environments (**75%**)²
2. Leadership and critical thinking (**63%**)²
3. Ability to articulate via written and verbal communication (**61%**)²

4. Harmonised and seamless learning pathways

Key achievements

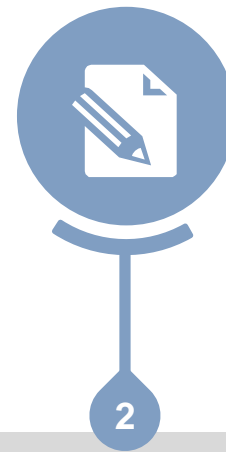


Revision of Malaysian Qualifications Framework to 2nd Edition

Based on the MQF version 1.0, TVET is broken down into two (2) separate pillars; namely the skills sector and the vocational and technical sector. Initial measures have been taken by MQA and DSD to harmonise the skills, vocational and technical sectors under one (1) common umbrella in the MQF framework, resulting in the development of MQF version 2.0.

Under this new framework, a separate pillar for lifelong learning has been established under the MQF which cuts across MQF levels one (1) to eight (8).

However, further measures to define the standards and a seamless credit transfer system would have to be undertaken to support this framework.



Recognition of prior or experiential learning and achievement under lifelong learning

In line with strategies and aspirations outlined in the Eleventh Malaysia Plan and Malaysia Education Blueprint 2015-2025 (Higher Education), Government agencies have taken proactive steps to strengthen lifelong learning for continuous skills enhancement. It covers Malaysians aged 15 years old and above who have dropped out of formal education and those who are currently employed, unemployed, or retired.

Various schemes have been introduced to drive this agenda, namely Recognition of Prior Achievement (RPA) programme under the DSD, Accreditation of Prior Experiential Learning (APEL) under MQA and Recognition of Prior Experiential Learning (RPEL) Scheme under the Human Resources Development Fund (HRDF) using RPA.

Note: The above are selected key achievements and not an exhaustive list

4. Harmonised and seamless learning pathways (cont'd)

Key achievements



Provision of TVET education from secondary school via Vocational Colleges (*Kolej Vokasional*)

72 existing vocational schools and eight (8) technical schools under the Ministry of Education were converted into Vocational Colleges.

Vocational Colleges offer students the opportunity to pursue TVET education as early as 16 years old (post-lower secondary) up till graduates with a diploma. The number of Vocational College graduates grew from 2,273 in 2016 to approximately 12,000 students in 2017.

Further measures have been taken to improve the accessibility of Vocational College graduates into higher education via enhancement of curriculum, upgrading of teaching equipment and upskilling of instructors.

Establishment of Malaysian Technical University Network (MTUN)

MTUN started with the establishment of four (4) University Colleges in 1999, which specialises in higher technical and technology programmes. In 2007, the four (4) University Colleges underwent a rebranding exercise and hence emerged as full universities, namely *Universiti Malaysia Perlis*, *Universiti Malaysia Pahang*, *Universiti Teknikal Malaysia Melaka* and *Universiti Tun Hussein Onn*.

The establishment of MTUN was to provide an education pathway for TVET graduates to pursue degree qualifications post-diploma.

Note: The above are selected key achievements and not an exhaustive list

4. Harmonised and seamless learning pathways (cont'd)

Key challenges



Limited mobility of students across the MQF as a result of disjointed learning pathways

In Malaysia, there are two (2) accreditation bodies responsible for quality assurance of TVET programmes. The DSD performs accreditation for the skills sector while the MQA performs accreditation for the vocational and technical sector as well as the academic sector under the MQF.

Due to the difference in functions of these accreditation bodies, there is a lack of a unified standard that is applicable to all TVET Institutions (public and private).

Horizontal mobility across different accreditation bodies

Currently, students face difficulties in transferring credits across different TVET programmes accredited by different accreditation bodies.

This has resulted in different learning outcomes and curriculum standards across the TVET ecosystem with varying degrees.

Vertical mobility into higher education

Only selected qualifications are recognised for students to enter higher education. Based on stakeholder engagements, the current bottleneck lies in the SPM requirement.

Most higher education TVET Institutions in Malaysia require SPM certification, which is a prerequisite for most, if not all, MQA-accredited programmes.

However, DSD-accredited programmes typically do not require SPM. As a result, TVET graduates accredited by MQA have more accessibility to pursue higher education as the curriculum is more academically inclined.

This has resulted in difficulties for students to have a clear understanding of their education pathways into higher education, exacerbating the negative stigma of TVET being a “dead-end” stream.

5. Sustainable TVET funding model

Key achievements



Iskandar Malaysia Employment Grant (IMEG) model

This is a grant provided by Iskandar Regional Development Authority (IRDA), which is allocated by the Johor State Government, to employers within priority sectors in Iskandar. It offers the following benefits:

- One-off Training Grant: 50% of salary paid or up to RM 2,500.
- Salary Grant: 50% of salary paid up to RM 2,500 per month for six (6) months.

Progressive upskilling trainings are provided for employees via Industry employment based on the requirements of the Industry. A pilot programme ran two (2) years ago saw all 300 participants remain employed by 36 companies after the six (6) months period.



Shift from a semi-Government funded model to a self-funded model

Universiti Kuala Lumpur (UniKL) under *Majlis Amanah Rakyat* (MARA) embarked on a transformative journey to reduce reliance on Government funding in order to become self-funded.

PSDC also embarked on a similar journey whereby one-off funds were provided by the Government for development purposes. PSDC has self-sustained itself throughout the years by leveraging on innovative ways to generate additional revenue such as:

1. Leasing out infrastructure to Industry players during non-peak season.
2. Providing consultancy services to TVET Institutions.
3. Providing online food delivery service to Industry players.

Note: The above are selected key achievements and not an exhaustive list

5. Sustainable TVET funding model

Key challenges



Majority of funding for public TVET Institutions are provided by the Government

The majority of funding for public TVET Institutions are provided by the Government. MoF provides Operational Expenditure (OE) while the Economic Planning Unit (EPU) provides Development Expenditure (DE).

Based on the findings from the previous EPU TVET Study in 2016, only a limited number of public TVET Institutions' revenue are generated from sources outside the Government although majority of public TVET Institutions reported having reasonable commercial and business development skills.



Budgets are largely input-based and do not incentivise innovation

Budgets are primarily based on historical costs and enrolment figures that are subsequently channelled to the various Ministries for disbursement.

The current funding model does not necessarily incentivise the intended outcomes across public TVET Institutions. As an example, TVET Institutions would reduce their programme intake in case of budget cuts as opposed to finding innovative ways to sustain their operations.



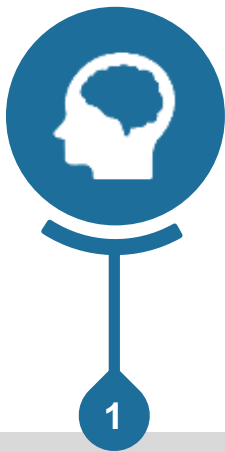
Funding channels are complex and multi-levelled

There are seven (7) Government Ministries and 17 TVET agencies responsible for overseeing funding for over 556 public TVET Institutions, resulting in complex and multi-tiered funding channels.

This may lead to increased costs due to increased administrative inefficiencies. Sector-wide reforms and improvements are difficult to implement, which limits responsiveness to market demand.

6. Work esteem and branding of TVET

Key achievements



SkillsMalaysia and participation in global skills competitions

In January 2011, SkillsMalaysia was established as a rebranding exercise for a National TVET awareness campaign which epitomises innovative skills training.

The objective of SkillsMalaysia is to create awareness of the opportunities in skills training and jobs related to TVET that can contribute towards developing a high-income Nation and in making skills training the first choice for school leavers.

In addition to this, World Skills Malaysia *Belia* (WSMB), World Skills Malaysia *Pengajar* (WSMP), ASEAN Skills Competition (ASC), World Skills Competition (WSC), *Anugerah Tokoh Mahir (Industri)* and Global Skills International is also another platform to promote skills.



Establishment of Malaysia Board of Technologists (MBOT)

With the establishment of MBOT, technologists and technicians in Malaysia can now be recognised as professionals governed under the Technologists and Technicians Act 2015. Professional Technologists and Certified Technicians recognised by the board would be entitled to use the title “Ts” and “Tc” respectively. MBOT aims to achieve a fair reward system for Technologists under this new recognition.

MBOT also assists in ensuring the quality of the profession is in line with the dynamic development of the current Industry and current trends in manufacturing technologies including, among others, automation, Internet-of-things and cyber physical systems.

Note: The above are selected key achievements and not an exhaustive list

6. Work esteem and branding of TVET (cont'd)

Key achievements (cont'd)



Recognition of *Sijil Kemahiran Malaysia* (SKM) qualifications into public service by JPA

In 2016, the Public Service Department (JPA) issued a circular named *Pekeliling Perkhidmatan Bilangan 1 Tahun 2016 - Rasionalisasi Skim Perkhidmatan Bagi Perkhidmatan Awam Persekutuan* under the Malaysian remuneration system effective from 1 July 2016 to improve the existing schemes under the public service sector.

Referring to this circular, the government has agreed to extend the recognition of SKM qualifications as part of the *Kelayakan Masuk Pelbagai (KMP)* within the *Sijil Pelajaran Malaysia (SPM)* and Diploma-certified service schemes, of which 66 schemes have recognised SKM as one of the requirements for the Public Service schemes and seven (7) schemes for Police, Malaysian Armed Forces (ATM) and Malaysian Maritime Enforcement Agency (APMM).

Note: The above are selected key achievements and not an exhaustive list



6. Work esteem and branding of TVET (cont'd)

Key challenges



TVET perceived as a “last resort” education by students and parents

TVET in Malaysia has always suffered from negative stigma, whereby TVET was perceived to cater for students with below average academic capabilities. By implication, TVET slowly gained the stigma of a “last resort” education for students who are not academically inclined.



Negative perception by employers: Inconsistent quality of TVET graduates

Most Industry players raised concerns about the quality of TVET graduates, in terms of their technical and soft skills as well as their work attitude. When further probed, Industry players highlighted that the quality of TVET graduates from similar programmes may vary drastically by TVET Institutions.

Hence, they prefer to hire TVET graduates from TVET Institutions that they had good past experience with or programmes with international recognition (e.g. Huawei or Samsung) due to the reliability in quality of the TVET graduates produced.



Low salary offered to TVET graduates reduces the attractiveness of TVET

Based on the analysis of DSD’s 2018 self-audit survey data, majority of TVET graduates (i.e. 68%) earn less than RM 1,500.

Based on engagements with Industry players, low wages offered to TVET graduates may stem from two (2) perspectives:

1. Majority of TVET occupations in the current market are low and semi-skilled, which do not command high salary levels.
2. Industry players do not see the correlation of TVET qualifications contributing to higher productivity or better quality of work as they still have to train TVET graduates for 3-6 months to make them Industry ready.

5.0

5.0 TVET Masterplan (Recommendations)



Key aspirations and initiatives to transform TVET in Malaysia

We utilised a hypothesis-based approach in designing a holistic and robust TVET ecosystem. We drew insights from a previous EPU TVET Study as well as engagements with various key stakeholders, which were further distilled to derive the following aspirations imperative to transform TVET in Malaysia.

Key aspirations and initiatives to transform TVET

1. Robust and effective governance

- 1.1 Consolidate and unify governance at Ministerial level
- 1.2 Establish an independent enforcement and inspectorate body

2. Efficient and productive operating model

- 2.1 Set up Hub-and-Spoke framework for localised collaboration

3. World class quality of learning

- 3.1 Enhance the curriculum design mechanism
- 3.2 Enhance the curriculum delivery mechanism
- 3.3 Enhance the curriculum review mechanism
- 3.4 Develop an integrated education management information system

4. Harmonised and seamless learning pathways

- 4.1 Develop a unified standard for TVET programme accreditation
- 4.2 Improve articulation between TVET and higher education, including developing a credit transfer framework
- 4.3 Expand TVET qualifications to include MQF levels 6 to 8

5. Sustainable TVET funding model

- 5.1 Develop funding matrix and policy
- 5.2 Develop performance-based funding methodology
- 5.3 Expand use of tender-contract for addressing training needs
- 5.4 Expand use of student loans
- 5.5 Review training fee policies and guidelines
- 5.6 Review current incentive packages for improvement opportunities

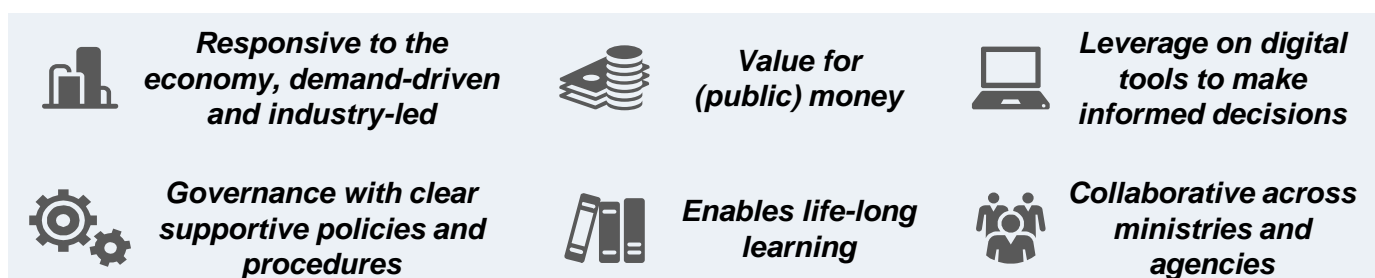
6. Work esteem and branding of TVET

- 6.1 Implement guidelines to promote positive descriptions of TVET in marketing and general public communication materials
- 6.2 Launch Nation wide campaign to promote TVET as a pathway of choice
- 6.3 Official recognition of selected high-value TVET related occupations

Note:

The first number indicates the Aspiration number. The second number indicates the initiative number for the respective Aspiration. (e.g. 1.2 indicates Initiative 2 of Aspiration 1)

Key design principles for aspirations and initiatives development:

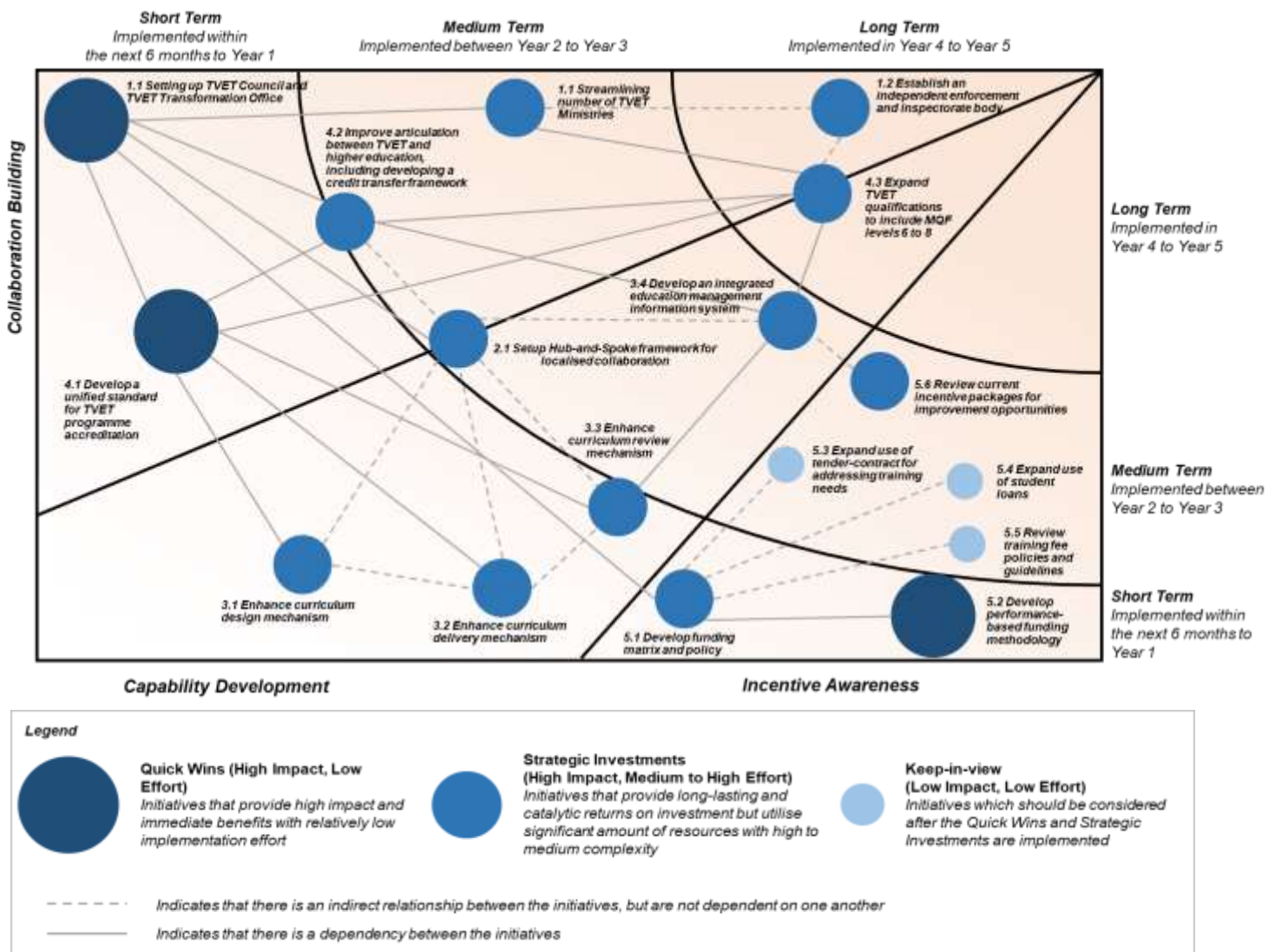


5.0: TVET Masterplan (Recommendations)

Roadmap and high level implementation timeline

To ensure a well-coordinated and impactful implementation, a holistic roadmap was designed to illustrate the 19 key initiatives to be implemented over the short, medium and long-term. Each initiative has been prioritised based on the impact to Malaysia's TVET sector in relation to achieving the vision for TVET Malaysia and its implementation effort. The priority and sequence in which these initiatives should be implemented is subject to the several factors such as implementation cost, criticality, complexity of implementation and availability of resources.

Figure 5.1: Roadmap and implementation timeline



Note: Initiatives 6.1, 6.2 and 6.3 in Aspiration 6: Work esteem and branding of TVET will be implemented throughout the 5 years

5.1

Aspiration 1: Robust and effective governance



5.1 Aspiration one:

Robust and effective governance

Overview

A sustainable TVET ecosystem's backbone lies in ensuring accountability, transparency and equity



Foundational attribute for a robust TVET ecosystem that sets the tone for how various stakeholders interact and define their respective roles and responsibilities



As the TVET landscape of Malaysia prepares itself for a wave of changes and improvement programmes, the set up of a robust and effective governance system will be the key component.

Any sustainable ecosystem has to have good governance which permeates throughout the ecosystem to ensure accountability, transparency and equity. This aspiration aims to build upon the existing governance structure and enhance aspects of the governance model both from an operations and people stand-point.

The objective of this aspiration is also to ensure that streamlined governance enables standardised policies, strategies, and modus of operandi so that public TVET Institutions in Malaysia uphold uniform levels of quality while developing students and serving the National objective.

Without a governance model that promotes a culture of high standards of values and conduct, it will be difficult to generate and sustain trust and reputation, which are the bedrock of an effective and transparent education system. Thus this area will remain a key priority area for the Malaysian TVET landscape moving forward.

5.1 Aspiration one:

Robust and effective governance

Overview (cont'd)

Objectives and principles in developing the strategies and initiatives to achieve the aspiration

Objectives

- To enhance transparency and accountability of all stakeholders.
- To inculcate a culture of high standards, ethics and awareness.
- To develop a governance model which empowers TVET Institutions to make informed decisions in an agile manner.
- To enhance clarity of roles, responsibilities and duties of each stakeholder.

Principles

We will adhere to the following principles when designing the strategies to achieve this aspiration:

- Tone from the top: ensuring the right core value and expectations are set and communicated throughout the organisation.
- Lean and agile governance model which empowers quick, seamless and transparent decision making.
- Stimulate a constructive critical attitude among public servants and promoting an environment of openness and transparency.

Key excerpts ...

“

A strong governance model is required to effectively steer the TVET ecosystem to be more aligned to National objectives.

”

Excerpt from an engagement session with a TVET Institution

“

Clarity of roles and responsibilities should help drive a collaborative TVET ecosystem amongst the various TVET stakeholders.

”

Excerpt from interviews with key Government stakeholder

5.1 Aspiration one:

Robust and effective governance

Where is Malaysia today?

Fragmented TVET ecosystem with little to no standardisation in processes, policies and structure

Fragmented TVET ecosystem, silo mind-set

The current TVET ecosystem has multiple Ministries governing which has caused inefficiencies, misalignment, and differences in quality of students and curriculum delivery. With each Ministry having tight control over their public TVET Institutions, now is the right time to have uniformity when it comes to decision making of TVET. With the right enforcement in place, robust monitoring mechanisms and clear accountability and ownership; empowering public TVET Institutions will help drive the success of the TVET agenda.

Significant efforts made towards greater autonomy for TVET Institutions

Malaysia has taken steps to achieve greater autonomy in the education space and specifically for TVET there has been some good initiatives in place. The Polytechnic Transformation Agenda is one of the key initiatives which puts in place the foundation for greater autonomy. This was followed up with the creation of MySpeKK, a community college rating system which gives more autonomy to higher rated community colleges.

However, there are still improvement opportunities with regards to better governance. We need a National governance framework and structure to help address the fragmented TVET system that Malaysia is facing.



5.1 Aspiration one:

Robust and effective governance

Why does it matter?

Lean governance promotes innovation and self-improvement.

A lean governance model which fosters trust and accountability is the key cornerstone towards developing and supporting an operating model driving quality education delivery, sustainability, iterative improvements and accountability.

Without a lean governance model with clear accountabilities there will be differences in standards, strategies, performance measurements and outcomes. Additionally, a leaner model will facilitate in empowering public TVET Institutions to make their own decisions. This is also aligned with Malaysia's Education Blueprint which states the importance of empowering public TVET Institutions.

Aspects of a good governance model for the TVET ecosystem

Lean and agile: A governance model which promotes a lean reporting structure and is agile in decision-making, communicating and implementing new standards. Creating a collaborative environment which enables knowledge sharing.

Fluid and adaptable: A governance model which is able to drive the TVET ecosystem in response to the rapid changing landscape, Industry needs, community needs and National goals. Is able to set standards and design policies reflective of changing global scenarios.

Performance setting and monitoring: A governance model which enables robust and unified performance setting and monitoring mechanisms and which drives accountability and transparency within the Government thus building trust in the community through transparent reporting standards.

Enforcement and transparency; building trust: A governance model which leverages on the infrastructure and technology today to implement and enforce standards. Utilise robust audit methodologies and frameworks to ensure public resources are utilised responsibly with higher levels of accountability.

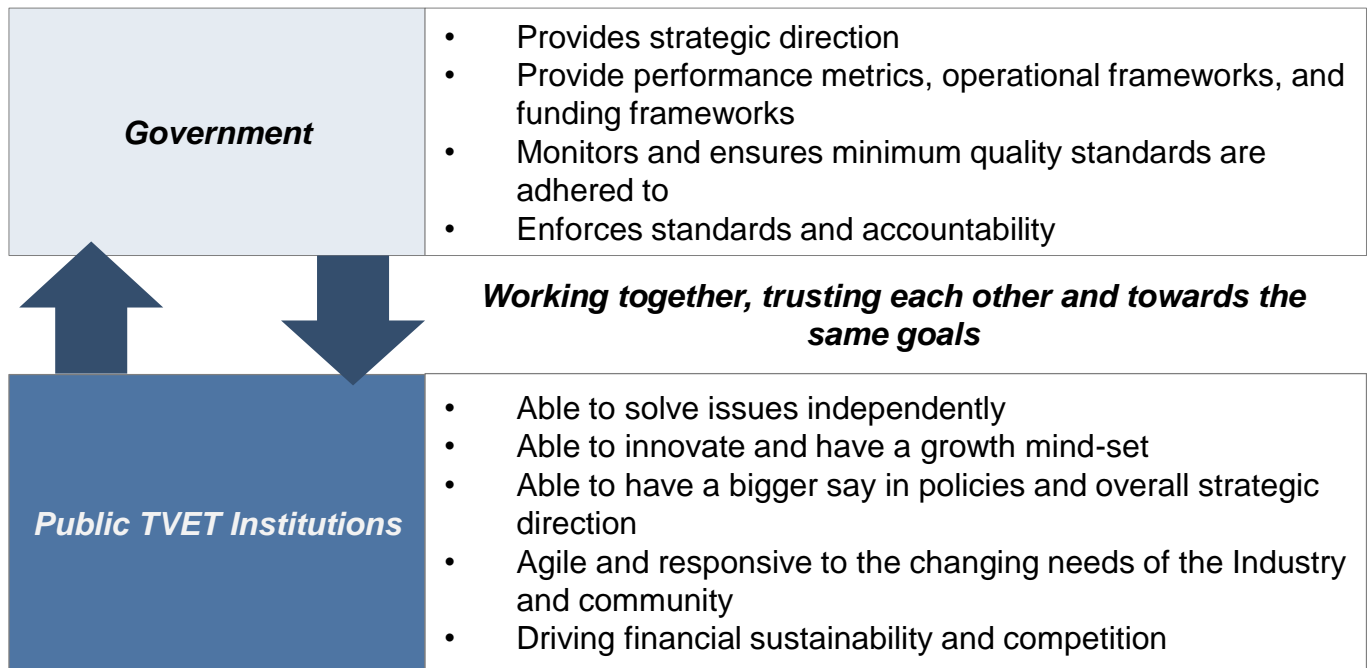
5.1 Aspiration one:

Robust and effective governance

What does success look like?

Balancing autonomy with accountability; driving self-regulation underpinned by a culture of high values, standards and ethics

A governance model which facilitates good public TVET Institutions to be semi-autonomous or fully autonomous whilst still ensuring quality delivery and alignment with overall strategic direction as illustrated below:



Success factors

1. Unified standards
2. Robust monitoring mechanism
3. Robust performance metrics
4. Ethical culture
5. Board effectiveness
6. Audit function

5.1 Aspiration one:

Robust and effective governance

Realising the Aspiration

Overview

Objectives

- To streamline and create a unified governance system which facilitates collaboration and standardisation of vision, strategy, processes, standards, technology, resources, frameworks and tools utilised in the management, design, delivery and review of TVET education.

Initiatives

1. Consolidate and unify governance at Ministerial level

- **Summary:** This initiative entails streamlining and creating a unified governance system which facilitates collaboration and standardisation of vision, strategy, processes, standards, technology, resources, frameworks and tools utilised in the management, design, delivery and review of TVET education.
- **Outcome:** Lean governance model which drives efficient and high quality learning through standardisation, transparency and leverage on economies of scale.

2. Establish an Independent enforcement and inspectorate body

- **Summary:** This initiative entails creating an independent enforcement and inspectorate body which is independent from the TVET accreditation bodies (MQA and DSD). This body is to enforce, monitor and facilitate the development of improvement/remediation plans as well as track the progress of these plans.
- **Outcome:** An enforcement and inspectorate body which is independent from accreditation bodies which drive compliance to the various standards in place to ensure high quality TVET graduates are produced.

5.1 Aspiration one:

Robust and effective governance

Realising the Aspiration

Initiative one: Consolidate and unify governance at Ministerial level (cont'd)

Description of the initiative

To ensure unified Governance, the public TVET Institutions in Malaysia needs to be governed by a reduced number of Ministries from its current state. The harmonisation will be able to drive standardisation and a high quality TVET education environment which will be able to leverage on economies of scale to generate greater efficiency and quality in TVET education. However transitioning from the current state to an ideal state will be a transformative journey, hence we propose an interim state. For the interim state, we propose setting up a special TVET council (for 2-3 years, after which the role of the TVET Council shall then be reviewed). This council should be supported by a transformation team to drive the TVET council agenda.

Interim state – Setting up of TVET Council

The TVET Council should be conferred powers by the Cabinet to help determine the overall direction of TVET, along with the Ministries involved. This TVET council should be set-up to advise and provide oversight during the transition phase into a new governance model (e.g. a governance model managed by reduced number of Ministries). This TVET Council will coordinate between the Ministries and Agencies. Once the objectives set by TVET Council for their first tenure is achieved, its role needs to be reviewed by the Cabinet for either extension with renewed objectives or transferring its roles to other bodies. Additionally, the TVET Council should be advised by regional development authorities, Industry players and Industry-led bodies.

TVET Council - Structure

- The TVET Council should be an entity which will have representatives from all the relevant Ministries responsible for the current public TVET Institutions. Since the TVET Council will be undertaking decisions at the strategic level we propose that the Secretary Generals of TVET related Ministries should be members of the TVET Council.
- Additionally the TVET council should have representation from MOF and EPU as they manage the funding of the public TVET Institutions.
- The TVET Council could be chaired by an individual mutually agreed by the TVET Council representatives or co-chaired by the respective Ministers of the new governance structure. Additionally, there should be esteemed members from the private sector.

5.1 Aspiration one:

Robust and effective governance

Realising the Aspiration

Initiative one: Consolidate and unify governance at Ministerial level (cont'd)

Description of the initiative (cont'd)

TVET Council – Structure (cont'd)

- The TVET Council should also seek advice from key Industry associations, regional authorities, and entities like MITI and MIDA on a regular basis to ensure that their recommendations are aligned to Industry's changing needs.
- The TVET Council should report to the Cabinet to ensure that the Government's overall agenda with respect to the TVET objectives is well represented through the Council.
- A Transformation team should be assisting the TVET Council in driving its objectives. Details of the Transformation team are in the subsequent pages.

TVET Council – Roles and responsibilities

In preparation for the transition to the future Governance model of TVET, the Council should also focus on the following:

- TVET Council should plan and coordinate initiatives to improve TVET education amongst the Ministries overseeing the public TVET Institutions. They will help coordinate streamlining activities across various Ministries after finalising the governance structure.
- TVET Council should also be responsible for coordinating and ensuring the current set of public TVET Institutions are optimised based on their programme offering and the local need of the region for each Industry.

TVET Council should have the ability to:

- Access information and data across Ministries
- Propose enhanced governance structure, roles and responsibilities
- Propose enhancement on standards, processes, operating model and strategies
- Propose optimisation of resources and assets
- Propose staffing of people from various agencies and Ministries
- Request to the Government to obtain funding to form the transformation team to drive initiatives

5.1 Aspiration one:

Robust and effective governance

Realising the Aspiration

Initiative one: Consolidate and unify governance at Ministerial level (cont'd)

Description of the initiative (cont'd)

TVET Council – Support it will need to drive the Transformation

- TVET Transformation office – The TVET council should be able to propose staffing of people from various agencies and Ministries to form the Transformation office. Also, to materialise this Transformation office the TVET Council should be granted some funds to cover the employee and other administrative expenses of the TVET Transformation office. The necessary assets, facilities and resources required should also be provided subject to the approved budget and terms of reference of the transformation office.
- TVET related information – Ministries involved should transparently provide information to the TVET Council on all the public TVET Institutions in the following areas:
 - ✓ TVET strategies, operating model, and quality standards being adopted. This will assist the TVET Council in driving standardisation of initiatives.
 - ✓ TVET programmes, their productivity levels, current set of funds being used etc. All this information will assist the TVET Council in undertaking optimisation and rationalisation decisions.
 - ✓ National objectives and the types of Industries of focus in Malaysia – Corridor representatives, MITI and MIDA should provide these information to the TVET Council so that they understand the future workforce requirements in Malaysia.

5.1 Aspiration one:

Robust and effective governance

Realising the Aspiration

Initiative one: Consolidate and unify governance at Ministerial level (cont'd)

Description of the initiative (cont'd)

Interim state – Setting up of a TVET Transformation Office

The TVET transformation office should be an operational team which is funded by the Government and reports to the TVET council. Their primary role would be to facilitate, support and deliver Malaysia's vision of a robust and effective TVET ecosystem. This team will collaborate with other ministries in developing remedial action plans, rationalisation plans, implementation plans and strategic initiatives. Once the objectives set by TVET Council for their first tenure is achieved, its role needs to be reviewed by the Cabinet for either extension with renewed objectives or transferring its roles to other bodies.

TVET Transformation Office – Structure

- The TVET Transformation team, will be an entity which will have representatives from all the relevant Ministries responsible for the current public TVET Institutions.
- Experts in the areas of human capital, governance, process, technology, strategy and project management to be hired/sourced internally to form this team.
- The transformation office will actively seek feedback and suggestions from Industry players and the public through feedback channels provided; both online and offline.
- The TVET Transformation Office will report to the TVET council on the progress of the TVET initiatives and will be subject to strict compliance measures and KPIs.
- The TVET Transformation Office will also work closely with PADU and similar performance enhancement bodies to leverage on their experience and perhaps skillsets when it comes to education transformation.

5.1 Aspiration one:

Robust and effective governance

Realising the Aspiration

Initiative one: Consolidate and unify governance at Ministerial level (cont'd)

Description of the initiative (cont'd)

Interim state – Setting up of a TVET Transformation Office (cont'd)

TVET Transformation Office – Roles and responsibilities

- Responsible for designing the detailed implementation plan for each of the TVET masterplan initiative. Set deadlines and potentially KPIs for agencies and Ministries based on the initiatives designed.
- Generate progress reports and status update reports to the public, TVET Council, and Ministries. This includes areas like financial transparency and operational effectiveness.
- Responsible for driving meaningful and impactful stakeholder engagement which should result in a seamless collaborative effort between Government entities (e.g. PADU, development authorities, MQA, DSD) to leverage on each others strengths and resources).
- Responsible for engaging the public, private sector and public TVET Institutions to obtain feedback and suggestions as well as conducting change management activities (e.g. to change the perception of TVET).
- Responsible for the development of implementation standards, KPIs, SOPs, guidelines, templates, frameworks and tools to be utilised during implementation.

5.1 Aspiration one:

Robust and effective governance

Realising the Aspiration

Initiative one: Consolidate and unify governance at Ministerial level (cont'd)

Description of the initiative (cont'd)

Proposed Long Term State

Streamlining the number of Ministries is proposed to be primarily based on the nature of TVET programmes offered (i.e. skills-based or vocational and technical education based). To put this into an example, MoE will focus on vocational and technical education (e.g. *Politeknik*, KV, MTUN, *Kolej Komuniti*) whilst MoHR will focus on skills based training (e.g. ILP, IKBN, ADTEC etc.).

However, there are other considerations:

- Mandates on target groups that public TVET Institutions are required to serve (e.g. bumiputera, B40, entrepreneurship etc.) should be used as the primary basis to determine the minimum number of Ministries under this unified governance structure.
- Existing Acts would need to be further studied to assess the feasibility of streamlining the number of Ministries governing TVET.
- Specific Industry training centres (e.g. Construction, Agriculture) to be analysed and determined whether it can be streamlined.
- Specific training for civil service (e.g. PDRM, *Akademi Bomba*) to be analysed and determined whether it can be streamlined or stays within the relevant agency/Ministry.
- Other considerations such as systems, current capabilities, current assets (i.e. infrastructure, equipment etc.) and current resources (i.e. people, financial etc.) would have to be analysed to identify gaps as well as lay the right foundation for the new governance structure.

The key principle to make this successful lies in the effective coordination and cooperation as the number of Ministries can be agnostic, as long as agreements are established across the Ministries when it comes to standardised policies, processes, unified performance evaluation, and data sharing to enable effective resource and asset allocation (e.g. no duplicate public TVET Institutions, sharing equipment effectively, leverage on each others capabilities etc.). This must be driven by the TVET Council and Transformation Team.

The area of compliance (i.e. public TVET Institution, programme and learning outcome standards) will be enforced by an Independent enforcement and inspectorate body.

5.1 Aspiration one:

Robust and effective governance

Realising the Aspiration

Initiative one: Consolidate and unify governance at Ministerial level (cont'd)

Description of the initiative (cont'd)

Proposed Long Term State (cont'd)

All public and selected private TVET Institutions (i.e. private TVET Institutions accredited by DSD) regardless of Ministries will also be subject to the same TVET rating system (e.g. STAR rating system), however for social obligation Institutions, they will still be subject to the same TVET rating however further study has to be conducted to determine the overall performance of the public TVET Institution.

Key considerations:

- Significant implementation effort will be required to harmonise and integrate public TVET Institutions across various Ministries.
- Assessing the current capabilities, resources, assets of each Ministry to effectively monitor and manage the performance of the public TVET Institutions under them.
- Assessing the current legislation in place and suggest amendments to cater for one accreditation unit, carving out enforcement and quality assurance to the independent enforcement and inspectorate body.
- Developing and formalising a standard operating model to enable collaborative work, standardisation of processes and to leverage on economies of scale.
- Upskilling and reskilling certain employees to incorporate the new ways of working.
- Establishing new systems, SOPs, risk management system, and performance model framework across the Ministries.
- Establishing KPIs which revolve around Industry satisfaction, student satisfaction as well as on operational efficiency measures.

5.1 Aspiration one:

Robust and effective governance

Realising the Aspiration

Initiative two: Establish an independent enforcement and inspectorate body

Description of the initiative

Establishing an independent enforcement and inspectorate body

To create an independent enforcement and inspectorate body which is independent from the TVET accreditation bodies (MQA and DSD). This body will enforce, monitor and facilitate the development of improvement / remediation plans as well as track the progress of these plans. They will report directly to the Prime Minister's Office and should be a statutory body.

Enforcement and quality assurance standards must be upheld through a TVET centralised independent body. These standards should also be consistent and implemented throughout all TVET Institutions. These standards include programme and learning outcome standards (i.e. NOSS, core ability and MPU).

This body is responsible for the enforcement of TVET curriculum standards (i.e. NOSS) (role to be taken over from MQA and DSD which is currently overseeing TVET standards development and enforcement), monitor performance and facilitate the development of improvement / remediation plans for TVET Institutions as well as track the progress of these plans. The main difference between what MQA and DSD have today is that this body should be independent of the standard setting arm. This should be done after the interim stage of consolidating and unifying governance at Ministerial level is achieved (i.e. the TVET council and Transformation Office is set-up).

Apart from enforcing standards on a regular basis, this body audits TVET Institution data and is empowered to penalise under-performing TVET Institutions. This enforcement, monitoring and quality assurance body must be independent and empowered. An example of a successful body which performs a similar role is the UK's Office for Standards in Education, Children's Services and Skills (Ofsted).¹

One of the key success factor is to ensure enforcement and monitoring is done on a regular basis and the key performance indicators used are robust and comprehensive covering internal efficiencies (e.g. operational metrics, financial metrics) and outcomes (e.g. employability, Industry feedback, collaboration, etc.). Additionally, this body must be empowered to inspect TVET Institutions at random and publish these inspections publicly.

Source: 1. <https://www.gov.uk/government/organisations/ofsted>

5.1 Aspiration one:

Robust and effective governance

Realising the Aspiration

Initiative two: Establish an independent enforcement and inspectorate body

Description of the initiative (cont'd)

Establishing an independent enforcement and inspectorate body (cont'd)

Create an anonymous and systemised review mechanism which helps to gather detailed data, analyse and subsequently design remediation/improvement plans based on the data gathered. This includes getting feedback by current students, instructors, community, other Government agencies and graduates.

Additionally, this body should leverage on technology to monitor the performance and progress of these TVET Institutions. This body will have to be equipped to actively enforce the various standards and policies enacted to ensure the performance of these TVET Institutions are aligned with the intended outcomes. This team will also publish reports and findings pertaining to the results as well as report results to relevant policy makers.

Roles and responsibilities:

- Oversee enforcement of TVET curriculum standards developed by DSD and MQA and ensures compliance to them.
- Develop robust evaluation tools, frameworks and methodologies to be used in the evaluation of TVET Institutions in terms of quality and efficiency.
- Empowered to conduct spot-checks, data audits and impromptu evaluation of TVET Institutions to assess their overall performance and dictate improvement/remediation plans to be carried out.
- Empowered to penalise and review TVET Institutions which do not meet the standards and under performs.
- Publish reports and findings on TVET Institutions overall performance online and share it publicly through relevant communication channels.
- Monitors and reports TVET Institution performance and progress of remediation/improvement plans to relevant Ministry / Ministries.
- Manages a whistle blower programme.

5.1 Aspiration one:

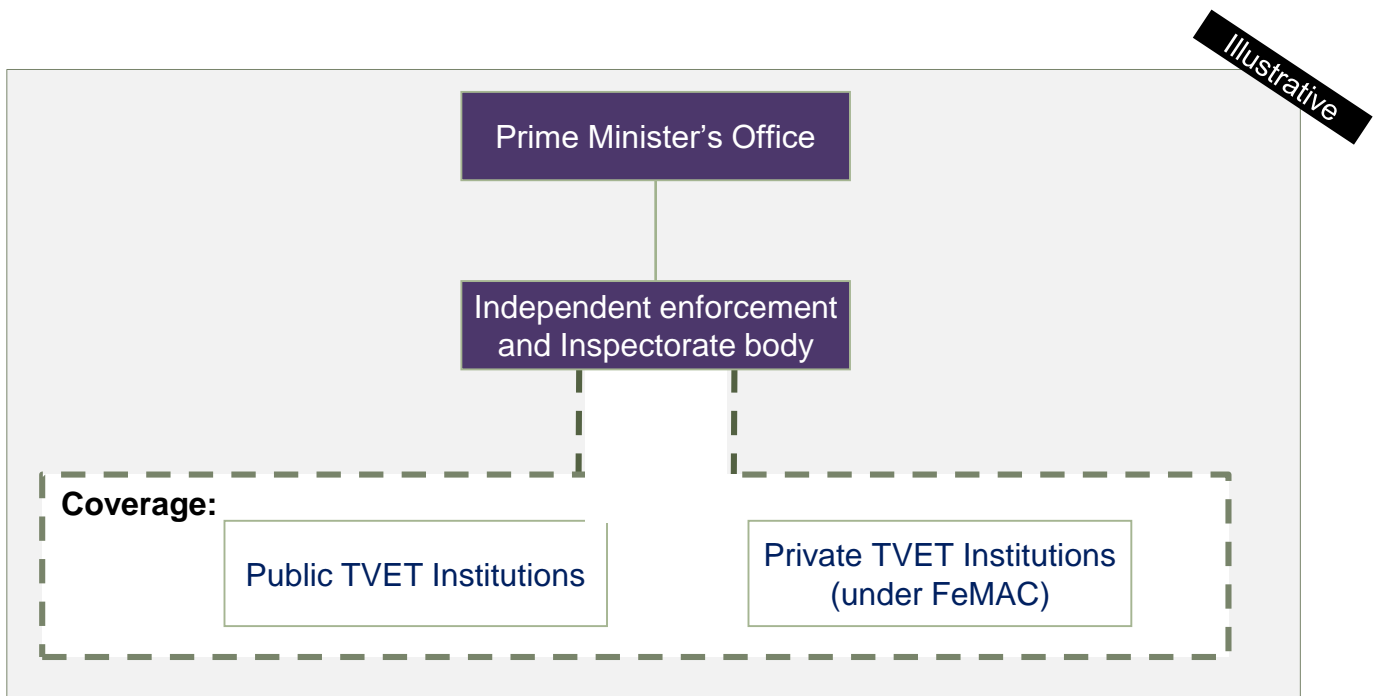
Robust and effective governance

Realising the Aspiration

Initiative two: Establish an independent enforcement and inspectorate body (cont'd)

Description of the initiative (cont'd)

Figure 5.1.1: Independent enforcement and inspectorate body's structure



5.2

***Aspiration 2:
Efficient and productive
operating model***



5.2 Aspiration two:

Efficient and productive operating model

Overview

Spearheading a model which drives efficiency and effective operations throughout the TVET ecosystem



An ecosystem where TVET Institutions offering various programmes leverage on each other's strengths and aim to drive improved operating efficiencies through technology.



Against the backdrop of an increasingly competitive human capital market and complex operating environment, the need for optimising the delivery of TVET has never been more significant.

A framework which continuously drives efficiency and effective TVET operations; and is agile enough to respond to Industry requirements is paramount in delivering TVET successfully and sustainably.

In keeping up with the Eleventh Malaysia Plan 2016-2020, several key strategies have been highlighted in this section to transform TVET, namely specialisation of programme offerings via Centres of Excellence (CoEs), as well as enhanced partnership between the Government, TVET Institutions and Industry.

The envisioned operating model allows TVET Institutions across the Nation to tap into common resources across the TVET landscape, allowing intellectual and physical assets to be shared across federal, state and Industry players. The involvement of the Industry players has been highlighted by numerous international agencies as a key driver for TVET excellence. For example, the European Training Foundation is a strong supporter of involving the Industry in the rethinking, re-designing and operations of TVET. However, to operationalise better Industry participation, we believe in driving localised Industry focus – where CoEs can champion excellence in selected key Industry sectors within its vicinity, thus leading the initiative of Industry collaboration and hence ensuring Industry-relevant courses, while collaborating with other TVET Institutions in its surrounding to develop the overall operating efficiency.

5.2 Aspiration two:

Efficient and productive operating model

Overview (cont'd)

Objectives and principles in developing the strategies and initiatives to achieve the aspiration

Objectives

- To facilitate a common platform for collaborative planning and quality control, driven by CoEs across the Nation.
- To facilitate sharing of assets – both intellectual and physical – across the TVET ecosystem.
- To maximise efficiency gains via centralisation of activities.

Key excerpts ...

“

The overall TVET landscape should be agile and responsive to the market, and strive to achieve excellence in delivering TVET programmes.

”

Excerpt from interviews with key Government stakeholders

Principles

The following principles were adhered to when designing the strategies:

- Establishing standards of quality across TVET operations.
- Leveraging economies of scale across TVET Institutions.
- Close collaborations with Industry players.

“

Leveraging on digital and online platforms for learning will have a great impact on making Institutions more efficient.

”

Excerpt from Industry engagement survey and interviews with public associations

5.2 Aspiration two:

Efficient and productive operating model

Where is Malaysia today?

The Malaysian TVET operating framework is largely split across Ministerial lines and underutilises the existing capabilities of TVET Institutions to elevate efficiency across the value chain

The current TVET operating landscape fosters minimal collaboration and reduced efficiency due to the following reasons:



Ministerial segmentation

Due to the design of the existing governance structure (i.e. control of public TVET Institutions is split between seven (7) Government Ministries and its agencies), it is difficult for public TVET Institutions to share assets or knowledge across Ministries or agencies. There is no singular framework that encompasses all Ministries to facilitate asset and knowledge sharing.



Overlapping programmes and agendas

There has been a push for TVET programme rationalisation to reduce duplication of programme offerings within the same geographical region. However, there exists improvement opportunities to further streamline public TVET Institutions and programme offerings.



Underutilised assets and digital capabilities

Steps have been taken to develop a digitally-enabled TVET landscape (e.g. via the e-profiling initiative by CIIAST). However, further efficiency gains and resource utilisation can be unlocked by utilising technology across a broader spectrum (i.e. centralised instructor planning or centralised asset maintenance system).



Underleveraged capabilities of Centres of Excellence (CoE) or Collaboration Hubs to drive high quality programmes

There are few instances of recognised CoEs that currently drive Industry collaboration and innovation. However, replicating a similar model Nationally through effective planning across major TVET programmes is an effort yet to be initiated.

5.2 Aspiration two:

Efficient and productive operating model

Why does it matter?

Getting the house in order is paramount to drive consistent and effective TVET delivery

A TVET ecosystem with TVET Institutions collaborating amongst each other to drive quality education outcomes through knowledge and asset sharing will ensure the optimal utilisation of current TVET resources. In addition, partnering closely with Industry players to meet their requirements will drive the needs of the Nation.

Key excerpts ...



The TVET ecosystem needs to be agile and collaboratively respond to the needs of the workforce.



Excerpt from interviews with key Government stakeholders

What would be the outcome if there exists an efficient and productive operating model?



TVET Institutions

TVET Institutions will have greater access to knowledge and assets within their local network, raising the quality of programmes and achieving optimal asset utilisation rates. In addition, public TVET Institutions will be adequately and efficiently supported by a centralised back-office function.



Government

The Government will appreciate the enhanced Industry Collaboration due to the formation of CoEs. In addition, the sharing of assets and resources amongst public TVET Institutions and Industry players alike will reduce the funding burden on Government players.



Students

Via a holistic operating framework, TVET students in Malaysia stand to have better learning experiences and an enhanced ability to tap into Industry networks for employment opportunities.



Industry and associations

Provide platforms for Industry and associations to collaborate and directly affect the planning and delivery of TVET programmes across the Nation. Public TVET Institutions and Industry players will also be able to collaboratively innovate training delivery to fit Industry requirements.

5.2 Aspiration two:

Efficient and productive operating model

What does success look like?

An optimal operating model is encapsulated by a digitally-enabled collaborative Hub-and-Spoke environment



Collaboration and innovation Hub

Serves as a platform for TVET Institutions, Industry players, agencies and associations to collaborate in areas of co-planning, asset sharing, innovation and training delivery.



Industry-focused

Owing to the collaborative nature of the aspired operating model, overall programme design and training delivery is expected to be Industry-relevant, thus raising the prospects of TVET graduates.



Programme Quality

Programme quality is expected to rise as Hubs perform quality monitoring and control activities throughout its network of TVET Institution “Spokes”.



Optimal economies of scale

Driving economies of scale by leveraging on neighbouring TVET Institutions to share assets and resources (e.g. Instructors) .



Efficient and productive

Minimal duplication of agenda or programme offerings within the same region, and TVET Institutions adhere to standards of quality for support functions.



Digitally-enabled collaboration

Single source of truth. Information and data is freely available throughout the TVET ecosystem and facilitates knowledge and asset sharing.

5.2 Aspiration two:

Efficient and productive operating model

Realising the Aspiration

Overview

Objectives

- To enable collaboration between TVET Institutions, Industry and Government agencies at a localised level - spearheaded by high performing public TVET Institutions (Hubs).
- To drive efficiency and potential cost savings via economies of scale.
- To facilitate streamlined and standardised business practices across the TVET ecosystem

Initiatives

1. **Set up Hub-and-Spoke framework for localised collaboration**

- Summary: Institutionalise collaborative models by utilising high performing TVET Institutions (i.e. Hubs) to support the propagation of TVET excellence across smaller TVET Institutions (i.e. Spokes) in their localised regions and respective sector-skill specialties.
- Outcome: TVET Institutions across the Nation will be subject to improved quality of standards and will have access to resources across the local network (including knowledge, assets and Industry connections). In addition, Industry players can be engaged in a more focused and localised manner.

5.2 Aspiration two:

Efficient and productive operating model

Realising the Aspiration

Initiative one: Set up Hub-and-Spoke framework for localised collaboration

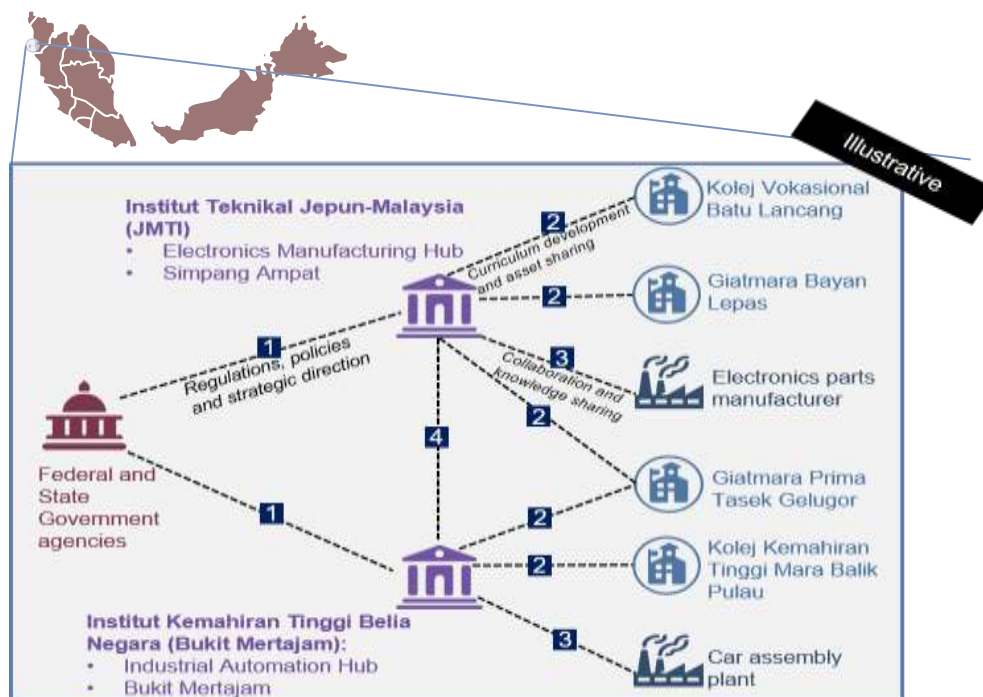
Description of the initiative

Enhance the collaboration amongst the key tripartite (i.e. Government, TVET Institutions and Industry), which will be spearheaded by high performing VET Institutions (i.e. Hubs) across the Nation. The primary purpose is to support the propagation of TVET excellence based on localised sector and skill requirements.

To date, there are limited examples of TVET Institution collaboration in a local region, sharing knowledge and assets. Whilst there are instances of CoEs with similar characteristics (i.e. PSDC, JMTI and ILPKL to support programme innovation and planning at other TVET Institutions), there are no formal mechanisms / channels to ensure that this model is enhanced and replicated at a larger extent to benefit TVET Institutions Nationally.

The figure below is an illustrative sample (based on Penang) of the aspired Hub-and-Spoke model.

Figure 5.2.1: Illustrative sample of the Hub-and-Spoke model



Legend:

-- X -- Number denotes the type of interactions which between the tripartite which is elaborated in the subsequent pages

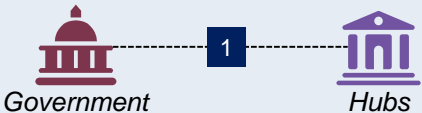
5.2 Aspiration two:

Efficient and productive operating model

Realising the Aspiration

Initiative one: Set up Hub-and-Spoke framework for localised collaboration (cont'd)

Description of the initiative (cont'd)

Interaction 1: Government and Hubs	
	 <p>The diagram illustrates the interaction between the Government and Hubs. On the left is a red icon of a government building labeled 'Government'. On the right is a purple icon of a university building labeled 'Hubs'. A dashed line connects the two icons, with a blue square containing the number '1' in the center.</p>
Entity	Key roles and responsibilities
Government	<ul style="list-style-type: none">• TVET Council provides direction on the National TVET Vision and Strategy.• TVET Council's Transformation Office develops the framework on how to select Hubs and Spokes. The general characteristics of Hubs and Spokes referred to within this report are as follows:<ul style="list-style-type: none">✓ Hubs: High-performing TVET Institutions which can be considered CoEs due to their size and past performance records as well as have programme(s) which are relevant to local Industry requirements.✓ Spokes: Smaller TVET Institutions that focus primarily on delivering similar TVET programmes as Hubs within the same region. These TVET Institutions may also be relatively further away from key Industry players or other TVET institutions, thus limiting their ability to drive collaboration.• Based on this framework, TVET governing Ministries and agencies will propose potential Hubs and Spokes for approval by a centralised body (e.g. TVET Council's Transformation Office). In addition, this framework will be used to guide working procedures between Hubs and Spokes as well as performance measurement of Hubs.• Corridor representatives and investment authorities (e.g. NCER, IRDA and MIDA) provide insights such as projected Industry requirements and investment priorities based on environmental scans conducted and discussions with Industry players (e.g. if a foreign electronic manufacturing company wishes to invest and set up a manufacturing plant in Malaysia, the investment authorities will work with local Hubs to ensure that the local workforce is trained to the company's specifications and hired to work in the new manufacturing plant).

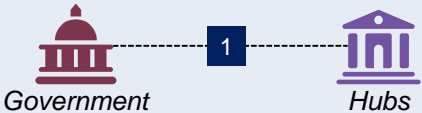
5.2 Aspiration two:

Efficient and productive operating model

Realising the Aspiration

Initiative one: Set up Hub-and-Spoke framework for localised collaboration (cont'd)

Description of the initiative (cont'd)

Interaction 1: Government and Hubs (cont'd)	
	
Entity	Key roles and responsibilities
Hubs	<ul style="list-style-type: none">• Hubs provide input to DSD and MQA during the development and review of National-level standards for TVET curriculum in their respective skill-sectors, detailing key insights garnered through localised Industry networking and historical programme outcomes across its network of Spoke Institutions. In addition, Hubs will provide advise regarding the review of TVET programmes and courses at Spoke Institutions to determine which are comparable and applicable for credit transfer.• Based on the performance of its Spoke Institutions, Hubs will provide feedback to the respective TVET governing agencies and Ministries regarding areas of improvement.

5.2 Aspiration two:

Efficient and productive operating model

Realising the Aspiration

Initiative one: Set up Hub-and-Spoke framework for localised collaboration (cont'd)

Description of the initiative (cont'd)

Interaction 2: Hub and Spoke Institutions



2



Entity	Key roles and responsibilities
<p>Hubs</p>	<ul style="list-style-type: none"> • Recommend improvements to TVET Institutions' curriculum development and delivery such as developing and recommending additional “top-up” modules to the Spoke's existing curriculum. This can be achieved by assessing the programme curriculum offered by the Spoke Institutions as well as analysing historical programme performance metrics, such as those outlined in the Performance and Management Framework (e.g. dropout rate, employability rate, duration-to-employment). <p>Note: Curriculum should be updated and developed with the credit transfer framework in mind, with the objective of promoting mobility amongst TVET Institutions and Higher Education Institutions. Hubs should aspire to develop curriculum via consultation with relevant Higher Education Institutions (HEIs) such that the curriculum is recognised by the relevant HEIs – thus facilitating the transfer of TVET students across the TVET and academic pathways (refer to Aspiration 4 Initiative 2).</p> <ul style="list-style-type: none"> • Leverage on their Industry network to provide feedback on TVET programmes run by Spoke Institutions (i.e. soliciting employer feedback and passing them on to Spoke Institutions). • Connect Spoke Institutions with their network of Industry players, and vice versa (e.g. if Spoke Institutions wish to invest in equipment whilst leasing out to Industry players to minimise investment costs). • Facilitate asset and resource sharing by analysing asset utilisation (including equipment and instructors) across their network of Spoke Institutions, and becoming the point of contact for resource requests by Institutions. This concept can also be extended to private Institutions to facilitate “buying places” (i.e. Institutions are paid to allow other Institutions to use their equipment and lecturers).


5.2 Aspiration two:

Efficient and productive operating model

Realising the Aspiration

Initiative one: Set up Hub-and-Spoke framework for localised collaboration (cont'd)

Description of the initiative (cont'd)

<i>Interaction 2: Hub and Spoke Institutions (cont'd)</i>	
	
Entity	Key roles and responsibilities
Hubs (cont'd)	<ul style="list-style-type: none">• Serve as the benchmark for excellence in other support functions such as student counselling or equipment maintenance by sharing their knowledge, best practices and business templates.• Drive innovation by sharing best practices (e.g. teaching other Institutions how to retrofit old equipment with Industry 4.0 technology, sharing with other Institutions how leading Industry players are evolving along with changes in skill requirements).
Spoke Institutions	<ul style="list-style-type: none">• Deliver TVET programmes in their facility and be open to extend it to other Institutions through an asset sharing model.• Liaise with respective Hubs to develop customised or “top-up” TVET module programmes where relevant.• Provide operational and programme metrics to their respective Hubs (e.g. asset utilisation rates, instructor utilisation rates, cost of running programmes, programme dropout rates and TVET graduate outcomes).

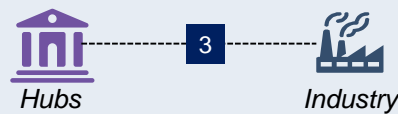
5.2 Aspiration two:

Efficient and productive operating model

Realising the Aspiration

Initiative one: Set up Hub-and-Spoke framework for localised collaboration (cont'd)

Description of the initiative (cont'd)

<i>Interaction 3: Hub and Industry</i>	
	
Entity	Key roles and responsibilities
Hubs	<ul style="list-style-type: none">• Collaborate with Industry players to develop, deliver and review TVET programmes (refer to Aspiration 3 Initiative 3).• Solicit feedback from relevant Industry players regarding quality of TVET programmes and graduates to ensure Industry requirements are met.• Collaboratively develop customised modular TVET curriculum or “top-up” modules for existing accredited curriculum.• Actively seek out opportunities with Industry players for key activities such as:<ul style="list-style-type: none">✓ Opening student apprenticeship positions for Spoke Institution students.✓ Providing instructor-Industry attachment opportunities.✓ Facilitating the leasing of equipment or facilities by Spoke Institutions (and vice versa).✓ Obtaining contributions from Industry players, including financial and non-financial donations such as cash, equipment and training material.✓ Developing and executing specialised corporate training programmes for Industry players to upskill employees.• Actively form partnerships with Industry by leveraging upon incentives (refer to Aspiration 5 Initiative 6). For example, by providing Industry partners with the “first pick” of top TVET graduates or taking advantage of tax deductions.

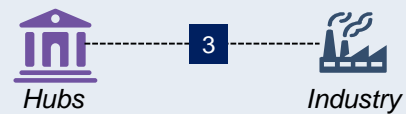
5.2 Aspiration two:


Efficient and productive operating model

Realising the Aspiration

Initiative one: Set up Hub-and-Spoke framework for localised collaboration (cont'd)

Description of the initiative (cont'd)

Interaction 3: Hub and Industry (cont'd)	
	
Entity	Key roles and responsibilities
Industry	<ul style="list-style-type: none"> • Reach out to Hubs when training may be required for existing workforce or entry level workforce (i.e. fresh graduates). • Provide Industry expertise and dictate specific training requirements to ensure curriculum development remains Industry-relevant. • Reach out to Hubs when there are opportunities for asset sharing (e.g. leasing of Industry equipment to TVET Institutions, and vice versa). • Create opportunities for internships while leveraging on incentive programmes. • Reach out to corridor representatives (e.g. IRDA, NCER) and investment authorities (e.g. MIDA) to understand the various incentive programmes available to invest in TVET talent.

Interaction 4: Between Hubs	
	
Entity	Key roles and responsibilities
Hubs	<ul style="list-style-type: none"> • Facilitate knowledge sharing network by leveraging digital platforms (e.g. maintaining a shared list of Industry networks across Hubs, sharing case studies of successful TVET programmes as well as the TVET programme curriculum itself).

5.3

Aspiration 3:
World class quality of
learning



5.3 Aspiration three:

World class quality of learning

Overview

Creating an education system which is equitable and relevant to nurture independent and resilient TVET graduates



Industry-focused curriculum which emphasises balance of technical know-how, soft-skills and attitude, and which is anchored around modern delivery methods whilst empowering students to be resilient to Industry's changing needs.



The world we live in today is being revolutionised by a confluence of - economic, geopolitical and technological forces. Job seekers today are forced to navigate through a multi-faceted and complex environment in order to land a job and continuously be successful in it.

The Malaysian economy in tune with these global forces is progressively moving up the value chain into increasingly higher-value sectors, underpinned by technological advancement and an increasingly skilled workforce. In one estimate by the World Economic Forum, 35% of skills that are considered vital in today's workforce will have changed, with youths changing jobs more than 10 times in their lifetime.

In this context, preparing Malaysia's youth of today for the future means not only closing the gap in learning, but equipping them with 21st century skills such as being multi-disciplinary, and possessing creativity and critical thinking.

A good TVET system has the potential and capability to address these challenges by ensuring it embeds Industry led curriculum leveraging on modern delivery methods. This not only maximises the effectiveness of learning but also reduces the skills gap while increasing employment.

Ultimately, developing well-rounded students who are empowered with transferable skills¹ to be independent and resilient to the ever-changing global landscape is imperative for the overall success of Malaysia.

Note: 1. Transferable skills are skills that can be used in most situations and are generic imperative skills for effective work (e.g. teamwork, leadership, critical thinking, creativity, communication, time management, entrepreneurship etc.)

5.3 Aspiration three:

World class quality of learning

Overview (cont'd)

Objectives and principles in developing the strategies and initiatives to achieve the aspiration

Objectives

- To ensure students are equipped with Industry-relevant skills.
- To bring equity in providing opportunities to all regardless of social and economic background.
- To equip students with technical and transferable skills which will endure change and promote entrepreneurship.
- To develop a robust support system to deliver programmes effectively.
- To develop a life-long learning culture and ecosystem.

Principles

The following principles were adhered to in the designing of these strategies to achieve this aspiration:

- Balanced accountabilities between Government, Industry and TVET Institutions.
- Improving the quality of learning for all whilst balancing the needs of the community as well as Industry.
- Creating an environment which is supportive of the overall learning journey.

Key excerpts ...

“

We need to produce holistic, entrepreneurial and balanced TVET graduates that contribute towards the betterment of our society...but we also need to make sure our instructors and teaching methods are sufficiently equipped.

”

Excerpt from an engagement session with a TVET Institution

“

There should be no difference between blue collar and white collar workers. We need a fluid workforce which is relevant to Industry needs and are constantly upskilling themselves.

”

Excerpt from an interview with an education sector leader

5.3 Aspiration three:

World class quality of learning

Where is Malaysia today?

Individual TVET challenges have to be addressed to bring improvements to the system in its entirety

There is misalignment between curriculum content and Industry workforce demands

The limited collaboration between Industry players and TVET Institutions has caused a disjoint between the TVET curriculum and the skills needed by the potential employers. Additionally TVET students are not being equipped with transferable skills that will allow them to assimilate with the ever-changing working environment. This gives rise to a serious concern as TVET graduates do not meet the demands of their field, and thus end up in a field that is irrelevant to their qualifications. Based on the findings, 31% of TVET graduates work, study or own a business outside their field of study¹.

Good Industry participation but with limited outcomes

Curriculum is largely based on NOSS and MQA at a National level. However, there is limited localised Industry participation with the TVET Institutions to jointly develop curriculum.

Most of the Industry players engaged highlighted misalignment between training provided by TVET Institutions vis-à-vis the needs of the Industry, hence they are reluctant to send their current employees to be trained by TVET Institutions.

Industry players cited that current TVET curriculum does not prepare TVET graduates for the Industry. This has resulted in significant effort by Industry players in retraining the TVET graduates as part of their on-boarding programme.

TVET instructors experience and Industry attachment

The analysis has shown that almost 30% of TVET instructors have less than 1 year of Industry experience and nearly 50% of TVET instructors have less than one (1) month of Industry attachment¹. The current TVET ecosystem does not emphasise on consistent contact between TVET instructors and their occupational field. This limited collaboration between TVET instructors and Industry players have resulted in a gap where Instructors are unable to impart Industry relevant education to students (e.g. work ethics, health and safety methods etc.).

Source: 1. Analysis based on 2018 DSD Self-Audit Survey data

5.3 Aspiration three:

World class quality of learning

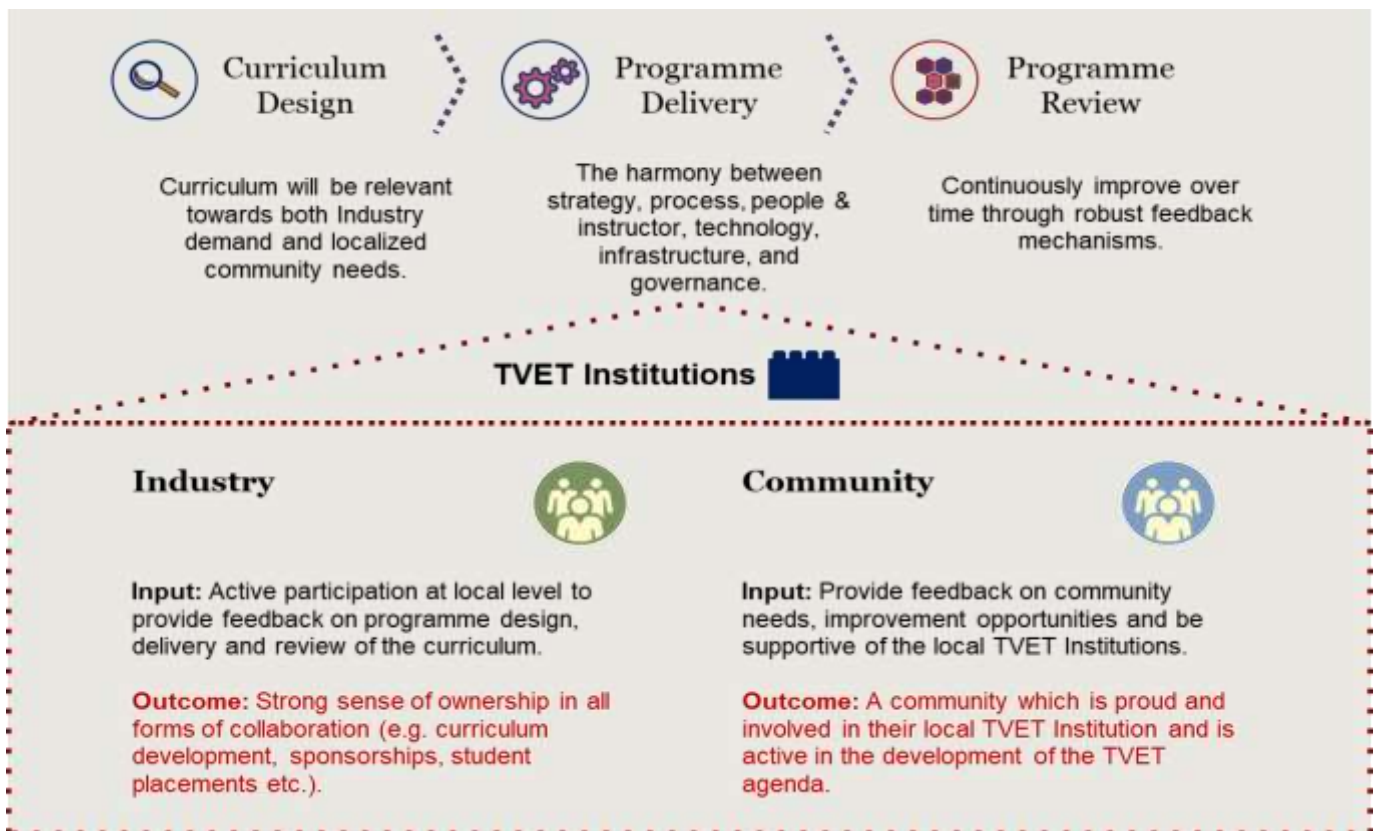
Why does it matter?

Creating an ecosystem which facilitates Industry-led curriculum development, agile and is student-centric

Quality is the hallmark of any education system. Students will choose the best education pathway that is available to them. This aspiration is therefore built upon the need for an education pathway that offers world class quality of learning.

World class quality of learning encompasses every component of an education system. From tailored programmes which ease the integration of graduates into the workforce, to modern infrastructure and facilities for delivery.

The developmental life-cycle of a TVET course which leads to higher learning quality for TVET students is illustrated below. Each step in the developmental cycle matters because it contributes towards TVET becoming a well-respected education pathway in Malaysia.



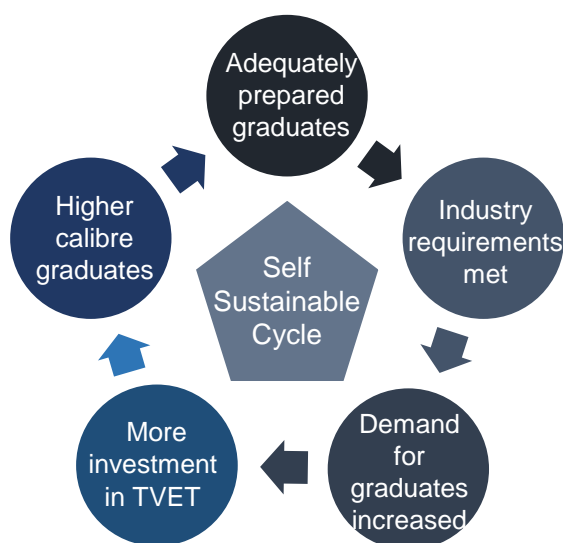
5.3 Aspiration three:

World class quality of learning

What does success look like?

The partnership between Government, Industry, TVET Institutions and community has to be robust to achieve the aspiration

Figure 5.3.1: Self-sustainable cycle



The adjacent diagram illustrates that ensuring a self-sustaining cycle requires a systemic change throughout the TVET landscape. World class quality of learning encompasses every aspect of education, such as excellent qualified instructors, modern up-to-date technology and facilities as well as programmes and syllabus structured to fit the current and future needs of students. It also demands for Instructors to be well equipped in their knowledge and methodology reflective of Industry's changing requirements.

This self-sustaining cycle will result in the following outcomes:

- **Smoother transition into the workplace :** Quality TVET learning provides opportunities to students to acquire skills and qualifications to better prepare them for the Industry workplace.
- **Lifelong learning:** TVET is not just for the youth, but for the employed and unemployed adults which focuses on continuous training and education.
- **Improving employability:** Industry-led curriculum and work-based learning ensure TVET graduates are Industry-ready and equipped with the relevant skills.
- **Foster stronger public-private partnerships:** Production of world-class TVET workforce will help Industry players to justify their returns on investment from collaborating with TVET Institutions, which may potentially lead to higher quantum of monetary or equipment sponsorships.
- **Improving operational efficiency:** Leveraging on modern teaching delivery methods will reduce the cost of delivery and cost per student.

5.3 Aspiration three:

World class quality of learning

What does success look like? (cont'd)

A workforce which inculcates a life-long learning culture, highly employable globally and resilient to change

With the right ecosystem in place, Malaysia is able to produce a balanced workforce which has a strong mastery of technical and transferable skills as well as inculcating a mind-set and behaviour which drives life-long learning.



Transferable Skills

- Able to communicate effectively.
- Have leadership and entrepreneurship spirit.
- Able to think critically.
- Motivated, disciplined and committed to their trade.

Technical Skills

- Develops and applies new skills in day-to-day work to enable individuals to be more productive and efficient.
- Self-aware of ones technical capabilities and improves on them.
- Seeks out new skills and knowledge through digital channels and participates in communities of practice.

Mind-set

- Growth mind-set.
- Confident mind-set.
- Innovative and experimenting mind-set.
- Patriotic spirit.

Behaviours

- Develop proactive behaviour in keeping current with new developments in the Industry.
- Be collaborative in nature and wants to give back to society.

5.3 Aspiration three:

World class quality of learning

Realising the Aspiration

Overview

Objectives

- To enhance and standardise the curriculum design process by implementing a set of standards which are developed closely with Industry as well as accessible to all.
- To enhance the curriculum delivery process by improving the quality of TVET instructors and enabling digital learning.
- To enhance the overall curriculum review mechanism to ensure the right outcomes are met (i.e. Industry satisfaction, graduate employability, student satisfaction etc.).

Initiatives

1. Enhance the curriculum design mechanism

- **Summary:** NOSS and Nationally-recognised Industry standards to be enhanced and used as the basis for developing TVET curriculum in Malaysia. NOSS (inclusive of Industry standards) will be approved by relevant ILBs and enforced through an independent enforcement and inspectorate body.
- **Outcome:** TVET curriculum tailored to Industry needs and driven by ILBs.

2. Enhance the curriculum delivery mechanism

- **Summary:** Improve quality of TVET instructors by upskilling the current instructors, mandating Industry experience, Industry attachment and hiring of Industry experts to bridge the skills gap. Additionally, enabling digital technology in curriculum delivery for non-technical training and other transferable skills.
- **Outcome:** High quality students are produced through capable instructors equipped with the right technical and transferable skills. Additionally, enabling standardised delivery of non-technical training through digital platforms (i.e. MOOC).

3. Enhance the curriculum review mechanism

- **Summary:** Improve the current review mechanism by creating additional feedback channels, implementing an accessible system and ensuring the feedback is addressed.
- **Outcome:** Create a self-improving mechanism by ensuring feedback from all stakeholders are heard and addressed.

5.3 Aspiration three:

World class quality of learning

Realising the Aspiration

Overview (cont'd)

Initiatives (cont'd)

4. **Develop an integrated education management information system**

- **Summary:** Implementing an integrated Education Management Information System (or EMIS) to become a one stop destination to capture, record and analyse all information pertaining to TVET graduates and workforce.
- **Outcome:** Integrated system which is accessible to all stakeholders backed by robust data analytics solutions.

5.3 Aspiration three:

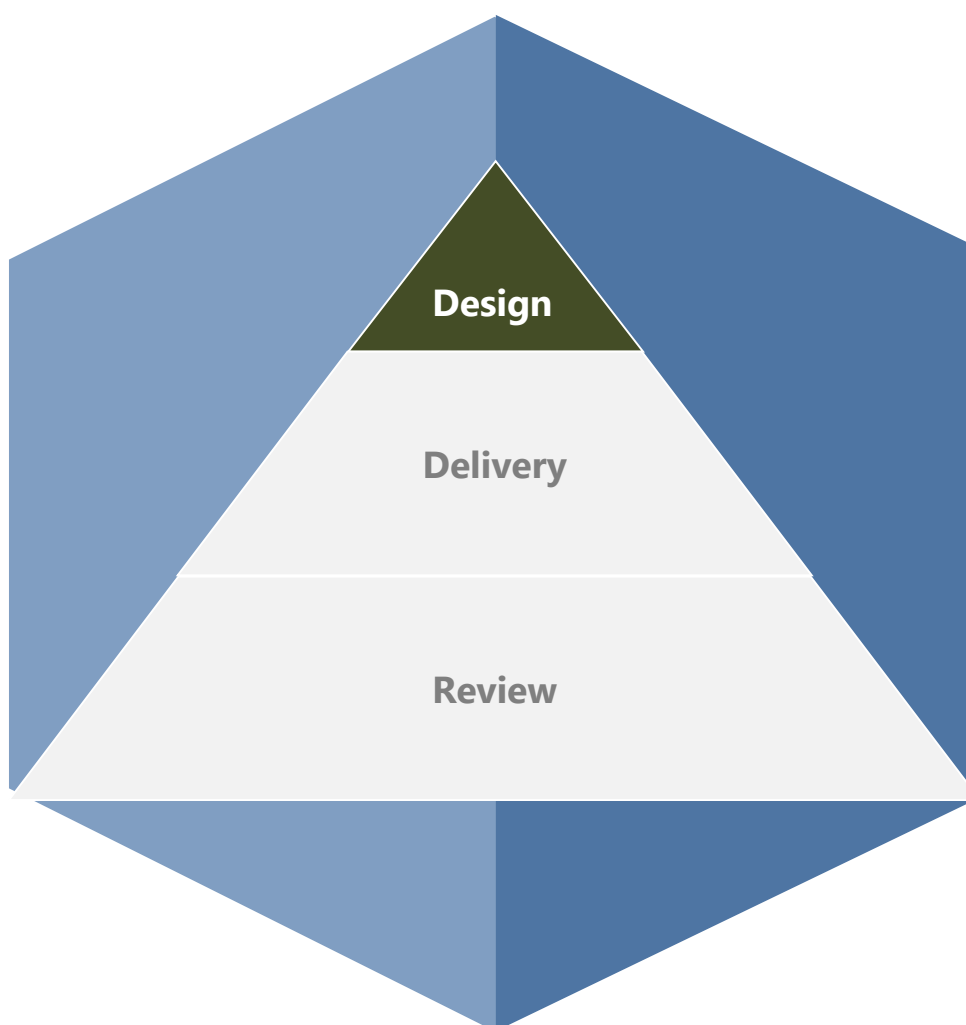
World class quality of learning

Realising the Aspiration

Initiative one: Enhance the curriculum design mechanism

Description of the initiative

This initiative aims to drive stronger Industry participation during the design phase of TVET curriculum development. NOSS (inclusive of Industry standards) will act as the basis for all TVET curriculum development. Additionally, the “Code of Practice for TVET Programme Accreditation” (once it has been finalised and approved) must be adhered to by all TVET Institutions and will be subjected to scrutiny by an independent enforcement and inspectorate body.



5.3 Aspiration three:

World class quality of learning

Realising the Aspiration

Initiative one: Enhance the curriculum design mechanism (cont'd)

Description of the initiative (cont'd)

Enhancement of the current TVET curriculum design framework and process ultimately requires a change in the way we engage and respond to Industry players, Government agencies, students, civil society and communities. This framework must be supported by a robust operating and performance model which helps drive the right behaviours and equip TVET Institutions with the right tools to execute an enhanced and more stringent framework in curriculum design. Additionally, this will also be supported by an independent enforcement and inspectorate body.

DSD and relevant Industry-led bodies will review, update and continue developing the NOSS with a change in the review and approval process. Rapidly changing Industry standards (e.g. IR 4.0) and highly technical Industry standards (e.g. Pharmaceuticals) should be reviewed and updated more frequently to ensure they are in line with the latest Industry trends. NOSS (inclusive of Industry standards) should also be made available online for free, as observed in Australia. Respected members from the Industry and the public will be able to review and provide feedback through the online platform.

Approval of the NOSS (inclusive of Industry standards) will be done by the respective ILBs or a committee which has sufficient representation from the following five (5) groups:

- Industry organisations/associations (i.e. represents SMEs and other entities)
- Large Industry players with an Environmental, Social and Governance (ESG) agenda
- Experts in a particular Industry and skill/service
- Employee representation (i.e. workers union)
- Representatives from civil societies and non-governmental organisations (NGOs) where relevant, especially for the special needs groups

The approval committee should be incentivised through a remediation framework (e.g. payments, tax deductions etc.) agreed by the TVET Council and subsequently reviewed by MoF. The committee members will sit in this committee for a set number of years (e.g. a maximum of four years) and subject to evaluation based on the KPIs outlined (e.g. Industry and student satisfaction). There should be ILBs for each Industry/sector to approve the NOSS and relevant industry standards. Once the standards have been approved by the respective bodies, DSD will then be responsible for publishing the NOSS online to solicit continuous feedback from Industry players and communities.

5.3 Aspiration three:

World class quality of learning

Realising the Aspiration

Initiative one: Enhance the curriculum design mechanism (cont'd)

Description of the initiative (cont'd)

An online platform will be established which contains the NOSS (inclusive of Industry standards). Industry players are invited to provide feedback on the existing standards which will be enhanced and revised. New occupational and Industry standards will be revised first through this process, which will result in a truly Industry-led NOSS (inclusive of Industry standards). The committee members selected by DSD and ILBs would not only focus on the current skills required in the Industry, but also emerging skills in the next 5-10 years.

NOSS (inclusive of Industry standards) will act as the baseline for design of TVET curriculum, adhering to learning outcomes and performance criteria detailed.

TVET Institutions should be given the autonomy to design their own curriculum to meet localised demand, using the curriculum attached to NOSS (inclusive of Industry standards) as a guideline. The Programme Evaluation scores or Star rating can be used as a guideline by TVET agencies to determine which TVET Institutions should be given autonomy to design their own curriculum or adhere to the NOSS (inclusive of Industry standards) curriculum provided.

For example, large TVET Institutions which are high performing (e.g. obtained a 5 Star rating for three years in a row) and has the necessary assets and resources would be given full autonomy to design and develop their own curriculum. However, these TVET Institutions would still need to adhere to the performance criteria and learning outcomes outlined in the NOSS (inclusive of Industry standards). These TVET Institutions will then provide feedback on how to enhance the NOSS (inclusive of Industry standards) and promote continuous improvement of these standards. These TVET Institutions will be subject to enforcement by the independent enforcement and inspectorate body and prove that their graduates demonstrate the knowledge, skills and competencies as set out in these standards.

Low performing TVET Institutions without adequate resources will follow the curriculum attached to NOSS (inclusive of Industry standards) to ease their curriculum development process. All evaluations will be evidence-led, focusing on the ability of students (including current workforce) to demonstrate the necessary knowledge, skills and competencies to perform their job function at the desired level. The independent enforcement and inspectorate body may conduct spot checks and audit to ensure that Industry and student satisfaction are achieved. Ultimately, the goal is to have a multi-channel feedback mechanism (website, call-centres, mail, social media, etc.) to identify areas for improvement and ensure the right outcomes are achieved.

5.3 Aspiration three:

World class quality of learning

Realising the Aspiration

Initiative one: Enhance the curriculum design mechanism (cont'd)

Description of the initiative (cont'd)

Enablers:

- **NOSS to be available online for free and an online platform should be set-up:** This is to allow for the public to provide feedback on the NOSS (inclusive of Industry standards) after the approval from either ILBs or a similar body which is driven by Industry. Additionally, professional bodies, Industry players, Government entities and professionals have to be invited to assess and provide feedback on the NOSS (inclusive of Industry standards) being created/updated through a registration system. The number of participants to assess and provide feedback on the NOSS (inclusive of Industry standards) will be determined whether its Industry specific occupation (e.g. 20% of Industry players to be invited online) or general occupations (e.g. invite at least 50 professionals to provide feedback and assess). The assessment will be further deliberated in the standard approval process laid out in the approval SOP.
- **NOSS to be updated based on Industry and public feedback:** After making these standards available online, Industry players and the public will be notified to provide feedback on the current NOSS (inclusive of Industry standards). Through the feedback received, key standards will have to be reviewed and enhanced.
- **Industry satisfaction and student satisfaction evaluation as a key KPI:** Industry satisfaction has to be a KPI for all TVET Institutions. Performance evaluation will focus on obtaining sufficient feedback from employers of their TVET graduates stating that the student is able to perform their tasks to the level which is stated in the NOSS (inclusive of Industry standards). The results of this evaluation can be audited by the independent enforcement and inspectorate body. DSD will have to measure Industry satisfaction through surveys or feedback from ILBs, associations and through their feedback channels. Based on frequently received feedback on TVET Institutions the independent enforcement and inspectorate body may take corrective actions.
- **Single performance rating system:** All the TVET rating systems in Malaysia should be consolidated into a single performance rating system (e.g. consolidating Star rating, Polyrate etc.). The new performance rating system should be evidence-led and should focus on the student outcomes (e.g. employability, salary), Industry satisfaction and lastly compliance to TVET Institution and programme standards in place (e.g. code of practice for TVET programme accreditation). Programmes should also follow the Resource Optimisation Implementation Toolkit (ROIT) in evaluating their programmes.

5.3 Aspiration three:

World class quality of learning

Realising the Aspiration

Initiative one: Enhance the curriculum design mechanism (cont'd)

Description of the initiative (cont'd)

- **High performing TVET Institutions will be able to award their own certification with their own brand but accredited by DSD:** High performing TVET Institutions (e.g. CoEs or TVET Institutions which for the past 3 years have a STAR rating of 5) could potentially be allowed to issue their own certification. However, they would still need to ensure that the NOSS (inclusive of Industry standards) is being adhered to and students outcomes are met.
- **ILBs or Committee responsible for approving NOSS to be incentivised:** ILBs should be incentivised to be the approver for NOSS (inclusive of Industry standards) and ultimately responsible for the quality of development. Their incentives could potentially be tied to the number of standards they maintain and update as well as Industry satisfaction towards the skills and standards produced.
- **Independent enforcement and inspectorate body** (refer to Aspiration 1 Initiative 2) – Adequate authority should be given to the Independent enforcement and inspectorate body for them to audit TVET Institutions, programmes and curriculum to identify the key issues and challenges.
- **National Dual Training System (NDTS) to be expanded:** NDTS should be promoted through ILBs, TVET Institutions and regional development authorities. Having greater participation in the NDTS programme should be part of the KPIs of large TVET Institutions with the means to promote the NDTS agenda. Subsequently, ILBs (e.g. CIDB) and regional authorities (e.g. NCIA, IRDA) should be mandated to help local TVET Institutions partner with Industry players to conduct NDTS. This could be further facilitated by TVET Institutions through the Integrated education management system (refer to Aspiration 3: Initiative 4) where a database of NDTS training centres should be created to enable Industry to get a suitable training partner as their counterpart and TVET Institutions. The NDTS programme could be enhanced to include the key features of the Meister programme. NDTS programmes and work-based learning host companies should be evaluated from both students and instructors alike based on the intended learning outcomes.

5.3 Aspiration three:

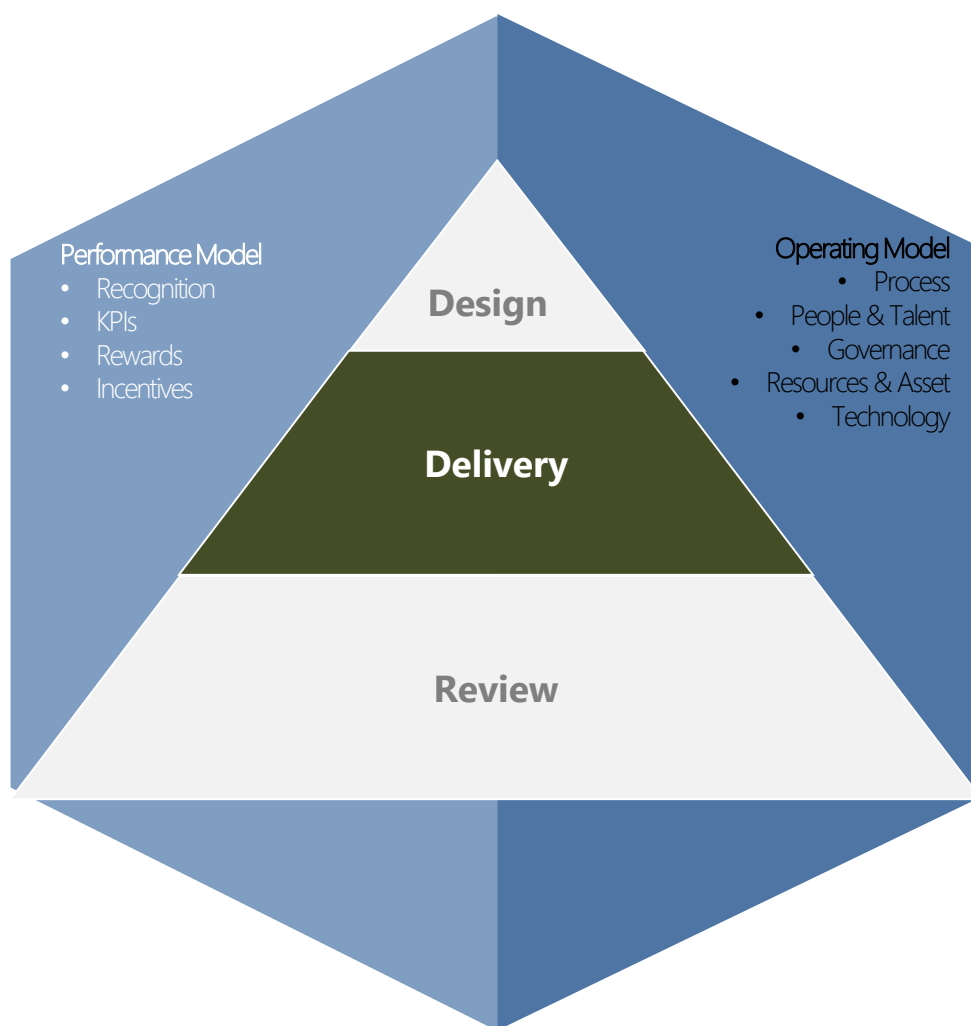
World class quality of learning

Realising the Aspiration

Initiative two: Enhance the curriculum delivery mechanism

Description of the initiative

This initiative aims to look into the two (2) most important components in effective delivery of TVET education: instructors and on-the-ground Institution support. This would mean looking into enhancing the current pool of instructors, retaining talented and high performing instructors as well as attracting skilled professionals into becoming instructors to close the skills gap. In addition, TVET Institutions should be equipped with modern pedagogy methods to facilitate efficient and effective delivery mechanisms.



5.3 Aspiration three:

World class quality of learning

Realising the Aspiration

Initiative two: Enhance the curriculum delivery mechanism (cont'd)

Description of the initiative (cont'd)

The components of this initiative are further broken down in the following paragraphs:

Enhancing quality of TVET instructors

- Mandatory minimum training hours, Industry attachment and Industry experience is required to improve the quality of Instructors so that they can educate students to be Industry ready. To implement this public TVET Institutions' KPIs should be revised to include Industry experience and industry attachment as well as minimum training hours. (e.g. All TVET instructors should have a minimum of one (1) to three (3) month Industry attachment every 2 to 3 years, total of 3-5 years of working experience ideally as well as 15 hours of training hours a year). To ensure high quality industry attachment outcomes, TVET Instructors should evaluate the host company.
- The framework should include hiring Industry players and experienced TVET Instructors from other TVET Institutions on a part time basis. This will entice relevant Industry professionals and experienced individuals to enter into public TVET Institutions. This will also help bridge the knowledge gap between Industry and instructors as well as help students find better opportunities to find employment through networking opportunities. Additionally, effective knowledge transfer can take place between these experienced individuals and new instructors. This must be enabled through a transparent resource management system.
- TVET Instructors performance rating should include - student, and Industry (in cases of Industry attachment) feedback. This will create a competitive environment which will drive the need for better outcomes from being more student-centric (through good pedagogical approaches) to being more Industry centric (hard skills and soft skills).
- Collaborate with local and international TVET Institutions for mobility and upskilling programmes. This will allow instructors to learn good practices from international TVET Institutions as well as be informed of global trends and practices.

5.3 Aspiration three:

World class quality of learning

Realising the Aspiration

Initiative two: Enhance the curriculum delivery mechanism (cont'd)

Description of the initiative (cont'd)

The components of this initiative are further broken down in the following paragraphs:

Enhancing quality of TVET instructors (cont'd)

- CIAST to be empowered to push training based on the instructor capability gap analysis on e-Profiling. Through this, CIAST will be able to upskill these instructors based on the Industry feedback. To ensure that the Instructors are trained on a regular basis based on the feedback provided by Industry and students on TVET instructors. Additionally, TVET Institutions/agencies should coordinate with CIAST on training programs and ensure that Instructors attend those programs. This will also be one of the audit parameters which will be enforced by the Independent enforcement and inspectorate body. CIAST will also have to work collaboratively with TVET Institutions in delivering training as well as identifying key instructors for train-the-trainer (TTT) initiatives. CIAST will be responsible for the training and upskilling of all public TVET instructors.



5.3 Aspiration three:

World class quality of learning

Case study : Chisolm Professional Educator College



“The Professional Educator College in UK seeks to improve instructor capabilities to ensure best possible experience for students and Industry”

Context

Underpinning the Professional Educator College’s vision is the Professional Educator Framework, that informs the focus and operations of the College which builds on the following principles:

- Addresses the development needs of all educators across senior secondary school, TVET and higher education sectors.
- Centred on identifying the needs of diverse student cohorts, responsive learning and assessment programmes and positive student learning experience.
- Building capabilities of instructors with attention to the needs of the 21st century instructors.
- Offering strong value proposition to attract instructors to work at Chisolm.
- Encouraging long-term career development.

Key capability statements



Professional Practice



Design



Assess



Facilitate



Engage



Support



Review

Embedded in the Professional Educator Framework are key capability statements. Capability statements are used to determine each instructor’s individual capability profile via the Educator Profiling Tool. The tool identifies gaps in the instructors’ current and emerging capabilities against the ideals for each capability statement.

5.3 Aspiration three:

World class quality of learning

Realising the Aspiration

Initiative two: Enhance the curriculum delivery mechanism (cont'd)

Description of the initiative (cont'd)

Impart training using digital channels

Deliver non-technical training such as health and safety and other transferable skills through digital channels such as online resources, e-learning channels, MoEs MOOC and INTAN's training platform could also be utilised for this purpose.

Centralised Knowledge Management to drive collaboration

Knowledge assets and good practices should be documented and shared across the TVET Institutions through a centralised system (i.e. Integrated Education Management System). This will include design processes, delivery mechanisms, methodologies, frameworks, tools, evaluation sheets, and other practices within these good TVET Institutions. There must be a standardised template to create various knowledge assets (e.g. SOPs, test sheets, etc.) which can be effectively shared across all regions.

Performance Model

Develop an enhanced rewards and recognition framework to enable retention of high-performing instructors and the hiring of external professionals which will close the capability gap and further enhance the quality of instructors. Additionally there should be a reward for TVET Institutions which are able to deliver programmes in an efficient manner (e.g. >90% asset utilisation, able to lease out additional capacity to obtain revenue etc.).

Operating Model

- Enabling technology to deliver non-technical training online through MOOC
- Enabling technology to monitor and communicate TVET Institution performance
- Establish standardised processes and standards to be applied across all TVET Institutions
- Lean governance model for quick escalation and resolution

5.3 Aspiration three:

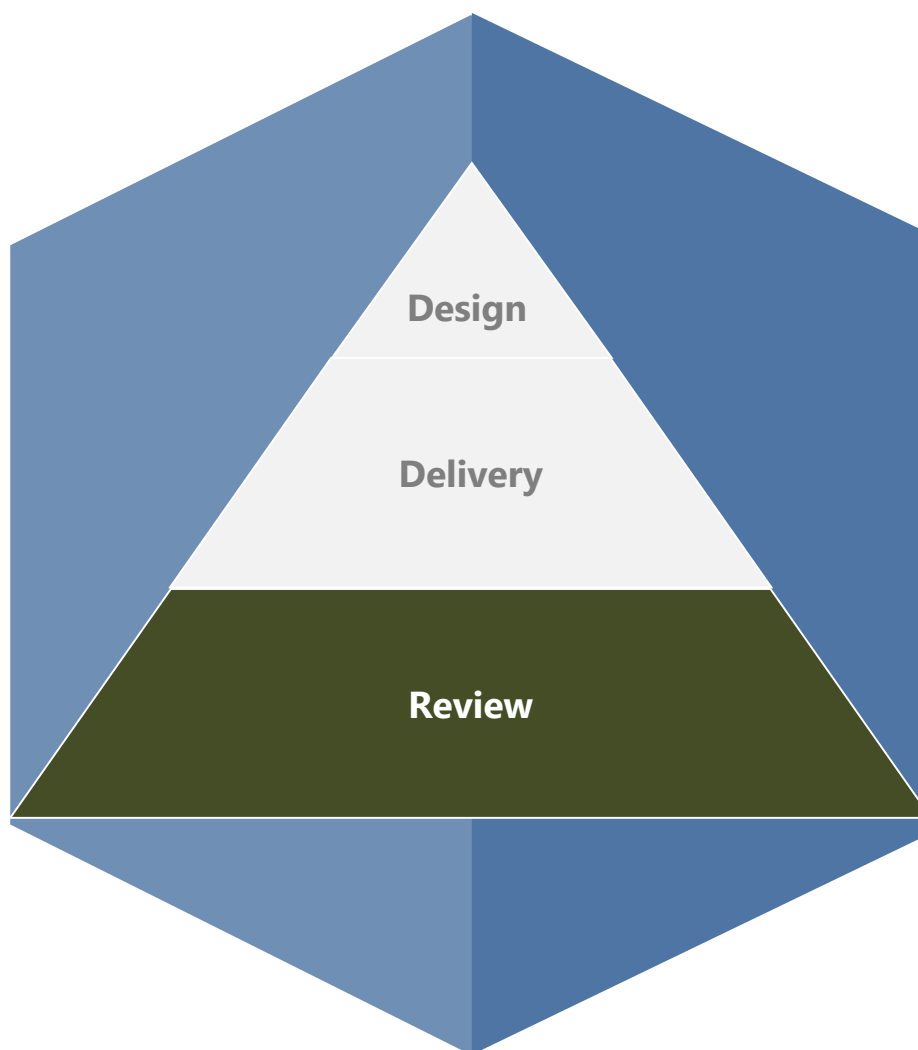
World class quality of learning

Realising the Aspiration

Initiative three: Enhance the curriculum review mechanism

Description of the initiative

This initiative aims to improve the current review mechanism. There is a need for increased transparency between TVET Institutions, students, graduates, Industry players and the public on the quality of TVET curriculum and graduates. The review mechanism must firstly be accessible easily through multiple channels (i.e. online and offline) as well as driving accountability to act upon the feedback received. This could potentially be linked to funding or other performance measurement systems (i.e.KPIs).



5.3 Aspiration three:

World class quality of learning

Realising the Aspiration

Initiative three: Enhance the curriculum review mechanism (cont'd)

Description of the initiative (cont'd)

The components of this initiative are further broken down in the following paragraphs:

Including multiple stakeholders in the review mechanism

Create robust feedback mechanisms which captures student feedback, graduate feedback, and Industry feedback anonymously on TVET Institutions performance. This feedback mechanism should be utilised to also analyse and develop insights which will facilitate Ministries, agencies, and TVET Institutions to develop remediation/improvement plans. This feedback mechanism must be tied back to the rewards and performance measurement systems to drive the right behaviours of self-improvement and creating a culture of student and Industry centricity amongst TVET Institutions.

Develop a technology based platform (i.e. Education Management Information System (EMIS) – refer to Aspiration 3 Initiative 4)

A technology based feedback mechanism will assist in gathering feedback online, anonymously and from anywhere in Malaysia to provide accessibility. Using technology will ensure that all stakeholders i.e. Industry players, current students, graduates and instructors can provide feedback at their ease and increase the efficiency of TVET Institutions.

Incorporating the feedback for further improvement

Agencies and TVET Institutions need to incorporate constructive feedback provided in the review phase for the design and deliver stage. This will ensure that the TVET Institutions are constantly improving to meet the Nation's objectives. This feedback can then be incorporated for performance based funding recommendations to ensure that the better performing Institutions are rewarded accordingly, linking performance of the TVET Institutions to their funding.

5.3 Aspiration three:

World class quality of learning

Realising the Aspiration

Initiative four: Develop an integrated education management information system

Description of the initiative

An Integrated Education Management Information System (or EMIS) will be a one stop destination to capture, record and analyse all information pertaining to TVET graduates and workforce. EMIS will comprise the following functions:

A dedicated website / portal serving students and Industry players

This website/ portal will assist all students/graduates and workforce to obtain information on education pathways and occupational pathways. This will include information such as salary ranges, benefits, employability, future trends and other relevant information for anyone to make an informed decision about their future. Clear and transparent information will assist in changing TVET perspectives and allows the public to gain an in-depth view on the development of TVET and the future of TVET.

The website / portal will also assist the Industry players to understand the various TVET Institutions and the programmes offered in their region, along with their rankings and the number of students enrolled. This will assist the Industry players in approaching TVET Institutions for apprenticeship programmes (e.g. NDTs programmes), running modular courses and for hiring graduates. Industry players can leverage on this information to also perform resource / asset sharing along with TVET Institutions.

A portal to capture TVET Institution performance

Based on the enhanced curriculum review framework and mechanism all TVET Institutions performance on various parameters and their rankings will be captured in EMIS and will be made transparent to the public. This will assist aspiring Students to chose the best of the TVET Institutions based on their performance as it will capture parameters such as overall ranking, average graduate salary per programme, Instructors experience etc. Additionally it will assist Industry players to chose the right TVET Institutions to hire their workforce.

A repository to capture Industry needs

The EMIS will also be a portal where the Industry's requirements could be captured. Industry could state their requirements in terms of future workforce required along with the skills. This kind of information will assist the TVET agencies to address the future requirements by allocating the students across the TVET Institutions. This repository could be combined with market databases, critical occupation list, and other Industry occupational information (e.g. provided by MIDA, MITI or other regional authorities).

5.3 Aspiration three:

World class quality of learning

Realising the Aspiration

Initiative four: Develop an integrated education management information system (cont'd)

Description of the initiative (cont'd)

Capturing financial and operational information

This database will also be used to store operational and financial data which can be audited by the dedicated team (i.e. Independent Enforcement and Inspectorate Body (refer to Aspiration 1 Initiative 2)).

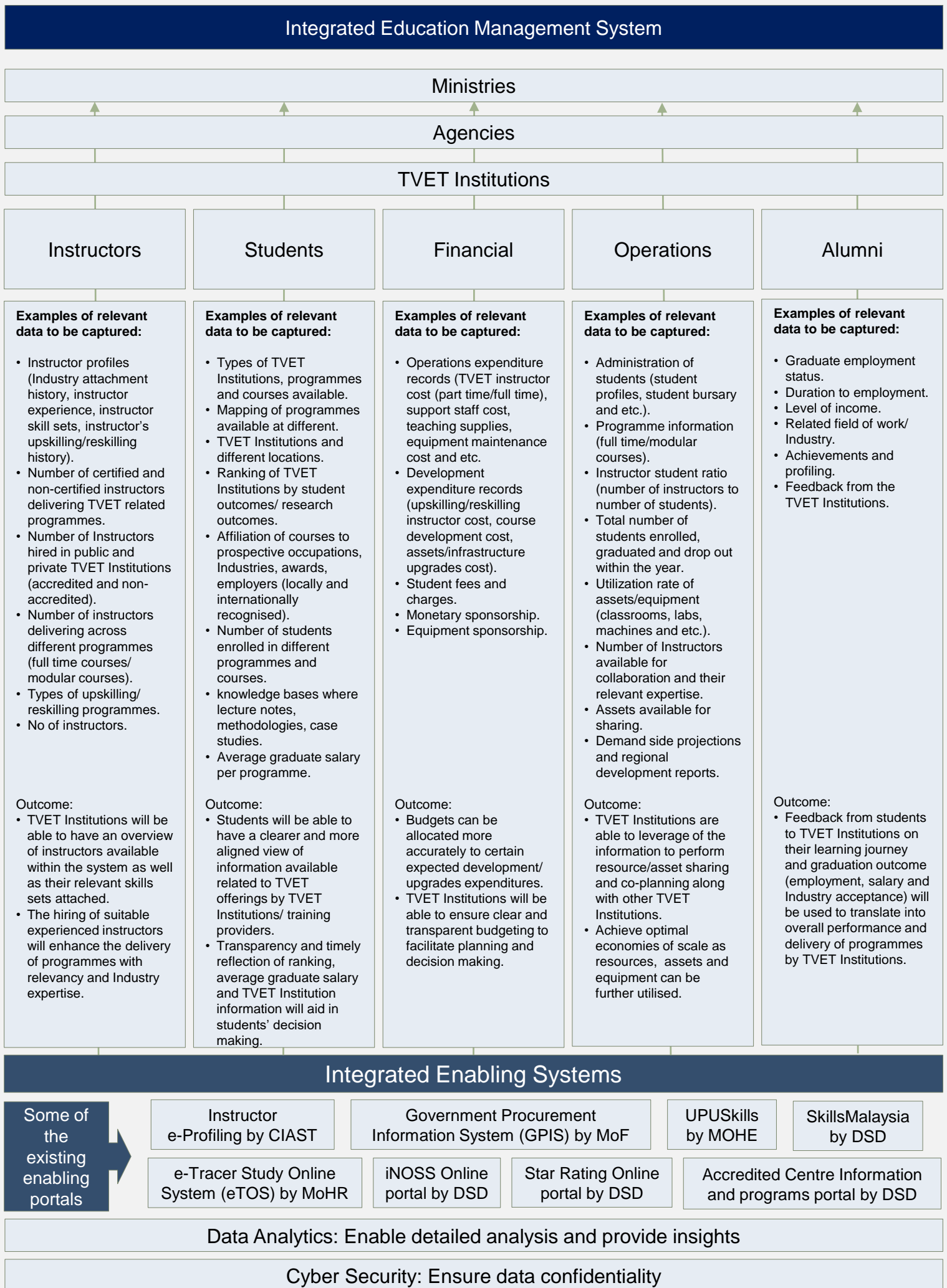
The integrated data management system should be implemented by stages, the two options are:

1. Leveraging on an existing system and expand its function and harmonising with other existing systems by stages.
2. Implementing with a small group of users and gradually expand by including users from different groups.

Note: Please refer to the next page for a sample system architecture design.



Sample integrated education management system architecture



5.4

***Aspiration 4:
Harmonised and seamless
learning pathways***



5.4 Aspiration four:

Harmonised and seamless learning pathways

Overview

Creating highly-permeable learning pathways, allowing students to seamlessly switch between general academic and vocational streams



Harmonised and seamless dual-pathway between academic and vocational streams creates stability in the TVET ecosystem as well as drives recognition amongst students, parents and the Industry.



Globally, one of the key reasons that TVET often appears unattractive to students and learners in the past was its isolation from the general academic education stream. Similarly in Malaysia, TVET is widely perceived by the public (i.e. employers, parents and students) to be catered for the less academically-inclined students.

In Malaysia, there are two (2) accreditation bodies responsible to assure quality of TVET programmes. The DSD performs accreditation for the skills sector while MQA performs accreditation for the vocational and technical sectors as well as the academic sector. Based on findings from the Eleventh Malaysia Plan Strategy Paper nine (9), TVET diploma graduates accredited by DSD have limited access to pursue further studies at higher education Institutions while TVET graduates accredited by MQA have wider access to pursue higher education.

Many countries with matured TVET ecosystems (e.g. Singapore, Switzerland and Germany) have taken proactive steps to improve the permeability between TVET education and higher education to open up more options for students, catering to diverse personal interests and Industry needs. Policymakers in these countries introduced different forms of hybridization, further blurring the segmentation between TVET and general academic education streams.

As one of the key focus in the Malaysia Education Blueprint 2015-2025, the “New Academia” system will shift from focusing on university education as the only pathway of choice to placing an equal value on both university education and TVET pathways.

5.4 Aspiration four:

Harmonised and seamless learning pathways

Overview (cont'd)

Objectives and principles in developing the strategies and initiatives to achieve the aspiration

Objectives

- To promote mobility of students between academic and TVET sectors
- To enhance attractiveness of TVET pathways to be equally valued and cultivated as the general academic stream
- To promote a culture of life-long learning
- To widen the target market for TVET and higher education Institutions via improved access

Principles

The following principles were adhered to when designing the strategies:

- Social equity and cohesion
- Students and learners mobility. Enable seamless permeability between the TVET and academic streams
- Supports lifelong learning
- Flexible education and training system

Key excerpts ...



We need to inject fluidity in the current education system...recognising more talents from the academic and TVET pool. Providing flexibility in the streaming system and introducing new pathways help students to embrace their interests and talents more confidently.



Excerpt from interviews with leading higher education providers



Malaysian Higher Learning Institutions will need to increase recognition of different types of talent excellence and support different pathways to success (i.e. TVET and academic).



Excerpt from Malaysia Education Blueprint 2015-2025 (Higher Education)

5.4 Aspiration four:

Harmonised and seamless learning pathways

Where is Malaysia today?

TVET graduates face varying quality assurance and limited mobility across the MQF

Large variance in quality of TVET graduates produced

The accreditation and quality assurance of TVET programmes fall under the purview of two (2) distinct agencies, namely MQA and DSD, that are under two (2) separate Ministries. The existence of two (2) different accrediting bodies with different quality assurance processes led to concerns about the variance in quality of TVET graduates produced.

Industry players also highlighted that quality of TVET graduates from similar programmes may vary drastically by TVET Institutions. This has caused confusion among Industry players and employers on the true “value” of TVET qualifications. Therefore, they prefer to hire and pay a premium for TVET graduates from recurring TVET Institutions that they had good past experience with.

Industry players are also more willing to pay a premium for certifications with international recognition (e.g. Huawei and Samsung) due to the reliability in quality of TVET graduates with specialised skillsets. Modular courses offered by Industry players were also not recognised by DSD and MQA, resulting in limited credit transfer arrangements into TVET programmes.

TVET students face disjointed learning pathways and limited access to higher education

TVET students face difficulties transferring credits across TVET Institutions, whereby only selected qualifications are recognised for students to enter higher education. This has resulted in limited access for TVET students to enter higher education, exacerbating the negative stigma of TVET as a non-flexible stream.

Based on stakeholder engagements, the current bottleneck in the disjointed learning pathway between TVET and higher education primarily lies in the SPM requirement in some higher education Institutions.



5.4 Aspiration four:

Harmonised and seamless learning pathways

Why does it matter?

Seamless learning pathways supports lifelong learning to meet growing economic demands and rapid technological changes

Why a seamless learning pathway for TVET matters

In a constantly changing world of work, skill requirements are driven by rapid technological change and megatrends. Technological advancements have increased demand for higher level technical skills, including at tertiary level. This requires employees entering the labour market to have lifelong career and cognitive competencies (e.g. problem solving) to handle different jobs and to keep learning. To sustain a lifelong career option, students graduating from TVET Institutions are sometimes expected to attain tertiary education as well.

Dual pathways strengthen TVET's effectiveness

A seamless pathway which allows students to move between vocational and academic streams creates a win-win situation for all parties. Some of the benefits of dual pathways are as follows:

Increases attractiveness - As students see opportunities to move from one pathway to another, it increases their career options making the courses more attractive.

Increases target audience - In the case of dual pathways, Institutions have a wider target audience (i.e. from both academic and TVET Institutions). Hence, they are able to optimise their usage of resources to cater to a larger target audience.

Attracts brighter students - Increased attractiveness of TVET offerings attracts brighter students thus removing the taboo of second-tier Institutions.

Promotes life long learning - Ensures students are engaged for longer durations to promote life long learning.



5.4 Aspiration four:

Harmonised and seamless learning pathways

What does success look like?

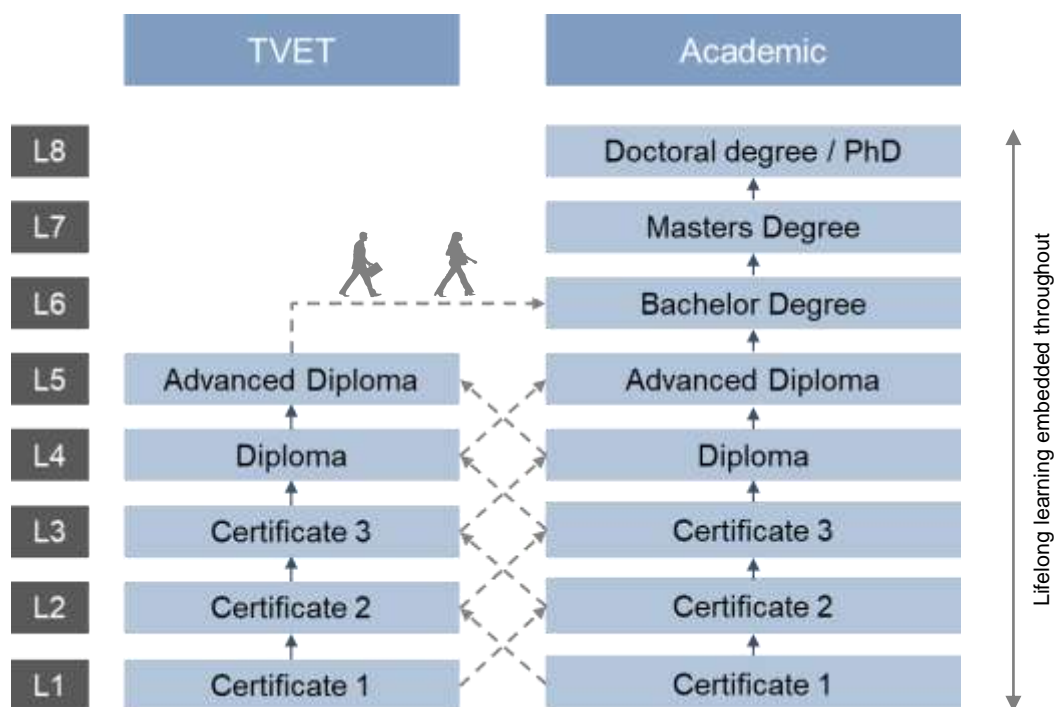
A TVET system which is fully permeable and interconnected to the Country's overall education system

The permeability of Malaysia's TVET system should enable students to change education preferences by providing seamless progression routes across every education level and type. This is observed in countries with mature TVET systems (e.g. Singapore, Switzerland and Germany), where TVET is fully embedded in the country's overall education system.

Potential benefits to be generated from a harmonised and seamless learning pathway:

1. TVET graduates have wider options to either participate in the labour market post-diploma or to further their studies into higher education
2. Students are able to progress through clear linkages across qualifications and levels (horizontally and vertically)
3. Facilitates collaboration across Institutions

Figure 5.4.1: Illustrative ideal education pathway



Note: Equivalency of qualifications for TVET and Academic sectors are based on MQF version 2.0

Legend:

- > Current pathways - - -> Possible pathways

5.4 Aspiration four:

Harmonised and seamless learning pathways

Case study : Harmonised pathway in Switzerland



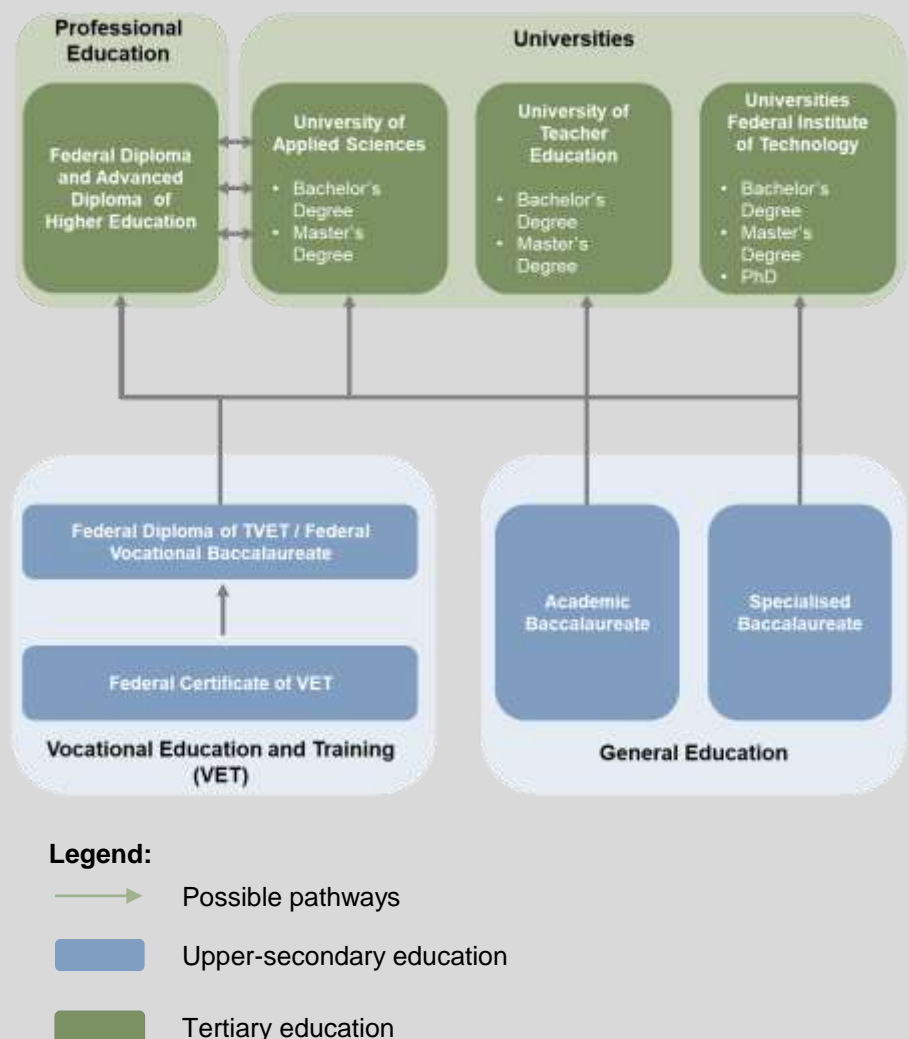
“No education programme without access to further education” or put more simply, “no dead ends”.

Context

In Switzerland, at the age of 15 or 16, students can choose between the general education and TVET pathways. Two (2) further options exist within each pathway; the academic baccalaureate and special baccalaureate in general education and the two (2) year certificate or three (3) to four (4) year Federal TVET Diploma within TVET.

The Federal TVET Diploma can be combined with the Federal Vocational Baccalaureate for strong students who want to continue their education at a University of Applied Science, transitioning between TVET and higher education seamlessly.

Figure 5.4.2: Illustrative pathway for TVET in Switzerland



5.4 Aspiration four:

Harmonised and seamless learning pathways

Realising the Aspiration

Overview

Objectives

- To support lifelong learning for learners to progress through the MQF via transferability of credits for skills competency certifications and recognition of prior learning for workers.
- To improve mobility of students and learners within the MQF via progression or inter-relation between qualifications.

Initiatives

1. Develop a unified standard for TVET programme accreditation

- Summary: A common standard would need to be adhered to for all TVET programmes across DSD and MQA for MQF levels 1 to 5.
- Outcome: A single quality assurance system and mechanism for TVET.

2. Improve articulation between TVET and higher education, including developing a credit transfer framework

- Summary: Improve access of TVET students into higher education and recognise prior learning arrangements in TVET programmes into academic / higher education programmes via a comprehensive credit transfer framework.
- Outcome: Facilitate accessibility of TVET students to pursue further studies at Higher Education Institutions.

3. Expand TVET qualifications to include MQF levels 6 to 8

- Summary: Expand the recognition of TVET qualifications under the MQF to include level 6 (Bachelor's Degree, Graduate Certificate / Diploma), level 7 (Masters Degree, Postgraduate Certificate / Diploma) and level 8 (Doctoral Degree).
- Outcome: Improved articulation for students to progress through the MQF up to level 8 under the TVET sector. TVET students are also encouraged to maintain their efforts in following their learning pathway, resulting in lower drop-out rates.

5.4 Aspiration four:

Harmonised and seamless learning pathways

Realising the Aspiration

Initiative one: Develop a unified standard for TVET programme accreditation

Description of the initiative

A unified set of standards for TVET programme accreditation will be the main guiding document in the implementation of a single quality assurance approach to TVET.

To date, the absence of a single unified standard for TVET programme accreditation led to variations in quality assurance of TVET programmes in Malaysia. TVET Institutions develop their respective TVET curriculum and programmes based on DSD and MQA's existing standards. Programmes accredited by DSD follow standards outlined in "Kod Amalan Pentauliahahan Program Kemahiran" (KAPPK) whereas programmes accredited by MQA follow standards outlined in the "Code of Practice for Programme Accreditation" (COPPA). These 2 documents outline different requirements for TVET programme accreditation (e.g. Curriculum design for DSD accredited programmes would need to be based on NOSS (inclusive of Industry standards) but not for MQA accredited programmes).

Hence, a unified set of standards would need to be adhered to for all TVET programme accreditation across DSD and MQA. Some selected key parameters (not exhaustive) to be included in the standards for TVET programmes are as follows:

- Definition and scope of TVET (e.g. proportion of practical and theory components in TVET programmes).
- Programme design, development and delivery (e.g. programme objectives, learning outcomes, programme content, teaching methods).
- Student entry requirements for TVET programmes (e.g. age, qualifications, reading, writing and speaking skills).
- Assessment of student learning for awarding of qualifications (e.g. methods of assessment, assessment criteria, assessors).
- Instructor requirements (e.g. qualifications of instructors, Industry attachment duration, student : teacher ratio).
- Programme review and monitoring (e.g. review mechanisms, methods, parameters)

This set of standards would need to be socialised with TVET Institutions, agencies, Industry players, professional bodies (e.g. MBOT) and Industry associations to obtain their buy-in and feedback.

Note: At the time of submission of this Report, based on our stakeholder engagements with DSD and MQA, a unified set of standards for TVET programme accreditation is currently underway and pending for approval from relevant authorities.

5.4 Aspiration four:

Harmonised and seamless learning pathways

Realising the Aspiration

Initiative two: Improve articulation between TVET and higher education, including developing a credit transfer framework

Description of the initiative

Negative stigma towards TVET stems from the current practice where less academically-inclined students are sent to TVET Institutions with limited option to return to the academic stream. Changing this perception requires improved articulation between TVET and higher education and increased mobility within the MQF via a credit transfer system between.

Improving articulation between TVET and higher education

In the context of TVET, articulation is the process whereby students are able to progress from a TVET qualification to the study of a higher level qualification via admission or credit transfer. At present, TVET programmes (mainly those accredited by DSD) are not sufficiently recognised by higher education Institutions, resulting in limited access for TVET graduates to further their studies in higher education Institutions. Based on stakeholder engagements, Diploma and Advanced Diploma TVET graduates are perceived to be less academically-inclined and face difficulties coping with Bachelor's Degree level programmes offered in higher education Institutions. As a result of the academic gap, TVET graduates face limited access to higher education Institutions.

One way to reduce the academic gap is via bridging programmes. TVET students can take up specific subjects or courses to bridge gaps between their existing knowledge with what is required by higher education Institutions. This will help prepare TVET students who wish to further their studies and allow them to successfully complete a Bachelor's Degree programme. TVET Institutions would need to work closely with higher education Institutions to develop these bridging programmes and better prepare their existing students for Bachelor's Degree programmes by leveraging on the network of Hub Institutions (refer to Aspiration 2 Initiative 1).

Furthermore, SPM requirement is also perceived as a bottleneck in the current TVET ecosystem. Some TVET students do not have the relevant SPM qualification which is typically required in most higher education Institutions, thus limiting their access to higher education. Ministries overseeing public higher education Institutions (e.g. Ministry of Education) would need to look into the need for TVET students to have the SPM qualification in order to access higher education. Clear criteria and guidelines will need to be developed between TVET Institutions and higher education Institutions to bridge the gap in the SPM requirement and allow alternative access of TVET students into higher education (e.g. GPA / CGPA requirements, APEL assessments, entrance examinations etc). These guidelines would then need to be clearly communicated to students and parents so that they are made aware of the available pathways.

5.4 Aspiration four:

Harmonised and seamless learning pathways

Realising the Aspiration

Initiative two: Improve articulation between TVET and higher education, including developing a credit transfer framework (cont'd)

Description of the initiative (cont'd)

Credit transfer arrangements between TVET and higher education

A comprehensive credit transfer framework between TVET and the academic sector provides a way of measuring and comparing learning outcomes (resulting from a course, training or placement) and transferring credits towards a new qualification in the same or different education and training provider across the Nation. Credits may be accumulated with the view of obtaining qualifications decided by the qualification-awarding Institution.

Transfer of credits should include:

- Vertical movements (i.e. moving to a higher skill level programme)
- Horizontal and cross-sector movements (i.e. moving from TVET sector to academic sector and vice versa)

This transfer can only take place if the awarding Institution recognises the credit and associated learning outcomes obtained by students. Various credit transfer guidelines and mechanisms have been developed by MQA, namely “Advisory Note No. 4/2017: Credit Transfers – Towards Richer and Diverse Student Learning Experiences”, “Credit Transfer for MOOC” and “*Garis Panduan Amalan Baik: APEL (C)*”.

However, the practice of credit transfers among TVET Institutions and higher education providers are relatively low as it is not actively promoted and incentivised. Credit transfers are still viewed by TVET Institutions and higher education providers as time-consuming. To promote this practice, it is proposed that:

- **Formal credit transfer arrangements** to be established between TVET Institutions and academic / higher education providers to recognise prior learning arrangements from TVET programmes. Representatives from each Institution compare their respective course curricula or programmes and award credits accordingly. Their consensus is then formalised in a written agreement and is regularly updated based on a mutual schedule.

5.4 Aspiration four:

Harmonised and seamless learning pathways

Realising the Aspiration

Initiative two: Improve articulation between TVET and higher education, including developing a credit transfer framework (cont'd)

Description of the initiative (cont'd)

Credit transfer arrangements between TVET and higher education (cont'd)

- **A comprehensive credit transfer guide** that lists established TVET course-to-course or block transfer credit arrangements should be published online, leveraging on the Integrated Education Management Information System (refer to Aspiration 3 Initiative 4). The purpose of the guide is to enable TVET students to research on the existing credit transfer agreements before enrolling into TVET Institutions and their available learning pathways. This will incentivise TVET Institutions to align their existing curriculum to higher education and form close collaboration in order to attract students. This database will be updated by DSD and MQA.
- **Hub Institutions to promote common credit transfer framework** across the Spoke Institutions for smoother regional mobility of students. Once a robust credit transfer system / framework has been established between Hub Institutions and higher education Institutions, Spoke Institutions offering similar TVET programmes can leverage on the framework to facilitate credit transfers with higher education Institutions.
- **Hubs Institutions** can also connect Spoke TVET Institutions with its network of academic / higher education providers and Industry players and **facilitate the signing of memorandums of understanding (MOUs)**.
- **Credit transfer framework to incorporate Industry and professional body certifications**, facilitated by the **Hub Institutions**. Hub Institutions to review Industry and professional body certifications in their respective regions and determine which certifications are comparable and applicable for credit transfer to Spoke Institutions. This practice will promote the lifelong learning culture in the existing workforce and students.

5.4 Aspiration four:

Harmonised and seamless learning pathways

Realising the Aspiration

Initiative three: Expand TVET qualifications to include MQF levels 6 to 8

Description of the initiative

Negative stigma towards TVET stems from the current practice where less academically-inclined This initiative aims to expand the recognition of TVET qualifications under the Malaysian Qualifications Framework (MQF) to levels 6 (Bachelor's Degree, Graduate Certificate / Diploma), level 7 (Masters Degree , Postgraduate Certificate / Diploma) and level 8 (Doctoral Degree) focusing on innovation and problem-solving.

At present, the 2nd Edition of MQF (MQF 2.0) recognises TVET qualifications up to level 5 (Advanced Diploma). Furthermore, standards for TVET programme accreditation (which is currently being jointly developed by DSD and MQA) only recognises TVET qualifications up to level 5 (Advanced Diploma).

However, in practice, we note that some TVET Institutions are offering TVET programmes up to level 6 (e.g. MTUNs, *Politekniks*, UNIKL and some private TVET Institutions). MQA and DSD would need to review the current TVET curriculum and programmes being offered for skill level 6 to ensure alignment with the learning outcomes outlined in the 2nd Edition of MQF. Standards for TVET programme accreditation would then need to be developed for skill levels 6 to 8 to provide comprehensive articulation for TVET.

Figure 5.4.3: Expansion of TVET qualifications up to MQF level



Note: The qualification titles for proposed TVET levels 6 to 8 are based on the nomenclature proposed in the 2nd Edition of MQF and subject to changes

5.5

Aspiration 5: Sustainable TVET funding model



5.5 Aspiration five:

Sustainable TVET funding model

Overview

Ensuring sustainable and efficient TVET funding practices that incentivise the right behaviours in-line with the National objectives of TVET



Clear and transparent funding mechanisms, underpinned by driving financial sustainability which is driven by various stakeholders involved in funding



As focus on the Malaysian TVET landscape intensifies, funding will play a key role and begin to dominate discussions amongst public and private sector stakeholders alike.

Riding the wave of transformational efforts across the Malaysian Government, a key aspect that requires significant scrutiny and review is the current funding model for public TVET Institutions.

In the international arena, UNESCO has noted that the topic of TVET funding is a common concern across the globe, particularly around the issue of insufficient TVET funding amongst various countries – echoing the feedback received from numerous Malaysian TVET stakeholders throughout stakeholder engagements.

The aspired funding model ensures that capital is allocated efficiently throughout TVET Institutions to ensure that the limited set of funds are optimised. TVET Institutions need to compete amongst themselves thus driving excellence.

5.5 Aspiration five:

Sustainable TVET funding model

Overview (cont'd)

Objectives and principles in developing the strategies and initiatives to achieve the aspiration

Objectives

- Ensure efficient allocation of funds throughout the TVET ecosystem.
- Promote fiscal consciousness throughout public TVET Institutions.
- Drive intended outcomes and behaviours via control of funding.
- Incentivise funding innovation driven by TVET Institutions.

Principles

The following principles were adhered to when designing the strategies:

- Promote cost efficiencies in the TVET ecosystem.
- Promote Industry-driven programmes and funding.
- Promote quality training and innovative thinking.

Key excerpts ...

“

A funding model should incentivise a TVET landscape that is sufficiently responsive to changes in the Industry

”

Excerpt from interviews with key Government stakeholders

“

Funding is one of the key levers of control within the Government. Thus an optimal funding model should be able to effectively influence the direction and ultimately the desired outcomes of the TVET sector. As such, its importance cannot be taken lightly

”





Excerpt from Industry engagement and consultation with key TVET figures

5.5 Aspiration five:

Sustainable TVET funding model

Where is Malaysia today?

TVET funding in Malaysia is fragmented across multiple Government Ministries with most of the funding following a centralised input-budget based approach

	Current State in Malaysia	Description	Limitations
Funding Sources	<p>Single ←  → Multiple</p> <p>The majority of funding is provided by MoF and EPU with limited funding provided from other sources</p>	<ul style="list-style-type: none"> Increased economies of scale and improved transparency. The Government can focus spending in areas which are of National priority. Easier to drive change through this model. 	<ul style="list-style-type: none"> Federal Government bears almost all the cost of training for TVET students. Potentially less responsive to market demands as it is not driven by demand or Industry.
Funding Channels	<p>Multiple ←  → Direct</p> <p>Complex and multi-levelled, with 7 Government Ministries and 17 TVET agency coordinators responsible for overseeing funding for over 556 public TVET Institutions¹</p>	<ul style="list-style-type: none"> Funding more responsive to the specific Ministry's TVET training priorities. Greater control of performance through TVET agencies' focus on public TVET Institutions. 	<ul style="list-style-type: none"> Sector-wide reforms or improvements difficult to implement. Increased costs at a National level due to increased administrative inefficiencies. Duplication of responsibilities across agencies.
Funding Mechanisms	<p>Input-Oriented ←  → Outcomes-Oriented</p> <p>Budgets are primarily based on historical costs and enrolment figures which are first negotiated with TVET agency coordinators followed by EPU and MoF</p>	<ul style="list-style-type: none"> Relatively transparent and easy to calculate. Allows for cross-Institution benchmarking of costs. 	<ul style="list-style-type: none"> Does not automatically promote desired behaviours (e.g. improving training quality or reducing the cost of delivery).
Funding Recipients	<p>Govt owned. ←  → Market-Wide</p> <p>Majority of Government funding is provided to public TVET Institutions. In addition, PTPK funds have been opened to both public and private TVET Institutions, further limiting the quantum of funds available to private TVET Institutions.</p>	<ul style="list-style-type: none"> Funding is provided to TVET Institutions where there is stronger regulation and control over the training delivered. Allows for greater focus on community service obligations. 	<ul style="list-style-type: none"> Without competition, there may be less incentive to improve training quality or reduce cost of delivery.

Source: 1. Obtained from 2018 DSD self audit data

5.5 Aspiration five:

Sustainable TVET funding model

Why does it matter?

A market-responsive and outcome-oriented funding model is necessary to ensure the long-term success of TVET Institutions

The ability to utilise funding to drive behaviours and incentivise the right outcomes over the long term is indispensable as a lever of control for the Malaysian Government.

A paradigm shift in the way we think about funding is a key requirement to achieve the aspired sustainable and outcome-based funding approach.

Key excerpts ...



The funding model should promote and incentivise the right outcomes and not just looked upon as a means of channelling funds



Excerpt from interviews with key Government stakeholders

What would be the effect if there exists a sustainable funding model?



TVET Institutions

TVET Institutions are clear on how they can increase quantum of fund allocations, be it via Government or non-government sources and are adequately incentivised to seek innovative forms of funding to maintain financial efficiency.



Government

Reduced burden on Government expenditure in favor of alternative funding mechanisms. As public TVET Institutions are provided more autonomy for funding efficiency, the role of the Government in setting policies and regulating the TVET ecosystem will rise in tandem.



Students

The funding model appropriately accounts for different student demographics and corresponding funding requirements. As student outcomes are measured through performance-based KPIs, the student experience is likely to be elevated.



Industry and associations

Industry-relevant TVET programme design and delivery as public TVET Institutions compete for Industry-funded programmes. Employed graduates are likely to be more “workforce-ready” due to the heightened focus on Industry relevance.

5.5 Aspiration five:

Sustainable TVET funding model

What does success look like?

An optimal funding model is one that manages to set clear expectations for TVET Institutions and drive intended behaviours



Industry-driven funding

TVET Institutions are focused on delivering Industry-relevant programmes and have the opportunity to leverage upon Industry to fund TVET programmes.



Maximised Return-per-Ringgit

Linking fund disbursement to intended outcomes via KPIs to efficiently allocate funding where it provides the most benefit to the Malaysian TVET ecosystem.



Drives Innovation

TVET Institutions are empowered and incentivised to be innovative in seeking additional fund sources, as well as maintaining cost efficiencies.



Reduced Government financial burden

Reduction in overall cost to the Government to fund TVET programmes via Industry funding and student loan systems.



Locally relevant decision-making

By enhancing the focus of decision-making onto local needs, a balance between Government and Industry priorities can be maintained whilst ensuring efficient allocation of funds.



Clear and transparent funding mechanism

Clear and transparent budgeting policies to facilitate long term planning and decision-making across TVET Institutions.

5.5 Aspiration five: Sustainable TVET funding model

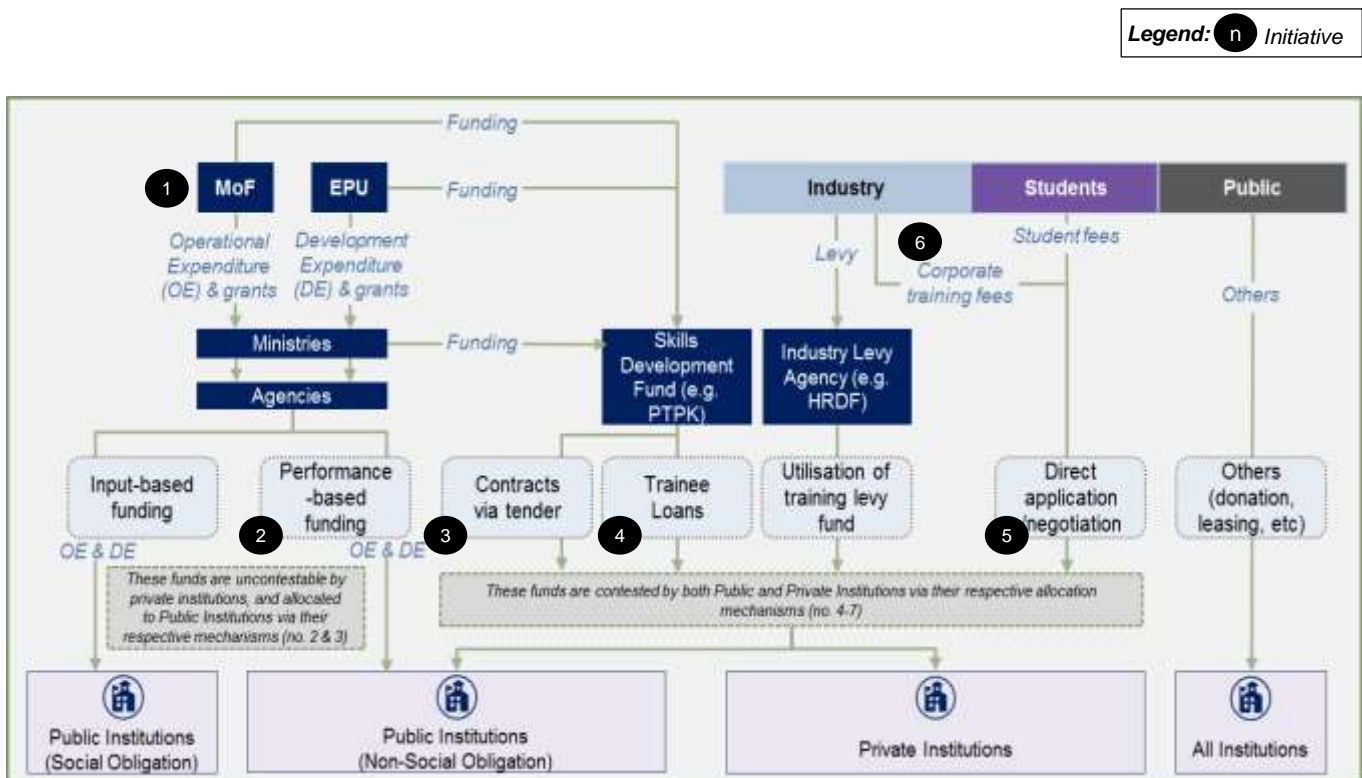
Realising the Aspiration

Overview

Objectives

- Institutionalise a funding model which enables efficient allocation of funds as well as incentivising the intended behaviours throughout TVET Institutions.

Figure 5.5.1: Illustrative visualisation of the aspired funding model



Note: Input-based funding (i.e. based on target enrolment figures and cost assumptions) should only be applicable for public TVET Institutions with a social obligation as their target audience are primarily communities in need of assistance – thus using performance-based measures that include employability and salary outcomes may not be reflective of the “benefits” of funding these TVET Institutions (e.g. the communities’ ability to up-lift their financial status and social standing).

However, to maintain the importance placed on programme outcomes, these TVET Institutions should be periodically monitored and reviewed during optimisation exercises which incorporates various factors such as input and outcome metrics, value proposition and market demand outlook of the programmes offered. In addition, zero-based budgeting methodology may be used to enhance the budgeting process (i.e. each budgeting cycle is developed from scratch rather than using past year budgets – thus embedding heavy scrutiny of the budget assumptions at each cycle).

5.5 Aspiration five:

Sustainable TVET funding model

Realising the Aspiration

Overview (cont'd)

Initiatives

1. Develop funding matrix and policy

- **Summary:** Develop a funding matrix as a tool for efficient fund allocation – combining strategic top-down direction and bottom-up impact analysis based on type of public TVET Institutions (i.e. social obligation vs non-social obligation).
- **Outcome:** Fund controllers (e.g. MoF and EPU) will have a structured framework to determine fund allocation (e.g. how much to allocate to the pool of funds for input-based funding vs performance-based funding). Additionally, public TVET Institutions will have guidance on how they should seek sources of funding. For example, funding may be sought from a mix of performance-based funding (i.e. allocated by the Government) and student-loan funding (i.e. applied by students).

2. Develop performance-based funding methodology

- **Summary:** Develop a funding framework based on the performance of the programme rather than input-based budgeting (i.e. budgeting based on historical costs and expected student headcounts).
- **Outcome:** As funding will be based on the performance of programmes (e.g. input-based KPIs such as instructor-student ratios and outcome-based KPIs such as graduate employability), public TVET Institutions will be incentivised to drive up performance of programmes in a bid to secure funding.

3. Expand use of tender-contract for addressing training needs

- **Summary:** Utilise tender-contracts as a channel of disbursing TVET funds, which is awarded by the Government based on a combination of programme quality and cost.
- **Outcome:** This will allow the Government to spearhead human capital development in high priority sectors and skills requirement. The funding will be contested by both public and private TVET Institutions on the basis of quality and cost – thus incentivising TVET Institutions to drive better programmes with minimal investment.

5.5 Aspiration five:

Sustainable TVET funding model

Realising the Aspiration

Overview (cont'd)

Initiatives (cont'd)

4. **Expand use of student loans**

- **Summary:** Increase quantum of funds dedicated to income-contingent loans as opposed to direct Government allocation (i.e. OE and DE).
- **Outcome:** This allows the Government to recover some capital via repayment of loans. In addition, by virtue of being student-demand driven and contestable by both public and private TVET Institutions, it is expected that the competitiveness and thus quality of TVET programmes will increase.

5. **Review training fee policies and guidelines**

- **Summary:** Review policies and guidelines with regards to public TVET Institutions' TVET fee structure, including setting fee caps and a consistent programme-cost allocation framework across public TVET Institutions.
- **Outcome:** As the TVET funding model is expected to utilise a greater degree of “fee-for-service” mechanisms (e.g. funding provided on a per student basis such as via student loan application), there should be regulations on the fees charged on a per student basis. In addition, a consistent cost allocation framework (i.e. a framework to calculate total cost per programme per student, including overhead costs) is expected to provide public TVET Institutions with a greater degree of visibility of where their costs are incurred thus influencing the prices they should charge as training fees.

6. **Review current incentive packages for improvement opportunities**

- **Summary:** Review current list of incentives that encourage the Industry to financially support TVET Institutions, and expand upon them where necessary.
- **Outcome:** Enhanced incentives for the Industry to collaborate and financially support the TVET ecosystem.

5.5 Aspiration five:

Sustainable TVET funding model

Realising the Aspiration

Initiative one: Develop funding matrix and policy

Description of the initiative

Within the public TVET space, the agendas and objectives for TVET delivery can differ by a considerable margin (e.g. public TVET Institutions whose target student demographics are communities in need vs public TVET Institutions whose primary agenda is to develop and upskill workforce). Therefore, any efforts to transform the current Government funding mechanism has to address this difference in needs.

The aspired funding matrix (refer to next page) is intended to support fund allocation decisions at two levels:

- 1. Public TVET Institution level:** For operational expenses, it conveys the strategic direction of the Government (i.e. informs how much public TVET Institution should target to receive from Government-allocated funding vs student-demand driven funding such as PTPK loans). This can be used to gradually steer the TVET ecosystem towards the Government's aspired funding matrix over time.
- 2. Federal level (MoF):** Based on strategic direction of the Government, this supports fund allocation decisions via various channels (i.e. quantum of funds allocated to input-based funding pool, quantum of funds allocated to performance-based funding or quantum of funds allocated to PTPK loans). Fund allocation decisions are thus performed with a view on TVET Institution-level mix of fund sources.




5.5 Aspiration five: Sustainable TVET funding model





Realising the Aspiration

Initiative one: Develop funding matrix and policy

Description of the initiative (cont'd)

Figure 5.5.2: Illustrative funding matrix

Legend:  Blue-colored portion represents the breakdown of funding mechanism that Institution should target to achieve (e.g. 50% of funds received by a non-social obligation public Institution should be derived from customer-driven allocations)

Institution type	Primary Agenda	Example Institution Groupings	Government allocated (Allocation decided by Government)		Customer-driven allocation (Allocation decided by trainees)	
			Fund Allocation Mechanism	Target Mix	Fund Allocation Mechanism	Target Mix
Public: Social obligation	Upskill marginalized and low-income communities as a means of uplifting career and social standing	<ul style="list-style-type: none"> GIATMARA IKBN Kolej Komuniti KV 	<ul style="list-style-type: none"> Input-based funding 		N/A	N/A
Public: Non-social obligation	Upskill local communities to meet relevant industry human capital requirements	<ul style="list-style-type: none"> ILP IKTBN ADTEC Politeknik 	<ul style="list-style-type: none"> Performance-based funding Contestable funding: Tender contract-based training 		<ul style="list-style-type: none"> HRDF-funded trainees PTPK-funded trainees Industry-funded corporate training programmes Training Fees 	
Private	Depends on Institutions	N/A	<ul style="list-style-type: none"> Contestable funding: Tender contract-based training 	As required	<ul style="list-style-type: none"> HRDF-funded trainees PTPK-funded trainees Industry-funded corporate training programmes Training Fees 	

Note: The funding matrix is to **guide the funding of Operational Expenses** of a TVET Institution. Development Expenditure is approved on a case-by-case basis, with TVET Institutions having to justify expenditures via clear business cases to the Government (i.e. EPU).

5.5 Aspiration five:

Sustainable TVET funding model

Realising the Aspiration

Initiative two: Develop performance-based funding methodology

Description of the initiative

Going forward, funding for public non-social obligation TVET Institutions (refer to description in Initiative 1) will be based on achievement of certain performance parameters or KPIs. This will ensure that the Government is able to drive similar intended behaviours across public TVET Institutions. Some sample KPIs are shown below:

- **Input-based** KPIs: Number of student enrolments, instructor-student ratio, instructors' Industry experience, asset utilisation rates.
- **Output-based** KPIs: Programme completion rates and "Graduate-on-Time" metrics (i.e. percentage of students graduating within the expected timeframe).
- **Outcome-based** KPIs: Graduate outcomes such as salary range, employability and duration-to-employment (i.e. number of students employed within 6 months), TVET employer satisfaction rating.

Outcome-based KPIs should be the primary driver of performance measurement. This will assist in shifting from a traditional approach of budget submissions which is based on historical budgets to a budget allocation approach based on intended outcomes.

To ensure that funding decisions are made with reliable data and assumptions, the following must be considered when designing the performance-based methodology:

Zero-based budgeting methodology may be used to enhance the budgeting process (i.e. each budgeting cycle is developed from scratch rather than using past year budgets, thus embedding heavy scrutiny of the budget assumptions at each cycle).

KPIs should be holistic, where performance should be a combination of input, output and outcome based KPIs which are in alignment with the National agenda of employability, instructor-student ratio etc. In addition, it should be acknowledged that the weightages of KPIs may differ depending on the region, programme type, and programme level. Additionally, for new public TVET Institutions with limited outcome-based track records, the traditional ways of budgeting could be applied for the initial years. KPIs measurement should either be collected by independent parties or be independently audited.

5.5 Aspiration five:

Sustainable TVET funding model

Realising the Aspiration

Initiative two: Develop performance-based funding methodology

Description of the initiative (cont'd)

The completed methodology should include the following:

- **Processes:** Data collection and measurement practices, budget submission process, etc.
- **Governance:** Decision-making authorities and monitoring policies.
- **KPIs:** Well-defined KPIs and benchmarks.
- **Scope:** Types of programmes or public TVET Institutions applicable for performance-based budgeting as opposed to input-based budgeting.



5.5 Aspiration five:

Sustainable TVET funding model

Realising the Aspiration

Initiative three: Expand use of tender-contract for addressing training needs

Description of the initiative

A portion of Government funding should be opened for both public and private TVET Institutions to bid via contracts. Examples of training contracts to be bid for include:

- Contracts to fulfil critical human capital skills gaps identified by Government agencies (e.g. to resolve a shortage of workers trained to use new cloud-enabled electronic manufacturing equipment in Kuantan, the Government can allocate funding to train a quota of students in the region and allow both public and private TVET Institutions to bid for the right to train these students).
- Contracts to up-skill workers required for Public Sector projects (e.g. construction of urban rail transit lines or construction of government-owned buildings).

The completed contract tendering framework and policies should cover the following:

- **Processes:** Identification of priority sectors and skills required, with clear assigned stakeholders to guide the process for identifying critical skills.
- **Governance:** Robust governance mechanism to drive decision making on critical skills and clear parameters for evaluating tenders (e.g. cost of programme, TVET Institution track record). Also includes policies in place to monitor the performance of successful bidders.
- **Scope:** Applicable TVET Institutions who are able to bid for the contract (e.g. using list of “approved” Private TVET Institutions). Also includes applicable projects or skill-sectors for funding (e.g. Industry 4.0 agenda).
- **Roles and responsibilities:** Formalised roles for key stakeholders such as Regional Investment Authorities and ILMIA.

5.5 Aspiration five:

Sustainable TVET funding model

Realising the Aspiration

Initiative four: Expand use of student loans

Description of the initiative

By channelling larger portion of funds to the TVET ecosystem via student loans (as opposed to direct Government allocation), the Government will enhance its ability to recover some of its funding via loan repayment. The Government may consider utilising income-contingent loans. By introducing the loans as an income-contingent mechanism, it is expected to alleviate the financial burden on those unlikely to repay the loan (i.e. those earning less than the income threshold). In addition, collaboration with other parties may be considered to enhance the efficiency of loans (e.g. collaborating with banks for loan servicing and disbursement, collaborating with IRB for loan collection).

Notes:

- At present, the funding to TVET Institutions is primarily based upon the loan application by students, and not allocated by Government agencies. Expanding the use of student loans introduces a “free market” element where the customer (students) decide which Institutions deserve funding, resulting in increased competition between Institutions for student applications.
- Income-contingent loans are only required to be repaid when the borrowers’ (i.e. TVET students) income exceeds a pre-determined threshold or after being employed a set number of years (e.g. after three (3) years)
- Income-contingent loans should only be applicable for programmes that are proven to result in employment within relevant fields at reasonable salaries (i.e. students are expected to work in the same field of study and will be able to reach the income threshold).

Any revisions to the current TVET loan framework should cover the following:

- **Process:** Transparent and efficient processes for application by students (i.e. clear eligibility criteria and centralised loan application processes), repayment criteria (e.g. duration after graduation or based on income levels) and repayment processes (e.g. payments via online portals or salary deduction by IRB).
- **Governance:** Payments made directly to TVET Institutions should be paid “in arrears” (i.e. based on agreed milestones) and not “in advance” (i.e. entire course fees paid in advance). Also includes transparent quotas, approval criteria and caps for loans.
- **Scope:** Applicable TVET Institutions and programmes for loans (i.e. via list of approved or accredited TVET Institutions and programmes). May also include policies on applicable programme levels for the loans (e.g. only Diploma and above).

5.5 Aspiration five:

Sustainable TVET funding model

Realising the Aspiration

Initiative five: Review training fee policies and guidelines

Description of the initiative

Review policies and guidelines on how TVET Institutions should charge fees to students (i.e. including students and corporate workforce) to ensure there is a consistent approach to fee setting and cost allocation for public TVET Institutions. Examples of areas that are covered include:

- Pricing methodologies such that public TVET Institutions have a consistent pricing strategy across similar public TVET Institution types within similar regions (i.e. cost allocation methodology to estimate cost per student, guidelines for corporate customer profit margins and regulating allowed profit margins for school leaver cohorts).
- Fee cap policies to ensure public TVET Institutions do not overcharge student fees. This is particularly important for cases where public TVET Institutions receive funding on a “per student” basis (i.e. self-funded students or student loans).



5.5 Aspiration five:

Sustainable TVET funding model

Realising the Aspiration

Initiative six: Review current incentive packages for improvement opportunities

Description of the initiative

To enhance the degree of Industry participation in the TVET ecosystem (e.g. Industry commissioning corporate training, funding pre-employment training, funding apprenticeship positions and donating cash or equipment), the current incentive schemes should be analysed to identify improvement opportunities.

A set of holistic (i.e. financial and non-financial) incentives is to be compiled and reviewed. For example:

- Assessing take-up rate of incentive schemes.
- Seeking feedback from relevant parties (e.g. MIDA and Industry Associations) to understand any barriers to training investment.
- Assessing historical outcomes of incentive schemes.

Improvements can take the form of amending existing initiatives (e.g. relaxing the criteria for utilising incentive schemes or developing new incentives).

By consolidating all incentives and related information in a centralised repository (such as the “i-incentives portal” by MIDA), both Industry and TVET Institutions will be better positioned to take advantage of the incentive schemes offered.

Examples of various past, existing and potential incentives are shown in the following page. Note that some incentives are already in place by various Government entities, for example MIDA and IRB.

Note: The relevant supporting policies (e.g. tax rules) has to be reviewed and updated where necessary to enable the aspired incentive packages.

5.5 Aspiration five:

Sustainable TVET funding model

Realising the Aspiration

Initiative six: Review current incentive packages for improvement opportunities (cont'd)

Description of the initiative (cont'd)

Figure 5.5.3: Illustrative incentive packages

Industry Contribution	Incentives (Financial and non-financial)
Cash donation	<ul style="list-style-type: none"> Has “first pick” rights of TVET graduates across the Nation. Able to rent / lease Government training facilities at discounted rates. Free Industry workshops on new technologies and trends by internationally-trained instructors. Tax deduction for related expenses
Equipment donation	
Scholarships	
Financing TVET-related buildings	<ul style="list-style-type: none"> Claim a special annual Industrial Building Allowance (IBA) of 10% for 10 years on qualifying capital expenditure for the construction or purchase of a building.
Outsource corporate training or provide trainers to public TVET Institutions	<ul style="list-style-type: none"> Single Tax deduction for related expenses. Double Tax deduction for related expenses (i.e. for those not contributing to HRDF). Free Industry workshops by internationally-trained instructors. Free curriculum development (i.e. development of course structure and course content). Still requires Industry to pay for corporate training fees.
Funding pre-employment training	<ul style="list-style-type: none"> Single Tax deduction for related expenses before the commencement of business. <p>*Industry must provide prove that they will employ the students.</p>
Funding non-employees' training	<ul style="list-style-type: none"> Tax deduction for related expenses. Matching grant for training.
Taking part in apprenticeship programmes / Structured Internship Programmes (SIP), inclusive of on-the-job training expenses and allowance	<ul style="list-style-type: none"> Double Tax deduction on expenses incurred (e.g. MoE's SIP programmes with TalentCorp) Allowed to screen apprentices for potential employment. Eligibility of HRDF levy utilisation. Able to rent / lease Government training facilities at discounted rates.

Illustrative

Note: The illustrative tax incentives below have been selected from existing and past initiatives by the Government. Various non-financial benefits (such as discounted rates for using Government training facilities) may also be considered as potential incentives.

5.6

Aspiration 6: Work esteem and branding of TVET



5.6 Aspiration six:

Work esteem and branding of TVET

Overview

Enhancing value, improving perception and work esteem will cultivate society's interest and acceptance of TVET



Changing the heart and mind of society is key towards building a TVET pathway which is equally valued as the academic pathway



Definition:

Work Esteem¹: refers to the sense of enjoying work, perceiving achievements at work as an intrinsic reward and as a force of innovation and creativity to enhance personal development and career

Branding²: The branding of TVET can be defined as the market value and attractiveness of vocational education and training

Vocational education is often viewed as a secondary, less appealing pathway compared to the conventional academic pathway. This has caused a vicious cycle resulting in students with below average academic performance joining TVET, who eventually perform poorer during their TVET education due to limited support from instructors and finally ending up in jobs with lower salaries.

It is vital for Malaysia to implement initiatives to overcome the prejudice towards TVET in order to reliably utilise TVET as a mechanism for generating skilled workforce for the Malaysian economy. If the public's perception of TVET remains poor, it will hinder all efforts to build a sustainable TVET ecosystem.

A robust TVET ecosystem must be supplemented with strong public acceptance towards TVET qualifications. This will translate into heightened work esteem for TVET graduates hence elevating their status similar to graduates from the academic pathway.

Source: 1. Journal of Technical Education and Training 2011

2. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ): Improving the Image of Technical and Vocational Education and Training

5.6 Aspiration six:

Work esteem and branding of TVET

Overview (cont'd)

Objectives and principles in developing the strategies and initiatives to achieve the aspiration

Objectives

- To elevate public's perceived value of TVET education.
- To generate increased interest, acceptance and demand for TVET qualifications and pathways.
- To eliminate prejudice and negative connotations towards TVET qualifications and pathways.

Principles

The following principles have been adhered to during the design of strategies to achieve this aspiration:

- Enhance the confidence through empowerment of TVET students, graduates and workforce.
- Measure scalability and sustainability to ensure consistent momentum and efforts in promoting TVET over the long run.
- Ensure fluidity and accessibility in tailoring branding efforts to various stakeholders and demographics to effectively drive key messages across the Nation.

Key excerpts ...



TVET graduates must exude confidence both in their certification and marketability to potential employers.



Excerpt from interview with education sector leader



Electronic media is an important medium of information and should be utilised to propagate TVET success stories throughout the Nation – Otherwise, the message that TVET is a viable education pathway may be crowded out by the marketing of academic programmes.



Excerpt from interview with parents and teachers

5.6 Aspiration six:

Work esteem and branding of TVET

Where is Malaysia today?

The perception of TVET is negatively skewed and promotion of TVET is unable to create desired levels of interest

Negative perceptions dilutes the attractiveness and the work esteem of TVET students

TVET suffers from the negative perception that it is inferior to general academic education and is catered for students with lower academic aptitude. This may have resulted in the majority of TVET intakes being students who are less-inclined academically thus propagating the same perception to Industry players who employ TVET graduates.

Association of low wages with TVET qualifications

Based on the analysis of the 2018 DSD self-audit data, 68% of TVET graduates across all TVET skill levels earn less than RM1,500 a month. This finding is consistent with findings from Industry engagements. Furthermore, almost 28% of Industry players have offered monthly salaries lower than RM 1,000 to TVET graduates². This limits the current TVET ecosystem's ability to drive Malaysia towards a high-income Nation.

Lack of promotion of higher end TVET related occupations

TVET education and its offerings varies significantly across skill levels. At lower levels of TVET (i.e. skill level 1-3) students are taught courses such as brick layering, cookie making, dress designing and etc., whereas at higher levels of TVET (i.e. skill level 4-6) TVET students are taught courses such as mechatronics, automotive, deep sea welding and etc¹. These higher end TVET jobs are well regarded by Industries and can fetch higher salaries in the long run. However due to lack of strong branding initiatives to propagate them as specialists or subject matter experts, TVET is still primarily perceived to cater to low-skilled occupations.



5.6 Aspiration six:

Work esteem and branding of TVET

Why does it matter?

Positive perception will drive social empowerment, interest and acceptance of the public towards the TVET pathway

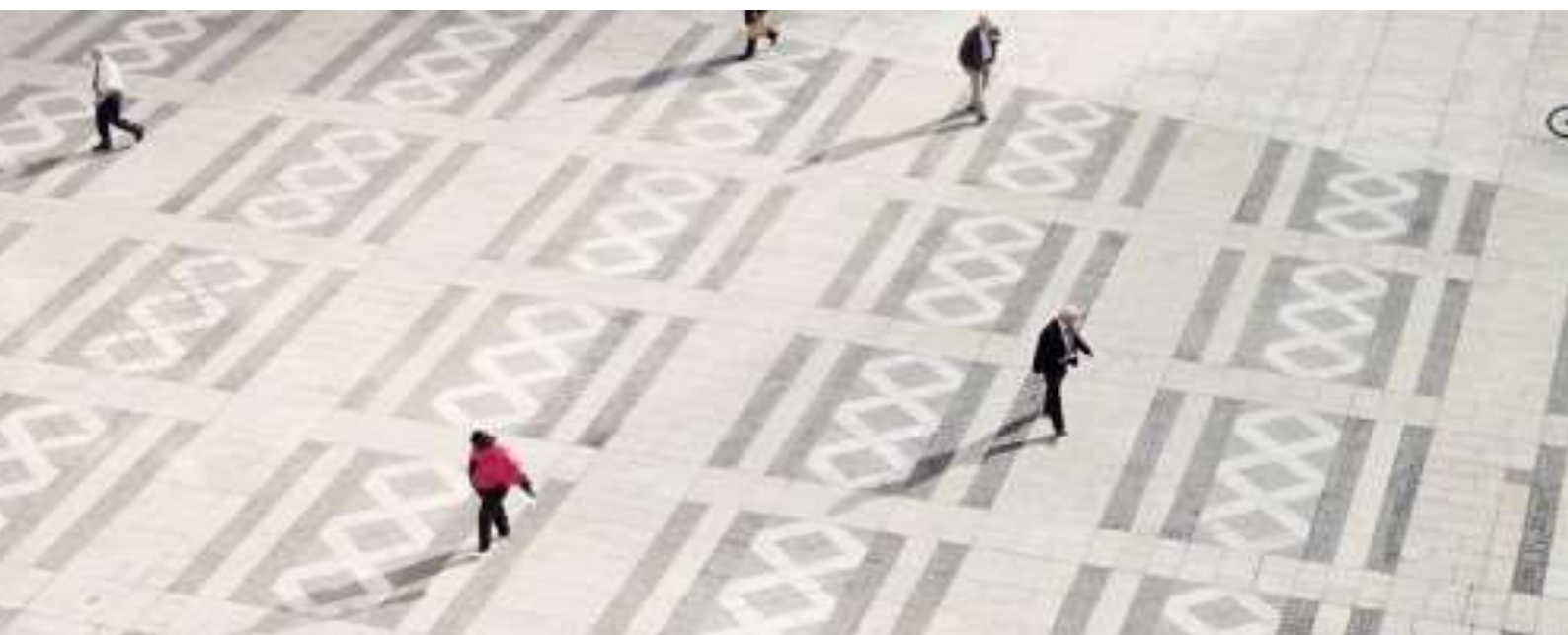
The outcomes from stakeholder perspectives if TVET is perceived positively

Students – Students will see TVET as a favourable career path and will prefer to choose it for their tertiary education rather than being forced to undertake it due to poor academic performance.

Parents – Parents are more accepting towards their children's ambition in skills-based or technical jobs, allowing greater alignment between student interests and field of study.

School environment – At the grassroot level, TVET will be seen as a viable pathway for students with clear education and career progression routes.

Industry – Industry players have confidence in the value of TVET qualifications translating into higher work productivity, thus raising the premium paid to TVET graduates. This in turn will increase the prestige of TVET qualifications.



5.6 Aspiration six:

Work esteem and branding of TVET

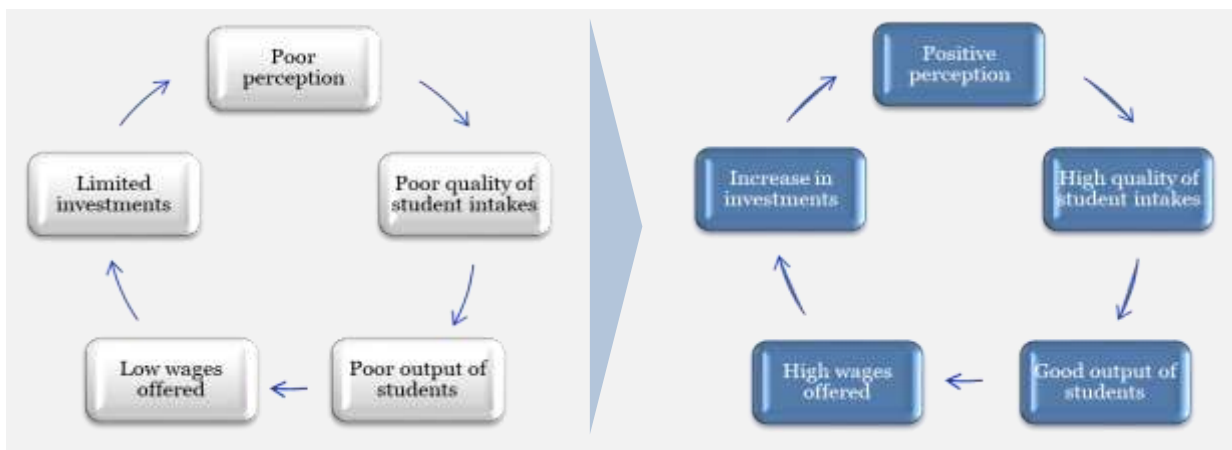
What does success look like?

TVET occupations are equally accepted and respected as more academically inclined occupations

Transforming the negative feedback loop of TVET




The negative feedback loop can be transformed by promoting a positive perception of TVET, whereby TVET is able to produce high quality student intakes, graduates are able to perform as per Industries' expectations, TVET workforce is offered higher wages as well as the increase in investments to continuously develop TVET.

Figure 5.6.1: Negative feedback loop of TVET



Success in TVET occurs when the general public recognises TVET as a pathway that is equally valued and cultivated similar to the general academic stream. This brings about various benefits to the wider society group, as highlighted below:

Key successes

		
Informed students and parents	Positive perception of TVET	Increased number of TVET ambassadors
Students and parents are provided with sufficient resources to make informed decisions on education enrolment	Public perceives TVET to be an attractive path and have great appreciation of the occupation opportunities that can be created within	Successful TVET ambassadors are well known in the local and regional communities and become role models to students

5.6 Aspiration six:

Work esteem and branding of TVET

Realising the Aspiration

Overview

Objectives

To eliminate prejudice and negative connotations towards TVET qualifications and pathways and to elevate the public's perceived value of TVET by generating greater interest, acceptance and demand for TVET education and related occupations.

Initiatives

- 1. Implement guidelines to promote positive messaging of TVET in marketing and general public communication materials**
 - **Summary:** Encourage and enhance consistent positive messaging of TVET, highlighting success stories, achievements and occupation opportunities to remove negative connotations from the minds of the public pertaining to TVET.
 - **Outcome:** Positive reforms of the branding and perception of TVET curated from all information points (i.e. media, TVET Institutions and Government agencies) that will aid in nurturing a positive perception in the minds of the public with regards to the acceptance of TVET as a pathway of choice.
- 2. Launch Nationwide campaign to promote TVET as a pathway of choice**
 - **Summary:** Increase collaboration between the Government and the Industry in organising awareness campaigns and targeted promotions at schools as well as for local communities to highlight the viability of TVET as a pathway of choice associated with attractive employment and entrepreneurship opportunities. This is especially beneficial to students, parents and the existing workforce who are widely exposed to mass media and electronic media (i.e. social platforms and content).
 - Sub-initiatives to support the Nationwide campaign includes:
 - ✓ Promote TVET occupations (rather than skill sets and TVET Institutions) in schools.
 - ✓ Conduct media campaigns including the usage of digital and social media.
 - ✓ Conduct roadshows / outreach programmes.
 - ✓ Equip career counsellors, teachers and school management with informative materials pertaining to TVET.

5.6 Aspiration six:

Work esteem and branding of TVET

Realising the Aspiration

Overview (cont'd)

Initiatives (cont'd)

2. Launch Nationwide campaign to promote TVET as a pathway of choice (cont'd)

- **Outcome:** Increase attention, interest and topic of discussions within the Nation, especially among students and parents, with regards to the opportunities and benefits that TVET can offer. This is to create a sense of urgency within the Nation regarding the importance of TVET as well as to incorporate a sense of inclusiveness and pride among students, graduates and the existing workforce who have embarked on the TVET pathway.

3. Official recognition of selected high-value TVET related occupations

- **Summary:** Officially recognise a list of selected high-value TVET related occupations in Malaysia via mandatory TVET certifications by Nationally-recognised bodies (e.g. Industry-led bodies, Government agencies). This initiative would require the active participation of Industry players and Industry-led bodies in reviewing the list on a regular basis. Also, general salary ranges offered by Industries and career progression of these professions can be further tabled out and reflected by TVET Institutions and Ministries through existing official portals and communication mediums.
- **Outcome:** With the availability of this list across various touch points such as schools, TVET Institutions and the media, opportunities of high-value TVET related occupations can be highlighted, thus increasing the awareness and interest of the public, especially students and parents, in embarking on the TVET pathway.

5.6 Aspiration six:

Work esteem and branding of TVET

Realising the Aspiration

Initiative one: Implement guidelines to promote positive messaging of TVET

Description of the initiative

Guidelines should be established to encourage positive descriptions of TVET highlighting success stories, achievements and occupation opportunities to remove negative connotations from the minds of the public pertaining to TVET. Efforts should also be made to eliminate unappealing marketing campaigns that describes TVET with relation to the 3D (dirty, dangerous and difficult) occupations that result in the dilution of the TVET pathways attractiveness and willingness of students to enrol into the TVET pathway.

To promote and increase the level of acceptance for TVET, guidelines should also be developed to promote TVET related occupations in schools. For example, deep sea welders and Formula 1 technicians could be invited to schools to not just explain their occupations, but also to demonstrate or show how interesting a career in the oil and gas industry can be.

Not only that, the proposed guideline developed will act as a reference / basis in promoting TVET to the public. For example, in developed countries such as the United Kingdom (U.K.), they have mandated institutions, and training providers to promote prospective occupations (as opposed to skills sets) to pupils. They have established controls tabled under the Education and Skills Act 2008 which contains measures to encourage more young people to participate in learning and to achieve higher levels of skill and qualification.

The proposed guidelines should cover all types of communication primarily managed by the Government including digital and social media. Guidelines developed should be extensive and should be applicable to public and private sector and training providers to ensure consistency of messaging.

Guidelines developed should cover the following elements:

- Prohibition of negative descriptions, with provision of examples
- Use of positive and constructive descriptions, with provision of examples
- Promotion of TVET occupations as opposed to skill sets
- Guidelines that are applicable to all marketing and general public communication materials and activities

5.6 Aspiration six:

Work esteem and branding of TVET

Realising the Aspiration

Initiative two: Launch nationwide campaign to promote TVET as a pathway of choice

Description of the initiative

The Government and Industry players collaboratively should organise awareness campaigns and targeted promotions at schools and local communities to highlight the viability of TVET as a pathway of choice associated with attractive employment and entrepreneurship opportunities.

This is especially beneficial to students, parents and the existing workforce who are widely exposed to the mass media and electronic media (social platforms and content). Furthermore, outreach programmes with face-to-face engagements are needed to extend the communication of TVET as a pathway of choice to communities within rural areas to ensure effective and holistic coverage.

Examples of effective campaigns can be seen through the promotional efforts of the United Kingdom (U.K.) and Singapore governments. U.K. has promoted apprenticeship of any skill occupations through “Earn while you learn”. Under this campaign, the U.K. Government promotes apprenticeship programmes that offer opportunities to gain relevant, industry-leading technical occupations and knowledge, and an accredited qualification that is recognised and desired.

Singapore on the other hand, has shown remarkable results through the efforts of the Institution of Technical Education (ITE) with their ‘Thinking Hands’ and “Hand-on, Minds-on and Hearts-on” campaign which has generated 76% of brand equity¹. They have enhanced their integrated communications strategies to reposition TVET by extensively and aggressively engaging with Singaporeans through:

- Active rebranding of ITE through Corporate Branding Programmes
- Enhancing communications and reach through a proactive Media Strategy
- Direct Engagement with key stakeholders

As for the Malaysian perspective, it is crucial to identify and design key messages following the stages within the TVET life cycle as different stages would have different targeted audiences and different expectations. We have outlined specific focus areas for the five (5) stages identified within the TVET life cycle:

Source: 1. *Leading Change: Branding and Marketing of TVET, 2008*

5.6 Aspiration six:

Work esteem and branding of TVET

Realising the Aspiration

Initiative two: Launch nationwide campaign to promote TVET as a pathway of choice (cont'd)

Description of the initiative (cont'd)

Stage 1 : Grassroots (Primary School)

Initiatives focus on creating awareness on interest-related skills and the availability of the TVET pathway. Target messages will also focus on ensuring perceptions of TVET are curated to be neutral or positive.

Stage 2: Forming (Secondary School)

Initiatives focus on creating better understanding on the opportunities and prospects of TVET. Initiatives will be driven to provide sufficient resources (knowledge, promotional materials and comprehensive guides) to assist students, parents and counsellors to make informed decisions on their choice of education in comparison to an academic pathway.

Stage 3: Maturing (Tertiary)

Initiatives focus on work esteem and success stories of TVET related occupations. TVET Institutions and agencies play an important role in ensuring students are motivated and supported in their choice of career as well as to ensure Industry players are confident and comfortable with the quality of TVET talent absorbed into the workforce.

Stage 4: Adulthood (Career)

Initiatives further emphasise the work esteem and the positive perception of TVET related occupations. This stage primarily focuses on the welfare of TVET graduates and the existing workforce in terms of availability of information on wages offered within industries, communication on regulations and policies that govern and maintain the quality of TVET as well as the communication on incentives and opportunities available for industries to further upskill or reskill the TVET workforce.

Stage 5: Upskilling (Lifelong)

Initiatives focus to promoting the need to continuously upskill oneself and be proactive in leveraging off formal and informal learning. Communication between Industry players and training providers would be crucial to ensure up-to-date Industry trends and skill sets required. At this stage, promotional activities by training providers will ensure attention to modular courses which are accredited, accessible and delivered to fit Industry needs.

5.6 Aspiration six:

Work esteem and branding of TVET

Realising the Aspiration

Initiative two: Launch nationwide campaign to promote TVET as a pathway of choice (cont'd)

Description of the initiative (cont'd)

The implementation effort to launch a nationwide campaign to promote TVET as a pathway of choice will be designed and tailored based on these stages to ensure key messages are communicated and impacted to intended target audiences. We have outlined several sub-initiatives to support the strategy in improving TVET branding and perception as follows:

Promote TVET occupations (rather than skill sets and institutions) in schools

TVET occupations should be emphasised (rather than skill sets and institutions) in schools addressing to students during Stage 1 & 2 as young minds are able to relate more to successful individuals and occupations as compared to skill sets and institutions.

The highlights to students should cover interesting TVET occupations such as marine mechanics, automation programmers and advanced manufacturing with the objective to inspire and provide basic information required for students, parents and teachers to understand what it takes to pursue their field of interest as well as what are the possible alternatives to achieve their goals.

Conduct media campaigns using digital and social media

The overall underlying concept, theme and message for campaigns should focus on “What can you be in TVET”. Different messages can be created according to different stages. For example:

- Stage 1 would focus on “this is what you can be in the future”,
- Stage 2 & 3 would focus on “what you can be in the future and how you can do it”,
- Stage 4 & 5 would focus on “different career pathways that you can explore and be an expert in”.

This will then be followed by a selection of communication mechanisms and channels according to different stages. For example:

- Stage 1, 2 and 3 would be launching of a nationwide TVET promotional video and school visits by TVET champions/speakers, roadshows by institutions and agencies to promote TVET opportunities and occupations.
- Stage 4 & 5 would be to leverage the use of existing official portals to deliver information for job searching, carnivals organised such as the SkillsMalaysia Carnival and the TVET Malaysia Carnival, and the TVET Malaysia Expo that are held yearly to engage with interested parties face-to-face and distribute relevant information.

5.6 Aspiration six:

Work esteem and branding of TVET

Realising the Aspiration

Initiative two: Launch nationwide campaign to promote TVET as a pathway of choice (cont'd)

Description of the initiative (cont'd)

As for the champions and speakers, the selection of champions / speakers invited can be representatives from the Ministry, Industry leaders, SMEs, successful instructors from Institutions, TVET international forum experts or famous personalities with TVET backgrounds and achievements.

Conduct roadshows / outreach programmes

Activities will reach out to target audiences who are in remote areas or have limited access to digital / social media. This will include face-to-face engagements to enhance and ensure the effectiveness of communication on TVET as a pathway of choice.

- Activities can be organised by six (6) economic regions, states, or by agencies and institutions.
- Information and materials provided are customised based on the geographical characteristics of the region / area, for example age group and language.
- Engagement and communication plans are designed based on impacted stakeholders (i.e frequency, engagement content and materials supplements) to maintain sustainability and consistency.

Equip career counsellors, teachers and school management with informative materials pertaining to TVET

This initiative aims to enable school counsellors and guidance teachers to provide advice on TVET career options by providing them with sufficient resources (knowledge, promotional materials and comprehensive guides).

Current platforms such as official portals used to distribute information should be revisited and reviewed regularly to ensure information uploaded is up to date and that the layout of information presented within the portal is clean, simple and convenient for users to view and navigate. This is to ensure good user experiences where information obtained is simple, accurate and credible.

Enrolment of students into TVET Institutions can be potentially increased through this touch point whereby parents and students are sufficiently informed of the opportunities and benefits of TVET as an education and career pathway in comparison to an academic pathway.

5.6 Aspiration six:

Work esteem and branding of TVET

Realising the Aspiration

Initiative two: Launch nationwide campaign to promote TVET as a pathway of choice (cont'd)

Description of the initiative (cont'd)

Equip career counsellors, teachers and school management with informative materials pertaining to TVET (cont'd)

For materials

- Development of reference materials should be available in the form of softcopies and / or hardcopies to ensure the information contained is easily updated and distributed to ensure accessibility.
- Material distribution and collection points (example: through Hubs and agencies) should also be identified and informed to career counsellors, teachers and school management.

For counsellors and guide teachers

- There should be provision of time, merits / KPIs and budgets for school counsellors, teachers and career counsellors to attend and get exposed to conferences, talks or career fairs in relation to TVET as well as to drive counselling activities amidst other educating functions.
- Information sharing should also be enabled with the leverage of government mediums such as the SkillsMalaysia portal by DSD, TVET Malaysia and the MyGOV portal.

5.6 Aspiration six:

Work esteem and branding of TVET

Realising the Aspiration

Initiative three: Official recognition of selected high-value TVET occupations

Description of the initiative

The recognition and identification of high-value TVET related occupations within society is still lacking as the public is not fully aware of the differences between conventional TVET occupations and high-value TVET related occupations that require specific skills sets and that offer higher wages.

A list of selected high-value TVET related occupations in Malaysia would need to be officially recognised via mandatory TVET certifications by Nationally-recognised bodies (e.g. Industry-led bodies, Government agencies). Currently, the requirement for mandatory certifications (e.g. structural draughtsmen, chargeman) are dependant on the participation level of Industry-led bodies. Requirement for such certifications are industry-specific (e.g. CIDB, Energy Commission) resulting in inconsistent requirements across industries and SMEs. As a result of not adhering to requirements and the lack of enforcement on mandatory certifications, the perception and the delivery of a quality TVET workforce has been impacted.

The driving force behind this initiative ultimately is the active participation of Industry players and Industry-led bodies in reviewing this list on a regular basis. With the availability of this list across various touch points such as schools, Institutions and the media, opportunities of high-value TVET related occupations can be further informed and highlighted. Thus, increasing the awareness and interest of the public, reducing the reluctance of the public to embark on the TVET pathway especially students and parents.

Not only that, Institutions would play a major role in developing and preparing talents for these high value jobs as they would be required to proactively promote and develop curriculum that match the expectations and requirements of industries. The general listing of salary ranges offered by industries as well as career progressions of these professions will be further tabled out and reflected by TVET Institutions and Ministries through existing official portals and communication mediums to enable the public to make informed decisions.

Conclusion

TVET is a game changer.. only if we do it right from strategy to execution and enforcement



There is a strong need for Government, TVET Institutions and Industry to work together moving forward to create an ecosystem which is sustainable and achieves Malaysia's aspirations.

Malaysia currently has achieved much in developing the TVET landscape and the question now is not what we don't have but actually how well we can use the current resources we have today and build upon them.

We need to build an ecosystem which not only fosters good graduates but also one which encourages students and workers alike to enter this pathway and ultimately generate high income and move the Nation towards achieving its aspirations.



6.0

Appendices

6.1

Assumptions and limitations of the Study

Assumptions and limitations of the Study

The analysis conducted throughout the Study is dependent on the nature and quality of data and inputs obtained. Hence, the following assumptions and limitations are applicable to this Study:-

Comprehensiveness and relevance of information gathered through focus interviews

- Information obtained from key stakeholders through focus interviews may not be comprehensive and may not be fully representative of the entire Industry as it is dependent on the stakeholder's Industry experience and willingness to share. Such views, opinions and information may be subject to change depending upon changing business priorities and trends.
- Where different skill issues and support requirements may be raised by Industry representatives during the focus interviews, only those identified to be common to a fair proportion of the key stakeholders were considered when developing the findings of this Study.

Accuracy and reliability of sources

- It is assumed that the information / data provided for the purpose of this Study is accurate. The information received was not audited. However, relevant stakeholders were contacted when a data item was clearly incorrect.
- Several reports and official documents (e.g., EPU's 2016 Study on the Demand and Supply of Human Capital Requirements on TVET, Eleventh Malaysia Plan) were relied upon during the course of the Study. It was assumed that the information provided in the reports is accurate and were not further audited.

Assumptions and limitations of the Study (cont'd)

Programme Evaluation

- Quality of the data – it was assumed that the information or data provided by the TVET Institutions were accurate. The information received was not audited. However, the relevant agencies were notified when a data item was clearly identified to be incorrect.
- Where a full set of data was not provided by a TVET Institution by the agreed date, that TVET Institution was not included in the Report findings.
- The output ratings for the TVET Institutions were provided to the relevant agencies and they had a period of time to validate this output with the TVET Institutions. This information was not independently validated with the TVET Institutions.

Programme Optimisation

- Since Programme Optimisation was based on both the demand analysis and the Programme Evaluation work, all of the limitations contained in these workstreams were applicable to this stage of the work.
- This stage produced a range of recommendations around programme growth and / or closures. The output of this work was provided to the relevant agencies and they were provided with adequate time (i.e., 2 weeks) to validate this output with the respective TVET Institutions. This information was not independently validated with the TVET Institutions.
- The programme recommendations produced as a result of the Programme Optimisation model represents high level indications as to potential areas for action.

Comparative Analysis – Selected Countries

- The information contained in this Study was based on publicly available information and was assumed to be accurate.

Improving Operating Efficiency and Cost Effectiveness

- The TVET Institutions were selected in conjunction with MoHR based on their Program Evaluation scores. These TVET Institutions were used to validate the approach and recommendations in this Report. However, it is important to note that viewpoints and input obtained from these respective representatives may not be considered as being fully representative of the TVET Institution sample.

6.2

List of stakeholders engaged

6.0 Appendices

List of stakeholders engaged via structured discussions

The following is the list of stakeholders engaged as of 12th October 2018

No.	Agency	Date
1	Institute of Labour Market Information and Analysis (ILMIA)	4 April 2018
2	<i>Dato Amir, Timbalan Ketua Setiausaha, Kementerian Sumber Manusia (MoHR)</i>	5 April 2018
3	Department of Statistics Malaysia (DoSM)	6 April 2018
4	Human Resources Development Fund (HRDF)	11 April 2018
5	Construction Industry Development Board (CIDB)	17 April 2018
6	Skills Johor	17 April 2018
7	Federation of DSD Accredited Centers Malaysia (FeMAC)	18 April 2018
8	Malaysian Qualifications Agency (MQA)	18 April 2018
9	<i>Ketua Setiausaha, Kementerian Sumber Manusia (MoHR)</i>	24 April 2018
10	<i>Kolej Kemahiran Tinggi Mara (KKTM)</i>	24 April 2018
11	Economic Planning Unit (EPU)	25 April 2018
12	Ministry of International Trade and Industry (MITI)	25 April 2018
13	Malaysian Investment Development Authority (MIDA)	25 April 2018
14	SME Corporation	25 April 2018
15	<i>Tan Sri Dato' Sri Paduka Dr Lim Kok Wing</i>	26 April 2018
16	Education Performance and Delivery Unit (PADU)	27 April 2018
17	Iskandar Regional Development Authority (IRDA)	27 April 2018
18	<i>Majlis Pembangunan Kemahiran Kebangsaan (MPKK)</i>	7 May 2018
19	Federation of Malaysian Manufacturers (FMM)	7 May 2018
20	Department of Skills Development (DSD)	8 May 2018

6.0 Appendices

List of stakeholders engaged via structured discussions

The following is the list of stakeholders engaged as of 12th October 2018

No.	Agency	Date
21	<i>Dato' Amir, Timbalan Ketua Setiausaha, Kementerian Sumber Manusia (MoHR)</i>	8 May 2018
22	Ministry of Education, Science and Technological Research (MESTR) Sarawak	23 May 2018
23	Malaysia Board of Technologists (MBOT)	30 May 2018
24	Penang Skills Development Centre (PSDC)	31 May 2018
25	<i>Dato' Amir, Timbalan Ketua Setiausaha, Kementerian Sumber Manusia (MoHR)</i>	5 June 2018
26	Institute of Labour Market Information and Analysis (ILMIA)	7 June 2018
27	Malaysian Qualifications Agency (MQA)	12 June 2018
28	<i>En. Wan Zulkfli, Pengarah ILMIA</i>	26 June 2018
29	<i>Tuan M.Kula Segaran, YB Menteri, Kementerian Sumber Manusia</i>	27 June 2018
30	Sabah Economic Development and Investment Authority (SEDIA)	28 June 2018
31	Malaysian Economic Empowerment and TVET Council Formation Meeting YB Nurul Izzah	4 July 2018
32	Department of Skills Development (DSD)	6 July 2018
33	Centre for Instructor and Advanced Skill Training (CIAST)	12 July 2018
34	National Human Resource Centre (NHRC)	12 July 2018
35	SG Education Group (Private Institute)	19 July 2018
36	British High Commission Kuala Lumpur	20 July 2018
37	<i>Jabatan Pendidikan Politeknik dan Kolej Komuniti (JPPKK)</i>	23 July 2018
38	<i>Dato' Mahfuz Bin Omar, Timbalan Menteri, Kementerian Sumber Manusia (MoHR)</i>	23 July 2018
39	GIATMARA	23 July 2018

6.0 Appendices

List of stakeholders engaged via structured discussions

The following is the list of stakeholders engaged as of 12th October 2018

No.	Agency	Date
40	<i>Perbadanan Tabung Pembangunan Kemahiran (PTPK)</i>	23 July 2018
41	Malaysia Digital Economy Corporation (MDEC)	23 July 2018
42	<i>Universiti Kuala Lumpur (UniKL)</i>	23 July 2018
43	GIATMARA (Instructors)	24 July 2018
44	Malaysian Qualifications Agency (MQA)	26 July 2018
45	East Coast Economic Region Development Council (ECERDC)	26 July 2018
46	Department of Statistics Malaysia (DoSM)	27 July 2018
47	Malaysian Qualifications Agency (MQA)	27 July 2018
48	<i>Majlis Amanah Rakyat (MARA)</i>	10 August 2018
49	Selangor Human Resource Development Centre (SHRDC)	15 August 2018
50	Malaysian Investment Development Authority (MIDA)	20 August 2018
51	<i>Pengerusi Jawatankuasa Pemerkasaan TVET YB Nurul Izzah</i>	21 August 2018
52	<i>Universiti Putra Malaysia (UPM)</i>	27 August 2018
53	Department of Skills Development (DSD)	28 August 2018
54	UK Malaysia TVET Workshop	29 August 2018
55	<i>Perbadanan Tabung Pembangunan Kemahiran (PTPK)</i>	29 August 2018
56	YB Nurul Izzah's team	29 August 2018
57	<i>Jabatan Pendidikan Politeknik dan Kolej Komuniti (JPPKK)</i>	30 August 2018
58	Human Resources Development Fund (HRDF)	30 August 2018
59	<i>En. Wan Zulkfli, Pengarah ILMIA</i>	3 September 2018
60	Department of Skills Development (DSD)	4 September 2018

6.0 Appendices

List of stakeholders engaged via structured discussions

The following is the list of stakeholders engaged as of 12th October 2018

No.	Agency	Date
61	TVET Townhall at Politeknik Kota Kinabalu, Sabah	6 September 2018
62	Malaysian Qualifications Agency (MQA)	7 September 2018
63	<i>Dato' Dr. Mohd Gazali, Ketua Setiausaha, Kementerian Pendidikan Malaysia (MoE)</i>	12 September 2018
64	<i>Dato' Amir, Timbalan Ketua Setiausaha, Kementerian Sumber Manusia (MoHR)</i>	13 September 2018
65	Economic Planning Unit (EPU)	19 September 2018
66	National Wage Consultative Council (MPGN)	20 September 2018
67	<i>Jabatan Tenaga Manusia (JTM)</i>	20 September 2018
68	Talent Corporation Malaysia Berhad (TalentCorp Malaysia)	24 September 2018
69	<i>Majlis Amanah Rakyat (MARA)</i>	24 September 2018
70	<i>Mesyuarat Jawatankuasa Penyelarasan TVET KSM</i>	25 September 2018
71	Centre for Instructor and Advanced Skill Training (CIAST)	25 September 2018
72	Technical and Vocational Education Division (BPTV)	25 September 2018
73	Johor Petroleum Development Corporation Berhad (JPDC)	25 September 2018
74	Federation of DSD Accredited Centers Malaysia (FeMAC)	3 October 2018

6.3

*List of public TVET
Institution types covered in
Department of Skills
Development
(DSD) self-audit survey
database*

List of public TVET Institution types in DSD self-audit survey database

No.	Institution types
1	<i>Universiti Kuala Lumpur (UniKL)</i>
2	<i>Politeknik and Kolej Komuniti</i>
3	<i>Malaysian Technical University Network (UniMAP, UMP, UTEM, UTHM)</i>
4	GIATMARA
5	<i>Institut Kemahiran Mara (IKM)</i>
6	<i>Kolej Kemahiran Tinggi Mara (KKTM)</i>
7	German-Malaysian Institute (GMI)
8	<i>Akademi Binaan Malaysia (ABM)</i>
9	<i>Majlis Latihan Pertanian Kebangsaan</i>
10	<i>Kolej Vokasional (KV)</i>
11	<i>Institut Kemahiran Tinggi Belia Negara (IKTBN)</i>
12	<i>Institut Kemahiran Belia Negara (IKBN)</i>
13	<i>Institut Latihan Perindustrian (ILP)</i>
14	<i>Pusat Latihan Teknologi Tinggi (ADTEC)</i>
15	<i>Pusat Latihan Pengajar and Kemahiran Lanjutan (CIAST)</i>
16	Japan-Malaysia Technical Institute (JMTI)

Note: PERHEBAT under the MoD is also a public TVET Institutions but data not captured in DSD self-audit survey data

6.4

List of TVET Ministries and Institution types under Department of Skills Development (DSD) not covered in Self-Audit Survey

6.0 Appendices

List of TVET Institutions under DSD that are not covered in Self-Audit Survey

No	Ministry	TVET Institution
1	Kementerian Pendidikan	<i>PVMA – Pendidikan Vokasional Menengah Atas</i>
		<i>PAV – Pendidikan Asas Vokasional</i>
		<i>Pusat Pembangunan Keilmuan Dan Kemahiran Akademi DBP</i>
2	<i>Kementerian Dalam Negeri</i>	<i>Maktab Teknik Polis Diraja Malaysia (PDRM) Muar</i>
3	Kementerian Pertahanan	PERHEBAT
		<i>Angkatan Tentera Malaysia (ATM)</i>
		<i>Tentera Udara Diraja Malaysia (TUDM)</i>
		<i>Tentera Laut Diraja Malaysia (TLDM)</i>
4	Kementerian Perusahaan Perladangan and Komoditi	Pusat Latihan Sawit Malaysia (PLASMA)
		GETAH
		Wood Industry Skills Development Centre (WISDEC)
5	Kementerian Kemajuan Luar Bandar dan Wilayah	<i>POLITEKMARA/Kolej Poly-Tech MARA</i>
		<i>Rubber Industry Smallholders Development Authority (RISDA)</i>
		<i>Lembaga Kemajuan Wilayah Kedah (KEDA)</i>
		<i>Jabatan Kemajuan Masyarakat (KEMAS)</i>
		<i>Lembaga Kemajuan Wilayah Pulau Pinang (PERDA)</i>
		<i>Institut Kemajuan Desa (INFRA)</i>
<i>Lembaga Kemajuan Tanah Persekutuan (FELDA)</i>		

List of TVET Institutions under DSD that are not covered in Self-Audit Survey (cont'd)

No	Ministry	TVET Institution
5	<i>Kementerian Kemajuan Luar Bandar dan Wilayah (cont'd)</i>	<i>Pusat Latihan Pembangunan Belia (PLPB)</i>
		<i>Tunas Bakti</i>
		<i>Institut Sosial Malaysia (ISM)</i>
6	<i>Kementerian Pelancongan dan Kebudayaan Malaysia</i>	<i>Akademi Seni Budaya dan Warisan Kebangsaan (ASWARA)</i>
7	<i>Kementerian Sains, Teknologi dan Inovasi</i>	<i>Agensi Nuklear Malaysia</i>
8	<i>Kementerian Perumahan dan Kerajaan Tempatan</i>	<i>Akademi Bomba Dan Penyelamat Malaysia Wilayah Timur</i>
9	<i>Kementerian Air, Tanah dan Sumber Asli</i>	<i>Institut Biodiversity, Jabatan Hidupan Liar dan Taman Negara (PERHILITAN) Semenanjung Malaysia,</i>



6.5

Institution Operational Framework (IOF)

6.0 Appendices

Overview

An operating framework acting as a guide to assess operational effectiveness and efficiency and to develop recommendations

In a bid to raise operational effectiveness and efficiency across the TVET landscape, a robust and well established operational framework is required. This framework was based on tried and tested good practices in benchmarking countries such as Australia that allow various stakeholders (i.e., Government, Industry, TVET Institutions and community) to work collaboratively towards a common agenda.

Based on a combination of various inputs derived from EPU's Human Capital Study on TVET - 2016, stakeholder engagements, and benchmarking analysis, several key characteristics were distilled to make up an optimised TVET Institution.

As a result, the Institution Operational Framework (IOF) was developed as a guide to assess operational effectiveness and efficiency of individual Institutions.

The four (4) key design principles of the TVET Institution Operational Framework (IOF) are as follows:

Holistic:

Covers core and business support functions

Simple:

Can be applied across multiple TVET Institutions

Progressive:

Ensures TVET Institutions have a pathway to progress to a higher level of maturity

Collaborative:

Promotes collaborative planning across course delivery, design and review



Introducing the Institution Operational Framework

The framework covers a wide range of functions within a TVET Institution, and can be divided into five (5) main categories and sub-categories

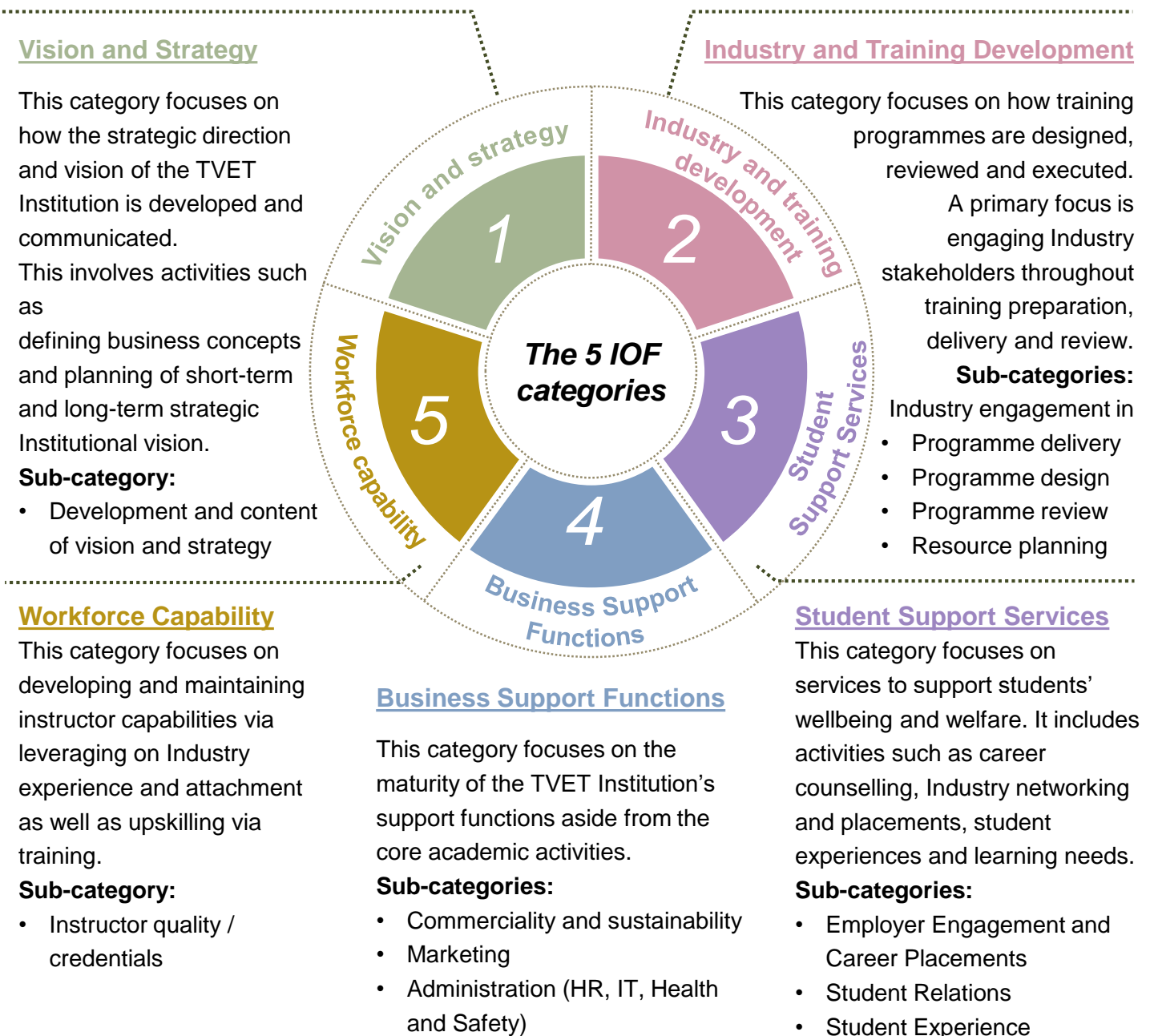


Figure 6.5.1: Institution Operational Framework categories

Introducing the Institution Operational Framework (cont'd)

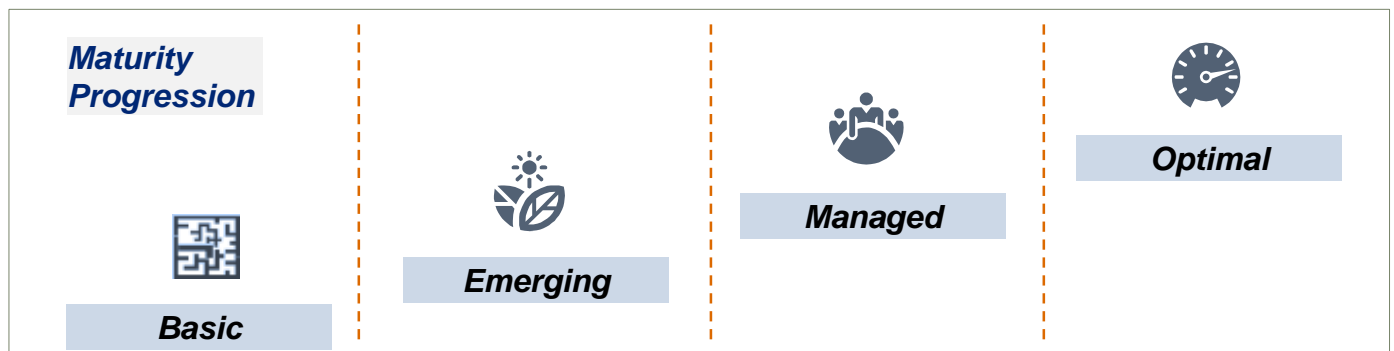
The IOF also incorporates a maturity scale that can be applied to each of the sub-categories

A four (4) point maturity scale was designed based on the design principles and key inputs of the Study. The objective of a maturity scale is to support the assessment of an Institution and identify its current and aspired state.

A high-level overview of the IOF maturity scales have been outlined below.

For further details and maturity guidelines for each of the subcategories, please refer to the following pages of this section.

High level overview of maturity scales



Basic	Emerging	Managed	Optimal
<ul style="list-style-type: none"> Minimal data collection and analysis. Limited Industry engagement to support career placements and curriculum design. Minimal documented processes, relying on ad-hoc processes. 	<ul style="list-style-type: none"> Data collection is used to support ad-hoc analysis. Some level of initial Industry engagement activities resulting in career placements and collaborative curriculum design. Documented processes covering most activities. 	<ul style="list-style-type: none"> Systematic data collection and analytics. Frequent Industry engagement activities resulting in career placements and collaborative curriculum design. Robust documentation driving efficiency and control. 	<ul style="list-style-type: none"> Technology-enabled data collection and analytics. Comprehensive and deep Industry engagement activities resulting in career placements and collaborative curriculum design. Robust and frequently reviewed documentation.

Introducing the Institution Operational Framework (cont'd)

Category, sub-category and detailed description (1/2)

The following table lists the description for the various categories and sub-categories within the Institution Operational Framework:

Category	Sub-category	Description
1. Vision and Strategy	1.1 Development and content of vision and strategy	Establishing direction for an Institution which involves defining business outcomes and long-term vision in-line with the needs of various stakeholders.
2. Industry and programme planning	2.1 Industry engagement in programme delivery	Ensuring that training is Industry-led and that Industry stakeholders are engaged throughout training preparation, delivery and review.
	2.2 Programme Design	Establishing process of identifying key programmes for development and how the programmes are developed (i.e., with clear KPIs, metrics, stakeholder feedback)
	2.3 Programme Review	Establishing process of reviewing key programmes for improvement and mechanisms on how the programmes are improved (i.e., with Industry engagement, stakeholder feedback)
	2.4 Resource planning	Ensuring processes and policies are developed and monitored to ensure optimal resource utilisation – including leveraging technology enablers for tracking utilisation.
3. Student Support Services	3.1 Employer engagement and career placements	Enforcing focus on supporting students in both career and on-the-job training placements. Leveraging upon relationships with Industry partners for placement opportunities.
	3.2 Student Relations (applications, counselling/support and etc.)	Equipping the Institutions with a comprehensive set of guidelines for driving necessary student interventions for providing counselling, career guidance and developmental policies.
	3.3 Student experience	Ensuring sufficient focus on providing excellent student experience and putting in place measures to monitor student experience information.

Introducing the Institution Operational Framework (cont'd)

Category, sub-category and detailed description (2/2)

Category	Sub-category	Description
4. Business Support Services	4.1 Commerciality and sustainability	Embedding focus on ensuring financial viability of the Institution, ranging from activities such as budgeting, financial analysis and monitoring.
	4.2 Marketing	Establishing a cohesive strategy and connect with intended stakeholders ranging from prospective students, parents to Industry players.
	4.3 Administration (HR, IT, Health and Safety and etc.)	Ensuring sufficient support for core academic activities such as Human Resources (HR), facilities management and finance.
5. Workforce capability	5.1 Instructor quality / credentials	Focusing on instructor capability and professional development to ensure continuous relevance and quality of teaching.



Introducing the Institution Operational Framework (cont'd)

Category, sub-category and maturity scale (1/10)

Category	Sub-category	Maturity Scale			
		Basic - 1	Emerging - 2	Managed - 3	Optimal - 4
1. Vision and strategy	1.1 Development of vision and strategy	<p>The strategy has some features in line with the vision. However, it was developed without input from external stakeholders (i.e., agency, Ministry and Industry players).</p> <p>The strategy and vision may not exist in a documented fashion.</p>	Documented Institution vision and strategy which is in line with the vision but was developed with minimal consultation from external stakeholders.	Documented Institution vision and strategy that has been developed in conjunction with key external stakeholders. The strategy and vision is comprehensive and covers current best practices.	<p>Documented Institution vision and strategy developed in conjunction with all key stakeholders, internally and externally.</p> <p>Strategy and vision is reviewed on a regular basis in line with best practices and Industry needs.</p>
2. Industry and programme planning	2.1 Industry engagement in programme delivery	Institution develops the programme with limited Industry engagement or Industry representatives invited are not well updated on emerging Industry needs.	Industry representatives are occasionally engaged by the TVET Institution in an ad-hoc fashion, there is no formal process for Industry participation and recognising them.	Industry is frequently engaged by the Institution in programme delivery, and there are established processes to enable this. This is either done through Industry driven courses or part-time Industry Instructors.	The Institution has a robust relationship with Industry and draws on Industry capabilities to innovate and drive best practices. The Institution has embedded practices to drive Industry engagement on co-development of programme and leveraging on Industry's equipment.

Introducing the Institution Operational Framework (cont'd)

Category, sub-category and maturity scale (2/10)

Category	Sub-category	Maturity Scale			
		Basic - 1	Emerging - 2	Managed - 3	Optimal - 4
2. Industry and programme planning (cont'd)	2.2 Programme Design	<p>Primary considerations: Programmes are created following an ad hoc procedure that does not take into consideration of relevant stakeholder feedback (i.e., Industry). Programmes are compliant with NOSS framework.</p> <p>Secondary considerations: Programme capacity is not met (e.g., student enrolment to programme capacity is <50%).</p>	<p>Primary considerations: The Institution has basic programme development procedures which considers stakeholder feedback. However, there are no metrics / KPIs to incorporate stakeholder feedback. Programmes are compliant with NOSS framework.</p> <p>Secondary considerations: Majority of programmes operate close to capacity (e.g., 50-70%).</p>	<p>Primary considerations: The Institution has comprehensive programme development procedures that draw on stakeholder (i.e., Industry) feedback and is measured by key metrics and KPIs. Basic future workforce skill needs assessments are undertaken for programme consideration. Programmes are compliant with NOSS framework.</p> <p>Secondary considerations: Most programmes operate to capacity (e.g, 70-85%).</p>	<p>Primary considerations: The Institution has comprehensive programme development procedures that draw on the most informed Industry shareholders and regularly measured through metrics and KPIs. Industry is directly involved in the design of programme curriculum. Programmes are compliant with NOSS framework.</p> <p>Secondary considerations: The Institution has an appropriate number of students for its courses, and most programmes operate to capacity.</p>

Introducing the Institution Operational Framework (cont'd)

Category, sub-category and maturity scale (3/10)

Category	Sub-category	Maturity Scale			
		Basic - 1	Emerging - 2	Managed - 3	Optimal - 4
2. Industry and programme planning (cont'd)	2.3 Programme Review	Reviews are undertaken with limited structure or KPIs. Programmes are infrequently reviewed.	Basic review structures are in place and a schedule of programmes for review is established.	Programme reviews are undertaken according to a designed schedule against key criteria. Only Industry players are consulted in the process of validating findings and ensuring Industry relevance.	Programme reviews are undertaken according to a designated schedule against key criteria. External stakeholders (i.e., Industry players, students and parents) provide inputs to the programme. Proactive action plans are developed to implement necessary changes and forecast / document future changes.

Introducing the Institution Operational Framework (cont'd)

Category, sub-category and maturity scale (4/10)

Category	Sub-category	Maturity Scale			
		Basic - 1	Emerging - 2	Managed - 3	Optimal - 4
2. Industry and programme planning (cont'd)	2.4 Resource planning	Some resource planning is undertaken manually, particularly in regards to instructor availability.	Resource planning is supported by the use of technology and defined metrics such as utilisation hours and programme capacity.	The Institution undertakes short and long-term forecasts of resource needs to maximise resource utilisation via an integrated system. Limited collaboration with other TVET Institutions in programme delivery by sharing Instructors.	The Institution undertakes short and long-term forecasts of resource needs to maximise resource utilisation. Where necessary, the Institution has measures in place to accommodate resource planning beyond the Institution-level and agile enough to cope with over / under utilisation (i.e., able to share teaching resources data across other Institutions at an agency-level).

Introducing the Institution Operational Framework (cont'd)

Category, sub-category and maturity scale (5/10)

Category	Sub-category	Maturity Scale			
		Basic - 1	Emerging - 2	Managed - 3	Optimal - 4
3. Student Support Services	3.1 Employer engagement and career placements	The Institution rarely facilitates opportunities for students to engage with Industry and employers throughout their programme.	<p>The Institution has a basic network of relationships that facilitate student engagement with Industry.</p> <p>Basic information for career awareness is provided to students (e.g., Industry pathways, work environment).</p>	<p>The Institution has a deep network of relationships with prospective employers that results in targeted training and post-training employability.</p> <p>Career guidance services are offered to students supported by representatives from Industry to support awareness and decision-making.</p>	<p>The Institution has a comprehensive Industry network that provides opportunities to students, facilitated by some dedicated resources. The Institution also actively seeks out additional relationships and opportunities to support student needs and growth.</p> <p>There is a systemised mechanism for continuously seeking employer feedback.</p>

Introducing the Institution Operational Framework (cont'd)

Category, sub-category and maturity scale (6/10)

Category	Sub-category	Maturity Scale			
		Basic - 1	Emerging - 2	Managed - 3	Optimal - 4
3. Student Support Services (cont'd)	3.2 Student Relations (applications, counselling / support)	Student supports are available for some requests, however, more complex requirements, such as identification of differentiated student support needs in the classroom are out of scope.	<p>Most student support requirements are met, including counselling, learning support and career guidance on an ad-hoc basis by Instructors.</p> <p>Student application and assessment guidelines are documented and are in place.</p>	<p>A designated team works to meet all current student support needs, including counselling, learning support and career guidance.</p> <p>Basic student monitoring methodology is in place to ensure students are able to complete courses / stay on track.</p>	<p>Student support needs are anticipated and prepared for ahead of time, by a designated team using innovative solutions.</p> <p>Clear intervention plans are developed with students who have been marked as "at-risk".</p>

Introducing the Institution Operational Framework (cont'd)

Category, sub-category and maturity scale (7/10)

Category	Sub-category	Maturity Scale			
		Basic - 1	Emerging - 2	Managed - 3	Optimal - 4
3. Student Support Services (cont'd)	3.3 Student experience	Minimal student experience data is collected and there is limited emphasis on the maintenance of student support systems.	Some student experience data is collected and actioned. There are an increasing range of considerations that are focused on by the Institution.	Student experience data is regularly collected and action plans are developed to implement changes in accordance with findings. Students have access to a range of support mechanisms, including moderations and complaints mechanisms.	Student experience data is regularly collected and action plans are developed to implement changes in accordance with findings. Research is undertaken to anticipate emerging and new student needs, and innovative methods are utilised to proactively cater for them.

Introducing the Institution Operational Framework (cont'd)

Category, sub-category and maturity scale (8/10)

Category	Sub-category	Maturity Scale			
		Basic - 1	Emerging - 2	Managed - 3	Optimal - 4
4. Business Support Services	4.1 Commerciality and sustainability	The Institution has basic financial monitoring and tracking mechanisms in place, however, ongoing commerciality is tenuous and there is a reliance on Government funds and other donations.	The Institution has clear financial monitoring and tracking systems in place, with clear metrics and targets in place to measure financial sustainability. Funding reliance is primarily on Government sources.	The Institution has a comprehensive budgeting and financial monitoring process. Financial data is frequently co-analysed with operational data for forecasting and analysis. Some non-Governmental sources of funds are acquired and utilised.	The Institution has a comprehensive budgeting and financial monitoring process, with a focus on driving innovation and efficiencies. The Institution is commercially sustainable, with long-term sustainability a key focus. (i.e., relying on non-Government sources of funding).
	4.2 Marketing	There are only foundational strategies in place to manage relationships with stakeholders and to market the Institution to prospective students with little to no usage of digital communication tools.	The Institution utilises a variety of channels to manage relationships with external stakeholders and sufficiently supports its marketing team with data, information and funds.	The Institution has a clear marketing strategy and has developed a point of view on key marketing components such as target audience, prioritised courses, prioritised Industries.	The Institution has a comprehensive marketing strategy and point of market differentiation. The Institution also tracks brand recognition and implements strategies to improve it.

Introducing the Institution Operational Framework (cont'd)

Category, sub-category and maturity scale (9/10)

Category	Sub-category	Maturity Scale			
		Basic - 1	Emerging - 2	Managed - 3	Optimal - 4
4. Business Support Services (cont'd)	4.3 Administration (HR, IT, Health and Safety and etc.)	<p>The TVET Institution's student or staff management system has basic functionality. There is a reliance on administrative headcount / manual processes with little technological innovation.</p> <p>Limited documented guidelines and Standard Operating Procedures (SOPs) in place to guide employees.</p>	<p>The Institution has a foundational student and staff management system, allowing for decreased reliance on administrative headcount.</p> <p>Some documented guidelines and SOPs present to guide employees. However, it is not present for all key activities.</p>	<p>The Institution has comprehensive student and staff management systems, anchored by a frequently updated IT system. Administrative data is collected, including graduate outcomes.</p> <p>Robust documented guidelines and SOPs are present for most key activities.</p>	<p>The Institution has comprehensive student and staff management systems, anchored by a regularly updated IT system. Administrative data is collected and used to improve practices.</p> <p>Robust documentation and SOPs are present for most key activities and are reviewed on a regular basis.</p>

Introducing the Institution Operational Framework (cont'd)

Category, sub-category and maturity scale (10/10)

Category	Sub-category	Maturity Scale			
		Basic - 1	Emerging - 2	Managed - 3	Optimal - 4
5. Workforce capability	5.1 Instructor quality / credentials	There is limited emphasis on staff / instructor capability or opportunities for staff upskilling within the Institution.	The Institution encourages the building of workforce capability, however, staff do not have clear professional development KPIs.	There are clear KPIs for professional development and the Institution develops new requirements / training opportunities for staff.	There are clear KPIs for professional development and the Institution has relationships with the Industry to encourage upskilling opportunities with Industry experts.



TVET Institution site-visits

Six (6) TVET Institutions across the Northern, Central and Southern regions were visited and tested with the IOF

The key objectives for the site visits included:

- Identification of key challenges or pain points.
- Validation of the understanding of key TVET Institutions and the analysis of their operational efficiency using IOF.
- To identify good practices which can potentially be applied across other TVET Institutions.

The following set of guidelines were utilised to identify a pool of potential TVET Institutions to visit. The six (6) TVET Institutions were ultimately endorsed and approved by MoHR.

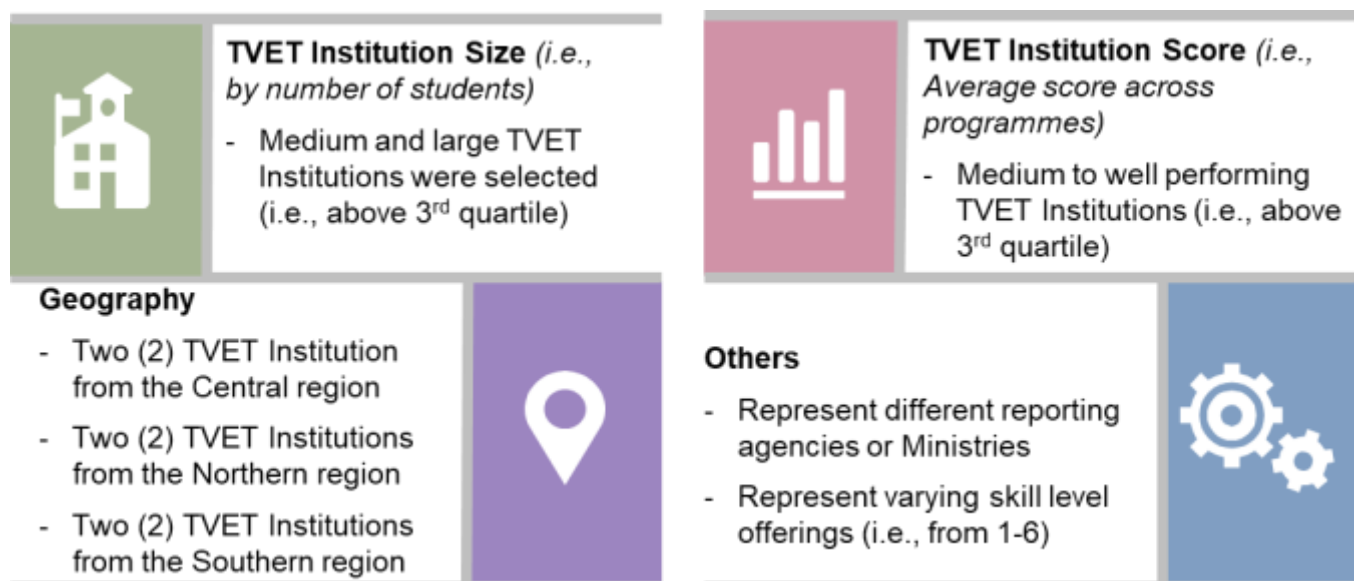
“*Findings from this site visit was useful in helping us understand the key issues on the ground, especially at an agency level.*”

Excerpt from agency representative

“*The TVET ecosystem needs a framework that can be applied across various Institutions with the objective of assessment and operational improvement.*”

Excerpt from TVET Institution representative

Key guidelines for selection of TVET Institutions for site-visits:



Key findings from TVET Institution site-visits

Good practices and improvement opportunities from various site-visits have been summarised across the five (5) categories

Category	Example of an optimal TVET Institution (based on the IOF)	Current state of TVET Institutions (based on TVET institution site-visits)
1. Vision and Strategy	<p>Development and content of vision and strategy: Documented TVET Institution vision and strategy that has been developed in collaboration with all key stakeholders, internally and externally. The strategy and vision is future facing, seeking to drive the TVET Institution forward through innovation in design, delivery and review of curriculum which is aligned to Industry best practices.</p> <p>Strategy and vision is reviewed on a regular basis.</p>	<p>Good Practices:</p> <ul style="list-style-type: none"> • Dedicated Strategy and Business Development Committee. • Business plan developed with Industry input. • Use of Balanced Scorecards (BSC) to drive strategy and vision. <p>Key Improvement Opportunities:</p> <ul style="list-style-type: none"> • Ensure sufficient stakeholder engagement when developing strategy, vision or business plans.
2. Industry and training development	<p>Industry engagement in:</p> <p>Programme Design: The TVET Institution has comprehensive programme development procedures that draw on key metrics, KPIs and stakeholder feedback. Industry is directly involved in the design of programme curriculum.</p>	<p>Good Practices:</p> <ul style="list-style-type: none"> • Industry representatives are directly involved in the decision-making process of equipment purchases. This ensures that the equipment is Industry-relevant. • Embedded KPIs detailing how frequently Industry players need to be engaged and finding new Industries to collaborate with. • Collaborate with other TVET Institutions to develop curriculum as well as share facilities and assets.

Key findings from TVET Institution site-visits

Good practices and improvement opportunities from various site-visits have been summarised across the five (5) categories (cont'd)

Category	Example of an optimal TVET Institution (based on the IOF)	Current state of TVET Institutions (based on TVET institution site-visits)
<p>2. Industry and training development</p>	<p>Programme Delivery: The TVET Institution has a robust relationship with the Industry, whereby the TVET Institution draws on Industry capabilities to innovate and drive best practice. The TVET Institution has embedded practices to drive Industry engagement, with a focus on co-development of programme delivery and leveraging on Industry's equipment.</p> <p>Programme Review: Programme reviews are undertaken according to a designated schedule against key criteria. External stakeholders are consulted in the process to validate findings and ensure Industry relevance. Proactive action plans are developed to implement necessary changes and forecast / document future changes.</p> <p>The TVET Institution undertakes short- and long-term forecasts of resource needs to maximise resource utilisation.</p> <p>Resource Planning: Where necessary, the TVET Institution has measures in place to accommodate resource planning beyond the institution-level and is agile enough to cope with over / under utilisation (i.e., able to share teaching resources data across other TVET Institutions at an agency-level).</p>	<ul style="list-style-type: none"> • Development of courses above-and-beyond NOSS requirements to maintain Industry relevance. • Sharing of instructors across TVET Institutions under the same agency is possible. <p>Key Improvement Opportunities:</p> <ul style="list-style-type: none"> • Maximise Industry engagement in all aspects of programme delivery, including design and review. • Establish policies or processes for seeking Industry feedback. • Monitor asset utilisation and capitalise on leasing opportunities. • Establish more engagements with employers of graduates.

Key findings from TVET Institution site-visits

Good practices and improvement opportunities from various site-visits have been summarised across the five (5) categories (cont'd)

Category	Example of an optimal TVET Institution (based on the IOF)	Current state of TVET Institutions (based on TVET institution site-visits)
<p>3. Student Support Services</p>	<p>Employer engagement and career placements: The TVET Institution has a comprehensive Industry network that provides opportunities to students, facilitated by institutional staffs. Institution staffs also actively seeks out additional relationships and opportunities to support student needs and growth, and there is a systemised mechanism for continuously seeking employer feedback.</p> <p>Student Relations: Student support needs are anticipated and prepared for ahead of time, by a designated team using innovative solutions. Clear intervention plans are developed with students who have been marked as "at-risk".</p> <p>Student experience: Student experience data is regularly collected and action plans are developed to implement changes in accordance with findings. Research is undertaken to anticipate emerging student needs, and innovative methods are utilised to proactively cater for them. Students are viewed as the key customer of the TVET Institution and all policies are developed with this in mind.</p>	<p>Good Practices:</p> <ul style="list-style-type: none"> • Established team to support TVET graduates obtain employment (i.e., CV writing classes or reviewing CVs). • Actively seeking employer feedback of TVET Institutions' graduates. • Established practices to monitor student behaviour and performance. This serves as referrals to the student counselling team. • Use of low-cost digital platforms to collect student satisfaction data (e.g., Google Forms). <p>Key Improvement Opportunities:</p> <ul style="list-style-type: none"> • Leverage existing Industry connections to facilitate job-matching. • Develop student monitoring mechanisms to ensure students stay on track. • Ensure student satisfaction data is analysed for improvement initiatives.

Key findings from TVET Institution site-visits

Good practices and improvement opportunities from various site-visits have been summarised across the five (5) categories (cont'd)

Category	Example of an optimal TVET Institution (based on the IOF)	Current state of TVET Institutions (based on TVET institution site-visits)
<p>4. Business Support Services</p>	<p>Commerciality and sustainability: The TVET Institution has a comprehensive budgeting and financial monitoring process, with a focus on driving innovation and efficiencies. The TVET Institution is commercially sustainable, with long-term sustainability a key focus. (i.e., relying on non-Government sources of funding).</p> <p>Marketing: The TVET Institution has a comprehensive marketing strategy and point of market differentiation. The TVET Institution also tracks brand recognition and implements strategies to improve it.</p> <p>Administration (HR, IT, Health, Safety and etc.): The TVET Institution has comprehensive student and staff management systems, anchored by a regularly updated IT system. Administrative data is collected and used to improve practices.</p> <p>Robust documentation and SOPs are present for most key activities and are reviewed on a regular basis.</p>	<p>Good Practices:</p> <ul style="list-style-type: none"> • “Cost-consciousness” is embedded across the departments via clear KPIs. • Financial analysis to track profitability of programmes is reported periodically and discussed for decision-making. • Use of technology / systems to support transactional activities and analytical work. • Utilisation of a variety of marketing channels to reach intended audiences. <p>Key Improvement Opportunities:</p> <ul style="list-style-type: none"> • Embed cost efficiency as a KPI. • Streamline external reporting by TVET Institutions to TVET agencies (e.g., DSD and PTPK) to avoid duplication of report preparation. • Develop clear marketing strategies to target various stakeholders.

Key findings from TVET Institution site-visits

Good practices and improvement opportunities from various site-visits have been summarised across the five (5) categories (cont'd)

Category	Example of an optimal TVET Institution (based on the IOF)	Current state of TVET Institutions (based on TVET institution site-visits)
5. Workforce capability	Instructor quality / credentials: There are clear KPIs for professional development and the TVET Institution has relationships with the Industry to encourage upskilling opportunities with Industry experts.	<p>Good Practices:</p> <ul style="list-style-type: none"> • Mandatory instructor upskilling embedded as part of TVET Institution KPIs. • Leverage Industry connections to send instructors for attachments. • Up-skilling instructors to international-standards (e.g., sending instructors to Germany) whom will then disseminate learnings with local instructors. <p>Key Improvement Opportunities:</p> <ul style="list-style-type: none"> • Enhance focus on instructor Industry attachment to improve programme design and ways of working.

Other key challenges highlighted by TVET Institutions during site-visits:

- Some TVET Institutions are unable to seek external funding due to policy restrictions (e.g., unable to lease assets to Industry or public) thus increasing their reliance on Government funds.
- “*Amanah*” funds (i.e., funds that are contributed by other activities such as corporate training) are highly regulated, requiring heavy approvals – thus limiting its use by the TVET Institution.
- “Silo mentality” of Ministries discourages inter-Institution collaboration across areas of programme design and asset sharing.
- CIAST e-profiling system does not allow instructors rated four (4) and above to attend CIAST training courses. However, participants indicated there is a need for training to maintain relevance to the Industry needs.
- Branding of TVET as a “last option” negatively impacts students’ morale.
- Waning interests in certain fields of Study contributes to lower student enrolment.

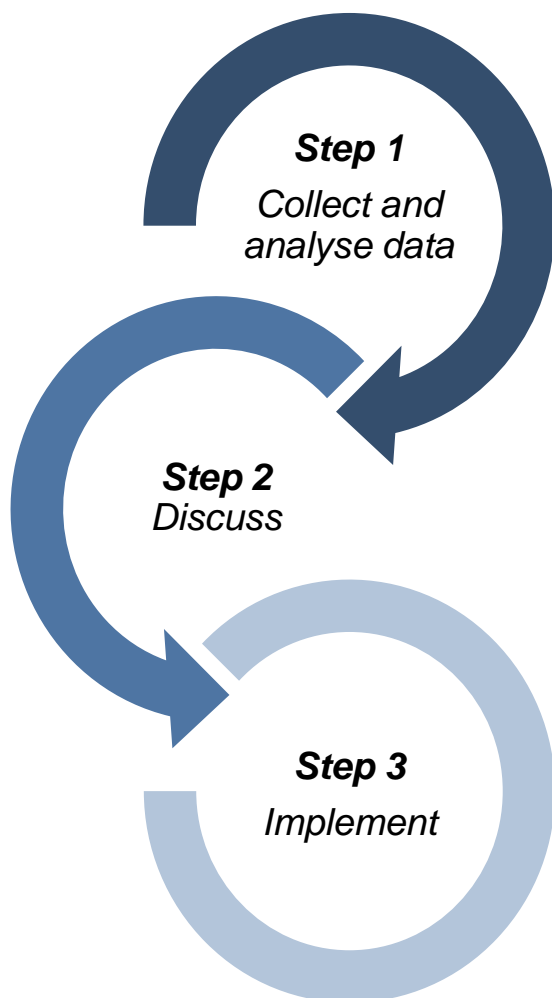
Utilising the TVET Institution Operational Framework

Moving forward, this framework can be used to facilitate discussions and recommendation development across the various functions of other TVET Institutions

A periodic review of the TVET Institution should be conducted to track implementation and maturity progress. Utilising the framework will assist TVET Institutions to determine and understand their current state as well as to identify areas of improvements.

Prior to utilising the IOF, it is important for a facilitator to be appointed for chairing the discussions with TVET Institutions. It is recommended that an independent party chairs the discussions – which can be carried out in three (3) primary steps.

Key activities in utilising the Institution Operational Framework:



1. **Collect Data:** The facilitator should collect basic data such as instructor utilisation, cost per student, and drop-out rates.
2. **Analyse data:** This will serve to identify key pain points for further discussion such as rising costs per student or dropping instructor utilisation.

3. **Top TVET Institution Management Discussion:** The facilitator should first meet TVET Institution Top Management and understand the aspired direction for their TVET Institution. This can be done using the IOF Maturity scale* to guide their discussions.
 - Objective: To plot out the current state and aspired targets using the IOF Maturity scale.
4. **Group Discussions:** Detailed review of the TVET Institution operations is performed by conducting group discussion sessions with Heads of Department or Heads of function across the TVET Institution.
 - Objective: To understand pain points and brainstorm recommendations for adoption.

5. **Implementation:** Perform wrap-up discussions with key TVET Institution stakeholders to discuss key challenges and recommendations to be implemented.
 - Objective: Define list of initiatives and discuss implementation plan (i.e., owner, timeline and success factors).

6.6

List of Institutions visited for Institution Operational Framework (IOF)

6.0 Appendices

List of Institutions visited for Institution Operational Framework (IOF)

The following presents the list of Institutions visited as of 6 September 2018

No.	Institutions	Dates
1	Penang Skills Development Centre (PSDC) - Northern Region	3 July 2018 – 5 July 2018
2	Japan Malaysia Technical Institute (JMTI) - Northern Region	4 July 2018 – 6 July 2018
3	GIATMARA Prima Pasir Gudang - Southern Region	9 July 2018 – 11 July 2018
4	<i>Kolej Komuniti Pasir Gudang - Southern Region</i>	9 July 2018 – 11 July 2018
5	<i>Institut Latihan Perindustrian Kuala Lumpur (ILPKL) - Central Region</i>	13 July 2018 and 16 July 2018
6	<i>Institut Kemahiran Belia Negara Peretak – Central Region</i>	6 Sept 2018



6.7

Resource Optimisation



Overview

We assessed 600 TVET Institutions across Malaysia focusing on outcome based indicators

Background

Programme Evaluation is a key component to assess the quality of programmes and TVET Institutions via an outcome-driven approach.

This section represents the detailed findings and recommendations.

Programme Evaluation objectives

1. To establish an objective and robust approach to baseline and assess TVET programmes and Institutions.
2. Analyse Programme Evaluation results and raw data to provide insights and conclusive findings which were then supplemented with Industry engagement findings, workshop and agency interviews to validate quantitative findings.
3. Build strong momentum and commitment among key stakeholders to drive concrete actions during stakeholder engagement sessions.



Overview (cont'd)

The outcomes from the evaluation of both programmes and operational efficiency has helped in delivering insights which were corroborated through stakeholder engagements

The approach adopted

The programme evaluation methodology focuses on eight (8) key performance indicators which covers both outcome-based and input-based indicators.

Based on the findings, a baseline Resource Optimisation Implementation Toolkit (ROIT) was created to help guide TVET Institutions on next steps once the Programme Evaluation scores are generated.

Furthermore, a set of recommendations were identified to improve the current ROM methodology to help increase the robustness of the model.



Source: 1. EPU TVET Study 2016

2. Refer to Appendix 6.2 for list of stakeholders engaged

Note: Findings of this section in the report is as per 2018 self-audit data provided on 12th June 2018.

Introduction to Resource Optimisation Model Approach and methodology

The ROM utilises Programme Evaluation scores to determine which TVET Institutions have to undergo a review based on the ROIT.

The evaluation is conducted based on a rating system covering the eight (8) agreed performance indicators which encompass both outcome and input-based indicators.

In-scope programmes were assessed against eight (8) Programme Evaluation criteria that were agreed with the PTC and PSC members.

- Each programme received a performance score, which was then aggregated at a TVET Institution and TVET agency level.
- The Programme Evaluation findings were then substantiated through interviews, sharing sessions and meetings with Government officials and Industry players.
- The Programme Evaluation findings were then substantiated further with the operational efficiency framework and ROIT to derive a BOS (Blue Ocean Strategy) recommendation.
- Additionally, improvement opportunities for the ROM methodology were assessed and identified to ensure robustness and accuracy.

Figure 6.6.1: Programme Evaluation 8 Performance Indicators

Performance Indicators	Weightage	Description
Outcome-based (70%)		
1. Employability	70%	(Employed graduates + graduates pursuing further study) / total graduates (%)
2. Graduate salary	20%	Weighted average of entry salary range according to certificate level
3. Duration to employment	10%	Weighted average of time taken by graduates to gain employment after graduating from programme
Sub-total	100%	
Input-based (30%)		
4. Industry collaboration	35%	Total of Industry relations indicators
5. Industry experience	25%	Weighted average of the period of industrial experience (months) of the instructor (pre-joining TVET institutions)
6. Academic/ skills qualification	20%	Weighted average of highest academic qualification level of instructors or weighted average of highest skills qualification of instructors
7. Industry attachment	10%	Weighted average of period of industrial attachment (months) of instructors while teaching
8. Instructor-student ratio	10%	Total teaching instructors / total enrolment (%)
Sub-total	100%	

Note: Findings of this section in the report is as per 2018 self-audit data provided on 12th June 2018.

Introduction to Resource Optimisation (Cont'd) **Scope of the programme evaluation**

TVET Institution level filtering criteria

- Public TVET Institutions with programmes accredited by DSD and MQA.
- Private TVET Institutions with greater than five (5) programmes captured in the TVET self-audit survey and has a star rating of more than three (3).

Programme Level Filtering Criteria

- Programmes identified by TVET Institutions as being TVET related (as per entry in the self-audit survey).
- Ongoing and temporarily stopped programmes (i.e., excludes new and discontinued programmes).
- Programmes with no tracer study has been removed from this assessment.

The tables below details the type of data and status of programmes that were included in the Programme Evaluation:

Type of Data	Definition
Outcome-based Data	Complete = Employability AND graduate salary fields > 0
	Incomplete = Otherwise
Input-based Data	Complete = Instructor AND Industry collaboration fields > 0
	Incomplete = Otherwise

Status of Programme	Definition
New programme	Intake > 0, Output = 0
Running programme	Intake > 0, Output > 0
Ceased programme	Intake = 0 and not temporarily stopped
Temporarily stopped programme	Intake =0, as specified by TVET Institutions

Figure 6.6.2: Definition of Type of Data and Status of Programme

Note: Findings of this section in the report is as per 2018 self-audit data provided on 12th June 2018.

Introduction to Resource Optimisation (Cont'd) Scope of the programme evaluation

The various scoping and filtering criteria on the DSD 2018 self-audit survey data were applied to arrive at the total number of TVET Institutions and programmes to be evaluated under the Programme Evaluation. The following is the final number of programmes that were evaluated under the Programme Evaluation and the ROM, only **IN SCOPE** or **COMPLETE DATA** TVET Institutions or programmes were included:

- **539 In-Scope TVET Institutions**
- **2,338 In-Scope TVET Programmes**

The programmes evaluated:

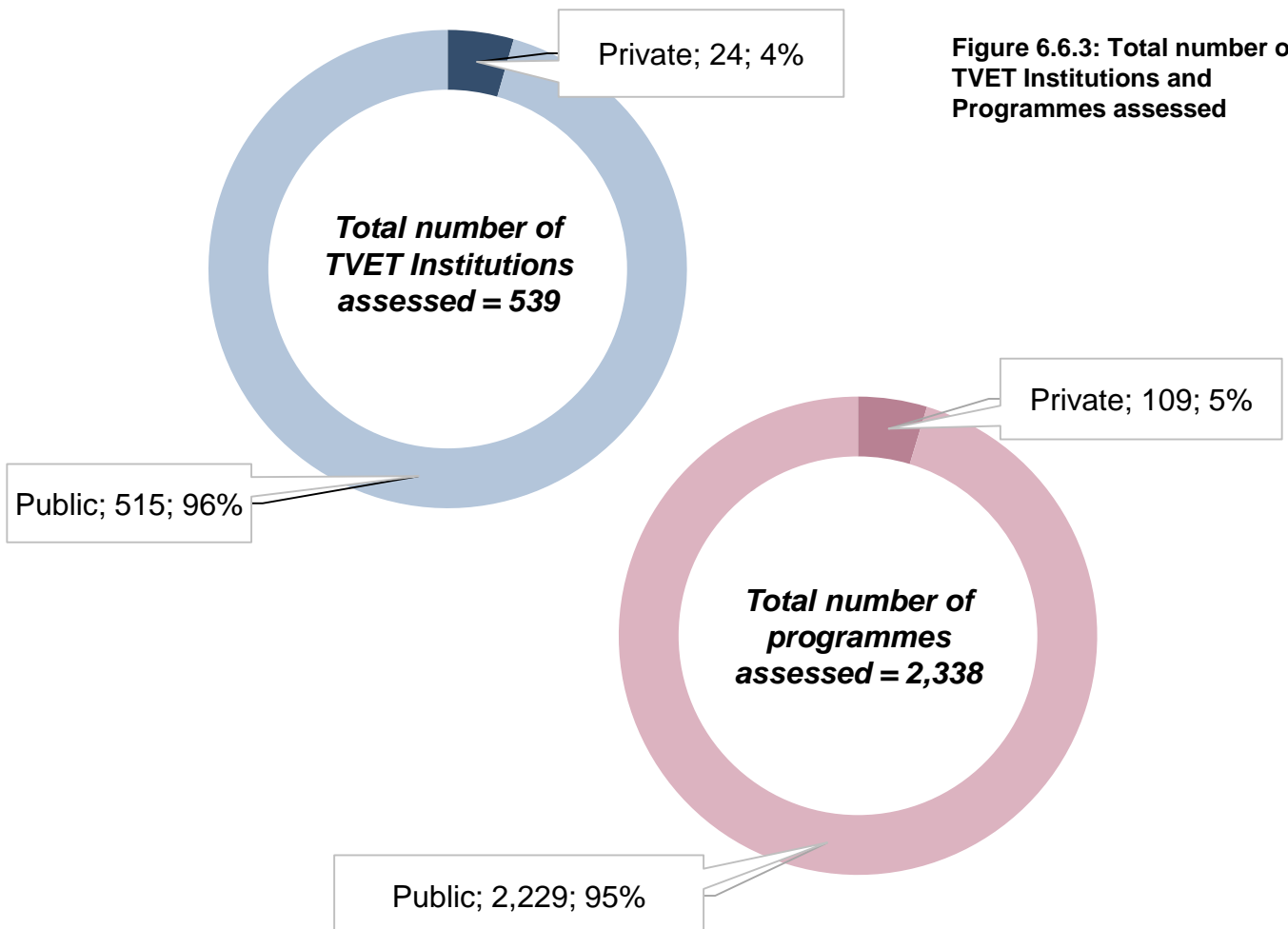


Figure 6.6.3: Total number of TVET Institutions and Programmes assessed

Note: Findings of this section in the report is as per 2018 self-audit data provided on 12th June 2018.

Programme Evaluation findings





The overall scores have reduced compared to the 2014 Programme Evaluation scores

All TVET programmes which have outputs (i.e, TVET graduates) using the eight (8) were evaluated using the eight (8) performance indicators. The results were compiled based on the 2014 Programme Evaluation results versus the 2017 programme evaluation results. Subsequently, a deep dive analysis on both the outcome and input based indicators were conducted and the outcomes are in the following pages.

The maximum score is 5.00 with higher scores indicating better results. The overall average score for the 2017 Programme Evaluation results stands at 3.74/5.00 whilst the 2014 Programme Evaluation results stands at 4.00/5.00.

Only three indicators demonstrated a decline in overall average score with the remaining five indicators demonstrating an overall increase in overall average score.

Figure 6.6.4: Programme results for year 2014 and 2017

2014 Programme Results	2017 Programme Results
<p>Overall score: 4.00</p> <p>Outcome-based Indicators:</p> <ul style="list-style-type: none"> • Employability Score : 4.65 • Salary Score : 3.21 • Duration to Employment Score : 3.91 <p>Input-based Indicators:</p> <ul style="list-style-type: none"> • Industry Collaboration Score : 3.60 • Instructor Industry Experience Score : 2.76 • Instructor Qualification Score : 3.33 • Instructor Industry Attachment Score : 1.51 • Instructor and Student Ratio Score : 3.96 	<p>Overall score 3.74 </p> <p>Outcome-based Indicators:</p> <ul style="list-style-type: none"> • Employability Score : 4.25  • Salary Score : 3.27 • Duration to Employment Score : 4.16 <p>Input-based Indicators:</p> <ul style="list-style-type: none"> • Industry Collaboration Score : 2.86  • Instructor Industry Experience Score : 3.51 • Instructor Qualification Score : 2.09  • Instructor Industry Attachment Score : 2.62 • Instructor and Student Ratio Score : 4.40

Note: Findings of this section in the report is as per 2018 self-audit data provided on 12th June 2018.

Programme Evaluation findings (cont'd)

Graduate employability

TVET graduate employability was measured by tracking graduate employment status and duration to employment across six (6) economic regions and 19 MSIC sub-sectors across all programme levels. On average, the graduate employability rate stood at 92% which has resulted in an average score of 4.25 / 5.00.

Below are the key highlights and findings from the analysis:

8% is the average unemployment rate across the six economic regions

Average Score:

4.25 / 5.00

72% obtained employment within six months after graduating

31% of employed graduates work, study or own a business outside their field of study

8% of employed graduates have their own business (6% within their field of study and 2% outside their field of study)

69% of employed graduates work, further study or own a business within their field of study

16% of TVET graduates further their studies after graduating

92% of TVET graduates were able to obtain employment after graduating

Note: Findings of this section in the report is as per 2018 self-audit data provided on 12th June 2018.

Programme Evaluation findings (cont'd)

Graduate salary

TVET graduate salary data was measured by assessing their income levels across six (6) economic regions and 19 MSIC sub-sectors across all programme levels. On average, 68% of TVET graduates earned between RM 500 – RM 1,500 which has resulted in an average score of 3.27 / 5.00.

Below are the key highlights and findings from the analysis:

28% of TVET graduates across all skill levels earn less than RM 1,000

Average Score:

3.27 / 5.00

45% of TVET graduates across all skill levels earn between RM 1,000 – RM 1,500

25% of TVET graduates across all skill levels earn between RM 1,500 – RM 3,000

2% of TVET graduates across all skill levels earn more than RM 3,000

97% of level 5 (advanced diploma) graduates earn more than RM 1,500

Majority of graduates earn between RM 1,000 – RM 1,500 regardless of programme skill level

8% of graduates across programme levels 1-4 programmes earn more than RM 1,500

Note: 1. Level 1,2,3 (Certificate), Level 4 (Diploma), Level 5 (Advanced Diploma), Level 6 (Degree)

2. Findings of this section in the report is as per 2018 self-audit data provided on 12th June 2018.

Programme Evaluation findings (cont'd)

Instructor experience and Industry attachment

TVET Instructors were measured by their experience (in Industry and attachments) across six (6) economic regions and 19 MSIC sub-sectors across all programme levels. On average, the instructor experience indicator scored 3.51 / 5.00 whilst the Industry attachment indicator scored on average 2.62 / 5.00

Below are the key highlights and findings from the analysis:



Note: Findings of this section in the report is as per 2018 self-audit data provided on 12th June 2018.

Programme Evaluation findings (cont'd)

Industry collaboration

TVET Institutions' Industry collaboration was measured across six (6) economic regions and 19 MSIC sub-sectors across all programme levels. The results of Industry collaboration when aggregated scored an average score of 2.86 / 5.00

Below are the key highlights and findings from the analysis:

73% of TVET
programmes are
developed with Industry

Average Score:

2.86 / 5.00

80% of TVET
Institutions have some
form of arrangement with
Industry players to provide
practical training

19% of TVET
Institutions receive some
form of equipment
sponsorship

12% of TVET
Institutions receive some
form of monetary support

68% of TVET
Institutions have an
arrangement with Industry
players to provide post-
graduate interview

50% of TVET
Institutions have some
form of partnership with
Industry players

18% of TVET
Institutions have some
form of arrangement with
Industry players for
student sponsorship

Note: Findings of this section in the report is as per 2018 self-audit data provided on 12th June 2018.

Resource Optimisation Model output

The programme scores will determine which programme needs to be reviewed in the ROIT

Each of the programmes evaluated under the ROM were given a score and subsequently placed into quartiles / bands which determined the following three (3) types of recommendations moving forward.

- **Enhance and Create:** Enhance the current programme quality and potentially create more of these types of programmes subject to the cost and demand of the programme. Additionally, knowledge assets such as teaching methodologies, SOPs used, performance metrics, and other materials can be used as a point of reference by other TVET Institutions.
- **Retain and Enhance:** Programmes are to be retained and enhanced based on the eight (8) performance indicators and may be subject to change based on ROIT. Agencies to decide the appropriateness of adopting the toolkit based on the mandate of the TVET Institution (e.g., social obligation courses)
- **Review under ROIT:** These programmes have to undergo all stages of the ROIT and the results must be audited by an independent party. Their performance has to be closely monitored and further consolidation / re-purposing efforts may be the next steps after applying the toolkit

Score Range	Recommendation
Score 4.01 – 5.00	Enhance and Create
Score 3.01 – 4.00	Retain and Enhance
Score 2.01 – 3.00	Review under ROIT
Score 1.01 – 2.00	
Score 0.00 – 1.00	

Figure 6.6.5: Score range and recommendations

Resource Optimisation Model output (cont'd)

There are 317 programmes to be reviewed using the resource optimisation implementation toolkit

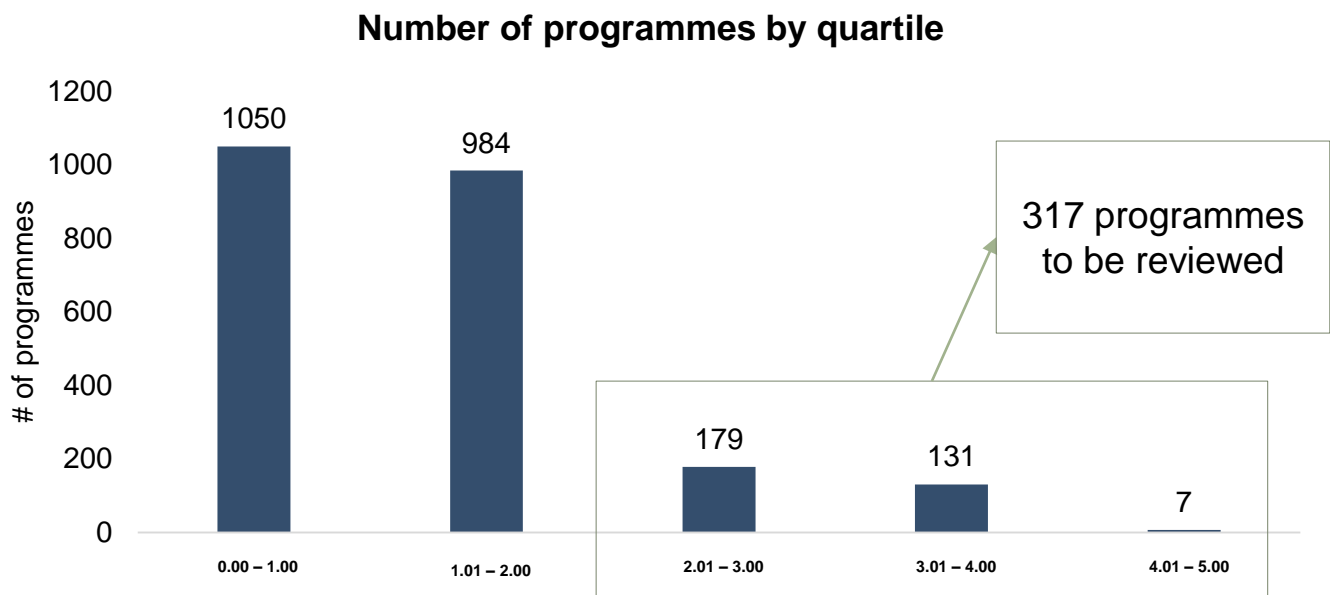


Figure 6.6.6: Number of programmes by quartile; each quartile is 20%

On average the programme evaluation score for programmes between the score range of 2.01 – 5.00. These programmes should be reviewed based on the ROIT.

Based on the current ROM methodology, the programme evaluation scores do not take into account factors such as length of programme, profitability of programme, purpose of programme, cost of delivery and other factors. Hence there is a need for a framework which helps to provide further guidance as the programme evaluation results only provides the starting point to identify areas of improvement across the TVET Institutions and whether the programme is really efficient and effective.

A ROIT was developed to help address this issue and provide a more holistic approach which combines the ROM with real world applications

Resource Optimisation Implementation Toolkit

There is a need to develop a standardised methodology and tool to evaluate existing and new programmes

Introduction

All TVET Institutions have a finite amount of resources and these resources have to be optimised to reach the following objectives:

1. Inclusive and accessible
2. Demanded from both Industry and / or community (social obligation)
3. Efficient in delivery
4. Sustainable from a financial perspective

Currently, there is no standardised methodology or tool being used Nationally to evaluate existing or new courses.

Objective

The programme evaluation results provide a starting point to identify areas of improvement across the TVET Institutions, however it is found that there is a significant need to create and implement a tool which allows TVET Institutions to have a standardised methodology in evaluating two (2) major aspects of programme design and delivery:

1. How effective and desirable are the existing courses with respect to the local Industry and community?
2. Is there a strong business case to initiate a new programme?

The toolkit aims to provide a standardised and tested way to guide TVET Institutions on how to better manage their resources by introducing a few key components to be considered. Additionally, the inputs from this toolkit can be used to benchmark TVET Institutions across Malaysia.

Implementation

In order to drive forward the implementation of this toolkit, it is recommended that the completed ROIT is included as a supporting pack in the annual funding application process. Through this, it can be demonstrated that TVET Institutions have taken into account the outputs of ROIT in their annual funding requirements.

Resource Optimisation Implementation Toolkit ROIT process flow for new programmes

This process flow dictates the various stages required to assess the viability of creating new programmes as well as the various considerations that need to be evaluated

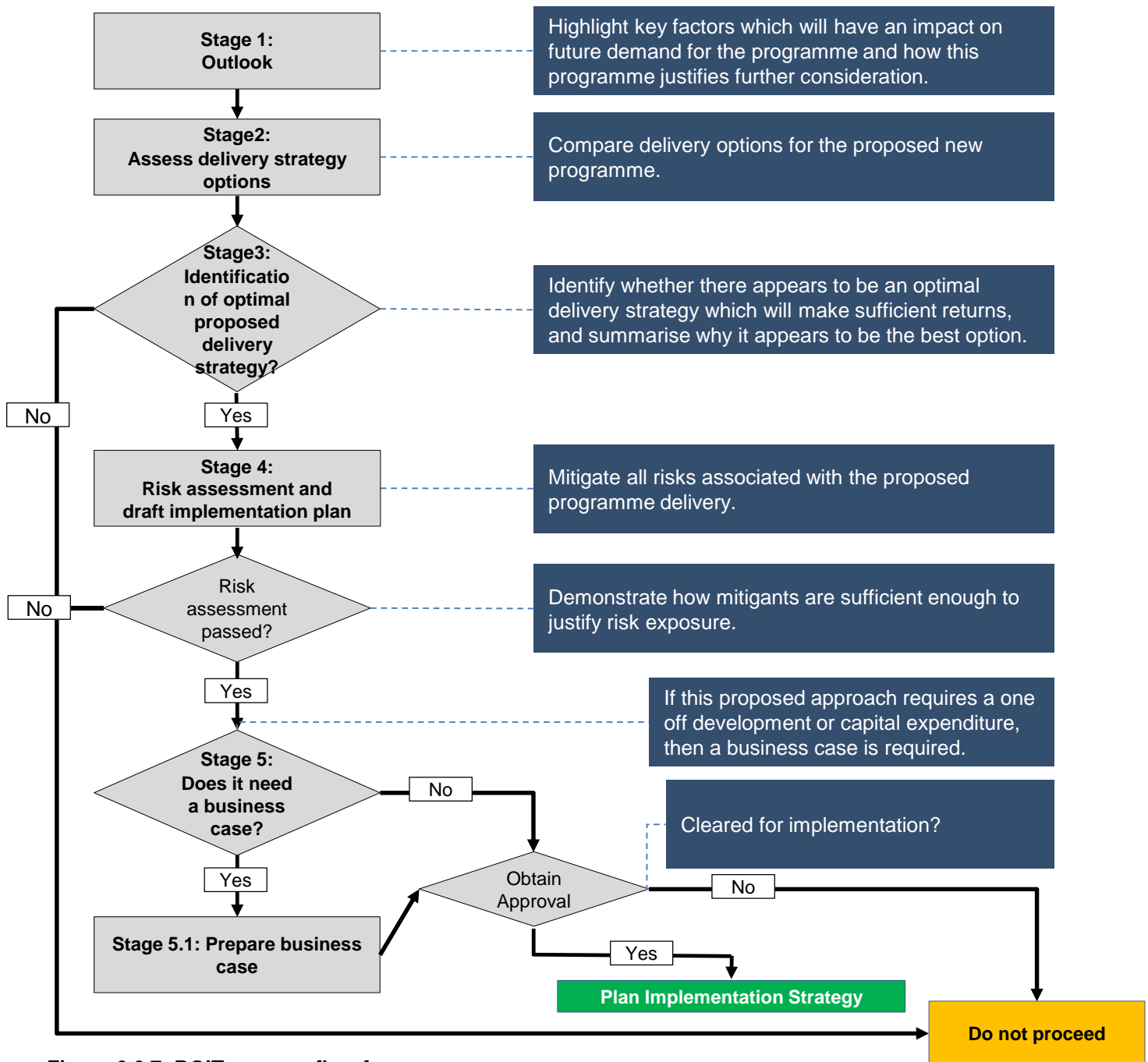


Figure 6.6.7: ROIT process flow for new programmes

Resource Optimisation Implementation Toolkit ROIT process flow for new programmes (cont'd)

Stage 1 – Outlook

The table below shows the various criteria to be considered when analysing the outlook:

Value Proposition	TVET Institutions need to identify the uniqueness of the programme. Points to consider are: <ol style="list-style-type: none"> 1. Whether the programme is already offered by other TVET Institutions in the region. 2. How attractive the programme will be to students and Industry players.
Demand	TVET Institutions need to assess what is the demand of the programme by Industry players in the region and what is the future outlook of the programme.
Competitive landscape	TVET Institutions need to consider current and potential competitors in the future. For example, considering whether the programme is easily replicable by other TVET Institutions with minimal effort or whether it will drive differentiation.
Other factors	Relevance of the new programme to existing courses and the TVET Institution's mission. For example, how the current programme supplements other existing courses and whether there are any synergies.

Stage 2 – Assess delivery strategy options

TVET Institutions need to ascertain which delivery strategy would yield the best results. A benchmarking study should be considered to compare the operational efficiency and quality of similar programmes of other competitors and outside and within the public TVET Institution landscape. Other considerations include key challenges faced when delivering such a programme, techniques of delivery and how to manage resources in an optimal manner. Various delivery strategy options and mix should be considered for evaluation.

Resource Optimisation Implementation Toolkit ROIT process flow for new programmes (cont'd)

Stage 3 – Identification of optimal proposed delivery strategy

The optimal proposed delivery strategy should be evaluated and considered based on the various delivery methods (e.g., traditional face to face delivery, digital delivery or blended delivery), cost of delivery, margins and resources required (e.g., infrastructure, equipment availability and instructor availability) to deliver the programme. A thorough review should be conducted and evaluated against the other delivery options tabled.

The strategies deployed must also be consistent and aligned with the direction provided by the Ministry or agency in charge.

Stage 4 – Risk assessment and draft implementation plan

After identifying the proposed optimal delivery strategy, a thorough risk assessment should be conducted to identify the potential impact towards the TVET Institution from an operational and financial perspective.

This includes risks in terms of how it impacts the bottom line, adjustment of pricing strategies, delivery risks (e.g., timeframe, cost over-runs, differences in quality and inaccurate demand projections), resourcing risks and limitations, reputational risks, and compliance risks.

Upon identifying these risks, a mitigation plan should be put in place to address each of these risks. These mitigation plans are to be communicated and reviewed by the management team in the TVET Institutions and agencies.

Stage 5 – Does it need a business case?

After assessing the risks involved, the next step would be to determine whether a business case is required. If there are no significant capital / conversion costs, then it is ready to be submitted for approval to the board of directors / agencies. However, if there are potential costs, then a business case should be prepared and submitted to the board of directors / agencies for their further approval.

This business case, if required, must show what value does it bring to both the TVET Institution and community. Additionally, it must contain projections (e.g., student demand, financials) to ascertain the sustainability of the programme.

Resource Optimisation Implementation Toolkit ROIT process flow for existing programmes

This process flow dictates the various stages required to assess existing programmes as well as the various considerations that need to be evaluated:

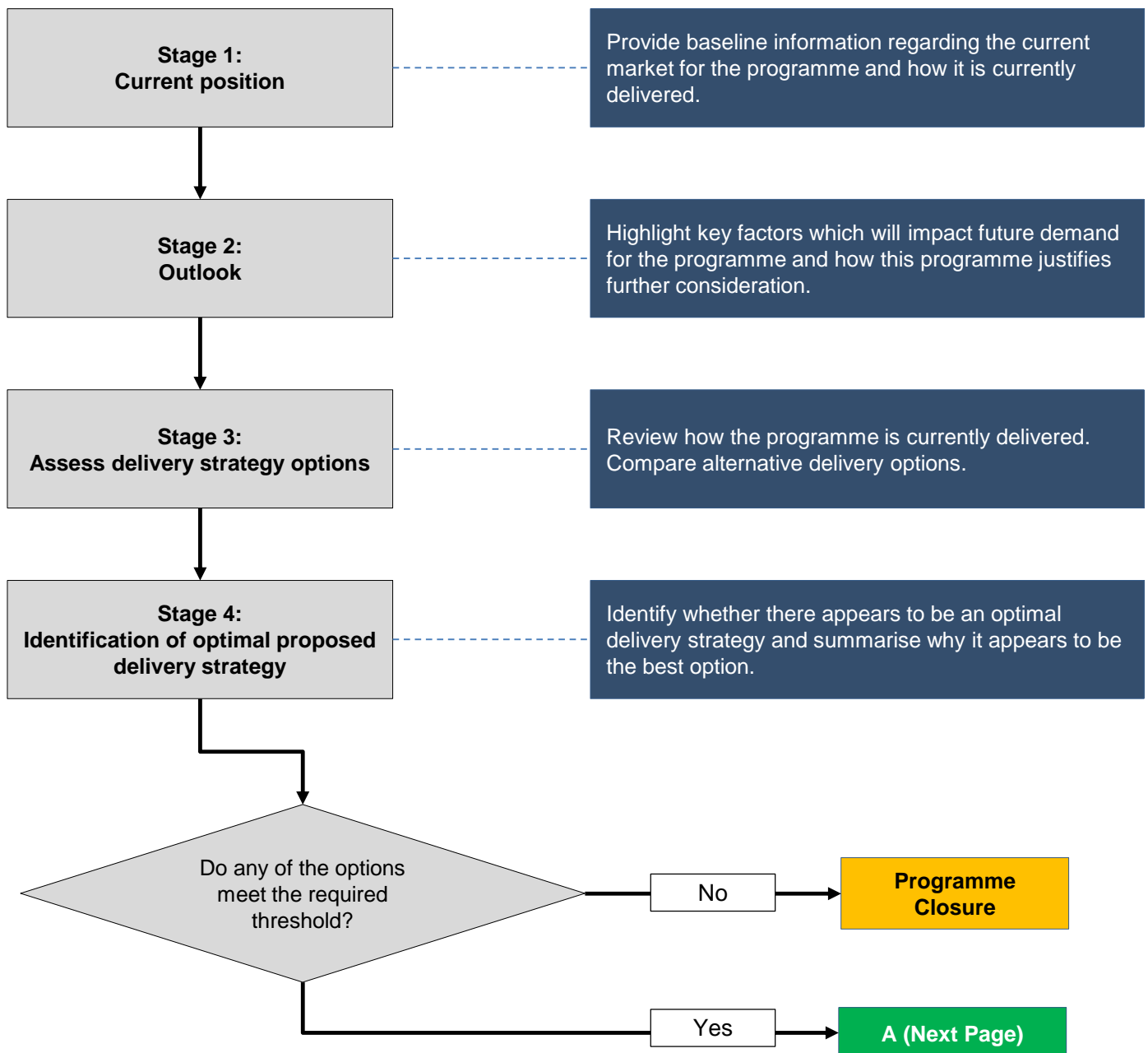


Figure 6.6.8: ROIT process flow for existing programmes

Resource Optimisation Implementation Toolkit

ROIT process flow for existing programmes (cont'd)

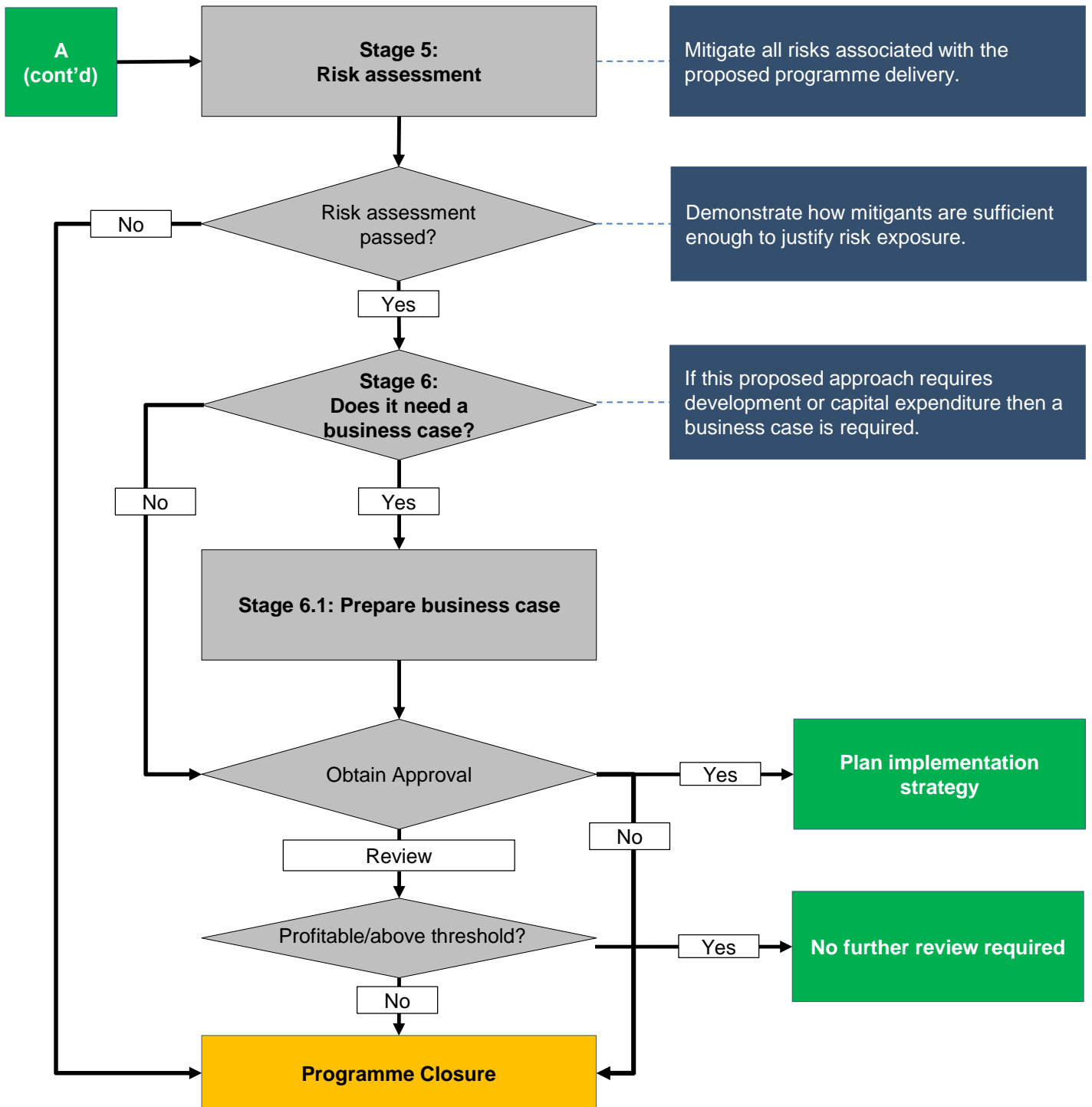


Figure 6.6.8: ROIT process flow for existing programmes (cont'd)

Resource Optimisation Implementation Toolkit ROIT process flow for existing programmes (cont'd)

Stage 1 – Current position

Review the current market (e.g., number of students in the programme, demographics, revenue / funding sources) in comparison to competitors. The present delivery approach, financial factors and other relevant information should also be taken into consideration.

Stage 2 – Outlook

The table below shows the various criteria to be considered when analysing the outlook:

Value Proposition	What makes the existing programme unique and attractive to students?
Demand	Market for the existing programme considering strategic agendas and Industry outlook
Revenue factors	Potential funding sources (e.g., Government grants, student tuition fees, or others)
Competitive landscape	Considers current and potential competitors
Delivery factors	How a programme is taught to students (e.g., face-to-face, fully online, mixed delivery) in comparison to competitors
Other factors	Relevance of the new programme to existing courses and the TVET Institution's mission

Stage 3 – Assess delivery strategy options

TVET Institutions need to ascertain which delivery strategy would yield the best results. A benchmarking study should be considered to compare the operational efficiency and quality of similar programmes of other competitors within the public TVET Institution landscape. Other considerations include key challenges faced when delivering such programmes, techniques of delivery and how to manage resources in an optimal manner. Various delivery strategy options and mix is to be tabled for evaluation.

Resource Optimisation Implementation Toolkit ROIT process flow for existing programmes (cont'd)

Stage 4 – Identification of optimal proposed delivery strategy

The optimal proposed delivery strategy is to be evaluated and considered based on the various delivery methods (e.g., traditional face to face delivery, digital delivery or blended delivery), cost of delivery, margins and resources required (e.g., infrastructure, equipment availability and instructor availability) to deliver the programme. A thorough review should be conducted and evaluated against the other delivery options tabled.

The strategies deployed must also be consistent and aligned with the direction provided by the Ministry or agency by which the TVET Institution is under.

Stage 5 – Risk assessment and draft implementation plan

After identifying the proposed optimal delivery strategy, a thorough risk assessment should be conducted to identify the potential impact towards the TVET Institution from an operational and financial perspective.

This includes risks in terms of how it impacts the bottom line, adjustment of pricing strategies, delivery risks (e.g., timeframe, cost over-runs, differences in quality and inaccurate demand projections), resourcing risks and limitations, reputational risks, and compliance risks.

After identifying these risks, a mitigation plan should be put in place to address each of these risks. These mitigation plans should be communicated and reviewed by the respective management teams in the TVET Institution and agencies

Stage 6 – Does it need a business case?

After assessing the risks involved, the next step would be to determine whether a business case is required. If there are no significant capital / conversion costs, then it is ready to be submitted for approval to the board of directors / agencies. However, if there are potential costs, then a business case should be prepared and submitted to the board of directors / agencies for their further approval.

This business case, if required, must show what value it brings to both the TVET Institution and community. Additionally, it must contain projections (e.g., student demand, financials) to ascertain the sustainability of the programme.

6.8

Revised Programme Evaluation weightages

6.0 Appendices

Moving forward, the adjusted the weightage and quantum for the eight (8) performance indicators are as follows:

Based on the current programme evaluation performance and incorporating the future aspirations of the Nation, the agreed weightages and quantum for the eight (8) performance indicators are as below:

Indicators	Weightage		Description
	Current Weightages	Proposed Weightages	Description
Outcome-based	70%	60%	
1. Employability	70%	45%	(Employed graduates + graduates pursuing further study) / total graduates (%)
2. Graduate salary	20%	45%	Weighted average of entry salary range according to certificate level
3. Duration to employment	10%	10%	Weighted average of time taken by graduates to gain employment after graduating from programme
Sub-total	100%	100%	
Input-based	30%	40%	
4. Industry collaboration	35%	30%	Total number of Industry relation indicators
5. Industry experience	25%	30%	Weighted average of the period of Industrial experience (months) of the instructor (prior to joining TVET Institutions)
6. Academic / skills qualification	20%	5%	Weighted average of highest academic qualification level of instructors or weighted average of highest skills qualification of instructors
7. Industry attachment	10%	30%	Weighted average of period of industrial attachment (months) of instructors while teaching
8. Instructor-student ratio	10%	5%	Total teaching instructors / total enrolment (%)
Sub-total	100%	100%	

 Changes to Programme Evaluation indicators

6.9

Data collection improvements

Data Collection Improvements

Tracer study

The objective of a Tracer Study is to provide standardised, informative and relevant information to get valuable information for the development of TVET Institution. It assists in evaluating the relevance of TVET Institutions in order to inform students, parents, lecturers and administrators of their current performance and the graduates they produce.

Some of the proposed improvements in the Tracer Study are as follows:

- Creating a comprehensive and standardised tracer study methodology and framework across the Nation is key to produce quality studies and insights.
- A current state assessment needs to be conducted as there is no standardised tracer study methodology across all TVET Institutions. The current information captured may not be comprehensive and accurate. The data gathering process is fragmented and non-standardised.
- MASCO mapping should be aligned and enhanced as some of the TVET occupations clustered as semi-skilled under MASCO are deemed high-skilled from the Industry's perspective (e.g., Welders in MASCO 7) resulting in a mismatch in what is defined as a skilled or semi-skilled TVET workforce.
- After identifying areas of improvement, the methodology and framework should be benchmarked against international study best practices and methodologies. An extensive performance indicator framework should be designed to evaluate the design and execution of the tracer study. This will assist in capturing a range of information (e.g., search duration, employment status, income, mobility, position, level match, field of study match, work autonomy, job satisfaction, student contacts) to be implemented in the TVET Institution. The tracer study should be segregated into three (3) different study groups (i.e., modular, part-time and full-time programmes).
- Additionally, tracer study surveys should be designed around three (3) time frames:
 - Exit survey (fresh graduate survey)
 - Graduate Survey I (1-2 years after graduation)
 - Graduate Survey 2 (4-5 years after graduation)

This will enable trends to be studied and detailed information regarding life beyond graduation to be captured.

Data Collection Improvements

Tracer study

- The first end-user-testing happens when on-going graduates complete their programmes and are required to complete the tracer study (i.e., either online / on paper). The information should be captured in the TVET Institution's database and fed into the self-audit survey database. The data should be accurate and sanitised by the TVET Institution. A successful tracer study is one which is able to answer some of these open questions:
 - How to measure study conditions and study provisions?
 - Does program quality matter for employment outcomes?
 - Which student characteristics must be controlled?
 - What are the best indicators of employment outcome and professional success?
 - How can surveys be conducted efficiently while ensuring high quality?
 - How should the data be analysed to gain usable knowledge and insights?
- Utilising the comprehensive data obtained through the tracer study, many studies and analyses can be conducted with all of them stemming from a single source of high quality and accurate data.
- A longitudinal approach should be adopted to study the graduates which fall within the same programme course duration (i.e., modular programme graduates should be compared alongside other modular programmes). This is to ensure fair comparison and accurate representation.



Data Collection Improvements

Self-audit survey

Self-audit survey data should be validated and audited by an independent body as currently there is no validation process in place to ensure accuracy of data submitted.

Continuous improvement in areas of data collection and data management is paramount to produce complete and high quality studies. Confidence in the data used and the depth of the self-audit survey data will be invaluable in future TVET workforce planning and trend analysis.

A comprehensive study utilising quality data aligned with Government objectives will provide insightful results which will assist the Government in policy formation and strategy formation. The recommendations below aim to standardise the methods of data collection and improve the overall quality and accuracy of data:


- Self-audit survey data should be validated and audited by an independent body as currently there is no validation process in place to ensure accuracy of data submitted.
- The survey system should be able to provide agencies with an extract of the data for all their TVET Institutions / programmes.
- Data validation checks should be embedded in the self-audit survey to reduce the number of data quality and completeness errors (e.g., summation of percentages to 100, student output comparison to enrolment).
- Reliability of the system has to be improved. There were instances in which some TVET Institutions reported that they were unable to access the systems.
- A standardised approach for collecting data, particularly tracer study data, should be recommended to all TVET Institutions to assist in improving the quality of the data.
- Data collection should be considered mandatory for all Government funded TVET programmes and public TVET Institutions.
- Core data in DSD / MQA have to be periodically updated to ensure relevance and accuracy as per changes at a programme level (i.e., Change in programme name, change in TVET Institution name).

6.10


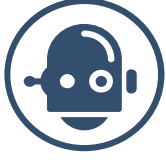
Suggested modular TVET programmes to address emerging technologies

Suggested Modular TVET programmes to address emerging technologies



The strength and relevance of TVET is continuously being challenged by the exponential growth of innovations as well as the development of new technologies in the past few years. As a result of entering into this new digital phase known as Industry 4.0, it is essential that TVET accommodates the new ways in which computers and automation will work, thus changing the demands of the workforce. The following is a list of suggested modular TVET programmes that are in line with emerging technologies and will help graduates to be Industry-ready.

Future skills	Description
<p>Artificial Intelligence (AI)</p> 	<p>Software algorithms that are capable of performing tasks that normally require human intelligence.</p> <p>Sample Course(s) or Course objectives</p> <p>Introduction to Artificial Intelligence (AI)</p> <ul style="list-style-type: none"> • Understand the philosophical foundations of Artificial intelligence (AI). • Understand the basic workflow of machine learning and AI applications. • Able to differentiate the nuances between AI and subset terms like machine learning and automation as well as the background and application. • Anticipate changes in delivery services and businesses as AI is used to forecast business strategies. <p>Programming Essentials (e.g., Python or JavaScript programmes)</p> <ul style="list-style-type: none"> • Explore essential elements of programming • Understand the basics of programming computers using the chosen programming language • Utilise core programming tools such as functions and loops.



Suggested Modular TVET programmes to address emerging technologies (cont'd)

Future skills	Description
<p>Augmented Reality</p> 	<p>Addition of information or visuals to the physical world to improve user experience for a task or product</p> <hr/> <p>Sample Course(s) or Course objectives</p> <p>Introduction to Augmented Reality (AR)</p> <ul style="list-style-type: none"> • Understand the basics of Augmented Reality (AR), including the hardware. • Understand current and potential applications as well as use cases. • Explore the future of AR and potential market. • Understand how AR will provide workers with real-time, contextual information to help them perform better at their jobs. • Explore the various types of AR implementations. • Able to identify the differences between AR and virtual reality (VR).
<p>Robotics</p> 	<p>Electro-mechanical or virtual agents that automate, augment or assist human activities, either autonomously or according to set instructions.</p> <hr/> <p>Sample Course(s) or Course objectives</p> <p>Intelligent Machining</p> <ul style="list-style-type: none"> • Obtain basic knowledge on the background of robotics, tools and related terminology. • Understand how robots automate repetitive actions and tasks normally handled by human users. • Explore the use of machine tools that are self-aware and are able to make decisions related to machine activity processes. • Anticipate how various Industries are rapidly evolving in parallel with the usage of robotics in automating certain processes that typically requires human intelligence.


Suggested Modular TVET programmes to address emerging technologies (cont'd)

Future skills	Description
<p>Internet of Things (IoT)</p> 	<p>Network of objects embedded with sensors, software, network connectivity and compute capability, that can collect and exchange data over the internet.</p> <p>Sample Course(s) or Course objectives</p> <p>Internet of Things (IoT): An emerging platform</p> <ul style="list-style-type: none"> • Comprehend how a system of interrelated computing devices, mechanical and digital machines and objects have the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction. • State the technological trends which have led to IoT. • Understand how organisations in multiple Industries depend on IoT to increase efficiency in various business areas and improve business values. • Explore various forms of machine-to-machine communication to collect and share data.
<p>3D Printing</p> 	<p>The use of additive manufacturing techniques to create 3D objects based on digital models by layering or printing' successive layers of material. Relies on innovative 'inks' including plastic, metal, glass and wood.</p> <p>Sample Course(s) or Course objectives</p> <p>Design Technology</p> <ul style="list-style-type: none"> • Understand how additive manufacturing and 3D printing are re-shaping many of today's domains, such as design, manufacturing and retail. • Experience various capabilities of 3D printing such as customisation and self-assembly. • Understand how 3D printing is used to come up with business solutions.

Suggested Modular TVET programmes to address emerging technologies (cont'd)

Future skills	Description
<p>Virtual Reality (VR)</p> 	<p>Computer generated simulation of a 3D image or a complete environment, within a defined and contained space, that viewers can interact with in realistic ways.</p> <hr/> <p>Sample Course(s) or Course objectives</p> <p>Introduction to Virtual Reality (VR)</p> <ul style="list-style-type: none"> • Understand the basics of VR, including the hardware. • Experience VR, understand current and potential applications and use cases. • Learn the process of designing VR products. • Understand the added advantage of VR in user experience and customer services. • Able to identify the differences between VR and AR.
<p>Blockchain</p> 	<p>Distributed electronic ledger that uses software algorithms to record and confirm transactions with reliability and anonymity.</p> <hr/> <p>Sample Course(s) or Course objectives</p> <p>Blockchain Fundamentals</p> <ul style="list-style-type: none"> • Understand the technical overview of blockchain. • Know and use key vocabulary and concepts commonly used when discussing blockchain and bitcoin in business situations. • Understand the individual technology components that are involved, their operating constraints, and how they can be brought together in order to serve various use cases. • Understand how blockchain technology is the basis of building a real-time global payment network.

Suggested Modular TVET programmes to address emerging technologies (cont'd)

Future skills	Description
<p>Drones</p> 	<p>Air- or water-based devices and vehicles that fly or move without an on-board human pilot.</p> <p>Sample Course(s) or Course objectives</p> <p>Drones in practice</p> <ul style="list-style-type: none"> • Understand the aerodynamics of drones and the preferred materials in the manufacture of unmanned aerial vehicles. • Explore the uses of drones in aerial photography, filming and special effects. • identify key flying skills, shot options and flying patterns needed when using drones in aerial photography. • Obtain basic knowledge on the concepts of unmanned aircraft modeling, the components involved in designing a control, and the basics of motion planning. • Understand the Industrial use of drones for land surveying, media creation, safety and surveillance, and logistics.



6.11

International comparative analysis findings

The education systems in the following three (3) countries have a strong focus on vocational training alongside academic education

Germany¹



- Germany's **dual education system** places more than 50% of school students in one of the over 300 training occupations.
- The Vocational Training Act has provided over 500,000 company-based training contracts a year.

Switzerland¹






- Over 70% of young people participate in the **Swiss Vocational Education and Training System** which offers apprenticeships, formal qualifications and early career training in over 200 different occupations.
- Around a third of companies in Switzerland engage in apprenticeship training programmes.

Australia



- The **Australian Vocational Education and Training (VET)** sector is based on a partnership between the Government and Industry. VET qualifications are provided by Government Institutions, called Technical and Further Education (TAFE) Institutions, as well as private Institutions.²
- Around 2 million people enrol in VET courses each year, with around 400,000 people in training as part of an apprenticeship or traineeships.²

Key takeaways aligned with recommendations and initiatives

ASPIRATION	 GERMANY	 SWITZERLAND	 AUSTRALIA
<i>Robust and Effective Governance</i>	<p>The Federal Ministry of Education and Research, BMBF, is responsible for policy, coordination and legislation of out-of-school vocational training and continuing education as well as training assistance.¹</p> <p>Vocational Training Act 2005: An act has been established to recognise a list of training occupations as TVET.¹</p>	<p>The State Secretariat for Education, Research, and Innovation (SERI): the closest Government body that Switzerland has to a Ministry of Education which carries out the regulation and steering of the Swiss Vocational Education.²</p> <p>Clear roles and responsibilities: Responsibilities of the tripartite partners are laid down in the Federal Vocational and Professional Education and Training Act (VPETA).²</p>	<p>The Department of Education and Training oversees the entire vocational education and training (VET) system, along with the state and territory Governments in Australia.³</p> <p>Single body for Quality Assurance: National Quality Council established to oversee quality assurance in the Australian Quality Training Framework and endorsement of training packages.³</p>
<i>Efficient and Productive Operating Model</i>	<p>Centre of Excellence: Establishment of CoEs for specific sectors (e.g., BMW-Automotive) which trains students in specific skills.¹</p>	<p>Modularisation of Training Delivery Breaking up long courses into shorter programmes to meet a particular skill acquisition without enrolling into a full-time TVET programme.²</p>	<p>Enterprise-specific training packages These training packages enable the customisation of VET programmes according to job specifications.⁴</p>




Sources: 1. Report on Vocational Education and Training 2017 (BMBF)
 2. Vocational and Professional Education and Training in Switzerland - Facts and Figures 2017 (SERI)
 3. TVET Country Profiles – Australia (UNESCO-UNEVOC)
 4. <https://www.asqa.gov.au/about/australias-vet-sector/training-packages>

Key takeaways aligned with recommendations and initiatives (cont'd)

ASPIRATION	GERMANY	SWITZERLAND	AUSTRALIA
<p>World Class Quality of Learning</p>	<p>Dual vocational system Integrate work-based and school-based learning for easier transition into full-time employment.</p> <p>Upgrading to VET “4.0” Experts from vocational practice and research bodies are engaged to draw up proposals on how Industry 4.0’s requirements can be satisfied in the TVET curriculum design.¹</p> <p>Quality Assurance TVET providers are obliged to undergo internal and external quality assurance according to criteria set by the Federal Ministry for Economy and Labour.²</p>	<p>Tripartite efforts The Confederation (i.e., Federal Government), 26 Cantons (i.e., states) and professional organisations work together to maintain a high level of quality within the VPET system.³</p> <p>Dual-track learning approach Most vocational education and training programmes have classroom training combined with an apprenticeship at a host company.³</p> <p>Mandatory TVET Qualifications 50% of Swiss jobs require a three or four year Federal VET Diploma, earned by completing the upper-secondary apprenticeship program.³</p>	<p>Apprenticeships and competency-based training Industry Training Advisory Boards are heavily involved in the identification of competency standards, qualifications and development of assessment guidelines to ensure training packages are always relevant.⁴</p> <p>Australian Industry and Skills Committee (AISC) Industry-led body to provide advice on implementation of National TVET policies.⁴</p>

Sources: 1. <http://www.cedefop.europa.eu/en/news-and-press/news/germany-vocational-education-and-training-40>
 2. Report on Vocational Education and Training 2017 (BMBF)
 3. Vocational and Professional Education and Training in Switzerland - Facts and Figures 2017 (SERI)
 4. <https://www.aisc.net.au/>

Key takeaways aligned with recommendations and initiatives (cont'd)




	 GERMANY	 SWITZERLAND	 AUSTRALIA
ASPIRATION			
Harmonised and Seamless Learning Pathways	<p>Fully permeable system Credit transfers from formal and informal training courses or experiential learning into higher education. Candidates would need to undertake examination, be assessed and recognised by an independent body.¹</p>	<p>No dead-end pathways for TVET Students can pursue more advanced education and training opportunities and switch from vocational training to universities of applied sciences via the Federal Vocational Baccalaureate (FVB).²</p>	<p>Mutual recognition of qualifications enables the transfer of qualifications and credits between the Australian states and territories.³</p>
Sustainable Outcome-based funding model	<p>Industry funds Companies created a general fund, in which companies pay contributions. Apprenticeship costs are covered by these Industry funds.¹</p>	<p>Industry funds Companies contribute to corresponding VET fund, which is used to cover the costs of activities within the VET sector (e.g., development of training programmes).²</p>	<p>Competition among training providers Provide funding to non-TAFE Institutions via competitive tendering³</p> <p>Funds driven at the State level Funds are allocated based on priority areas at the State level with greater controls.³</p>

Sources: 1. World TVET Database – Germany (UNESCO-UNEVOC)

2. Vocational and Professional Education and Training in Switzerland - Facts and Figures 2017 (SERI)

3. TVET Country Profiles – Australia (UNESCO-UNEVOC)

Key takeaways aligned with recommendations and initiatives (cont'd)

ASPIRATION	 GERMANY	 SWITZERLAND	 AUSTRALIA
Work esteem and branding of TVET	<p>Regarded as a First choice of education 70% of students in Germany opt for the TVET pathway due to the high employability rates and wages paid which is similar to that of University graduates.¹</p>	<p>Regarded as a First choice of education Due to the diverse pathways and lucrative pay, TVET in Switzerland is regarded as a primary pathway, and more than two thirds of students enroll in Vocational and Professional Education and Training (VPET) courses after compulsory schooling.²</p>	<p>National professional body responsible for collecting data on TVET A consolidated source of data with public access gives transparency to the achievements and new changes in TVET, increasing the public's confidence in the system.³</p>



Sources: 1. PwC Young Workers Index 2016
 2. Vocational and Professional Education and Training in Switzerland - Facts and Figures 2017 (SERI)
 3. National Centre for Vocational Education Research (NCVER)

Thank You