



# IN-DEMAND AUTOMOTIVE MANUFACTURING COMPETENCIES

*Rapid Research Findings for TVET Educators & Learners*

Research conducted in collaboration with the Durban Automotive Cluster (DAC) and the East Cape Automotive Industry Forum (ECAIF)

Funding Partners



Implementing Partner



National Partners





## Acronyms

DAC	Durban Automotive Cluster
DHET	Department of Higher Education & Training
ECAIF	East Cape Automotive Industry Forum
IYF	International Youth Foundation
NAACAM	National Association of Automotive Component and Allied Manufacturers
OEM	Original Equipment Manufacturer
STEM	Science, Technology, Engineering and Mathematics Technical
TVET	and Vocational Education and Training Fourth Industrial
4IR	Revolution
WIL	Work-Integrated Learning

Research conducted by High Gear, in collaboration with the DAC and ECAIF.



## Contents

2	Executive Summary
4	Full Report
4	Participating Industry Clusters and Manufacturing Firms
5	Research Methodology
6	Main Findings
12	Recommendations and Next Steps
13	Appendix A: Automotive Manufacturer Participants
14	Appendix B: Adapted Industry Competency Model Pyramid
15	Appendix C: Research Surveys
17	Appendix D: Detailed Survey Data

# Executive Summary: Automotive Manufacturing Competency Research

## What is High Gear?

The National Association of Automotive Component and Allied Manufacturers (NAACAM) and the Department of Higher Education and Training (DHET) are the lead national partners of **High Gear**, an exciting four-year (2020-2024) initiative managed by the International Youth Foundation (IYF) that is advancing South Africa's public TVET college system. High Gear draws on industry knowledge and skills imperatives—along with IYF curricula enhancement tools—to strengthen the market relevance of select public TVET college courses.

Ultimately, High Gear aims to demonstrate a model for greater industry involvement in TVET course design and delivery that generates enthusiasm from TVET educators and industry, while also generating positive returns for young people and employers.

The UK government's Skills for Prosperity Programme is funding High Gear implementation in KwaZulu-Natal, and the United States Agency for International Development (USAID) and the Michael and Susan Dell Foundation are funding implementation in the Eastern Cape. All three funding partners are supporting High Gear's national stakeholder engagement and learning efforts.

### The Automotive Manufacturing Competency Research




**Primary Purpose:** In October 2020, High Gear conducted rapid research with automotive assemblers and component manufacturers, to identify the competencies that they demand most from TVET graduates. The identified competencies are informing High Gear's strategies to align TVET course delivery with industry needs.

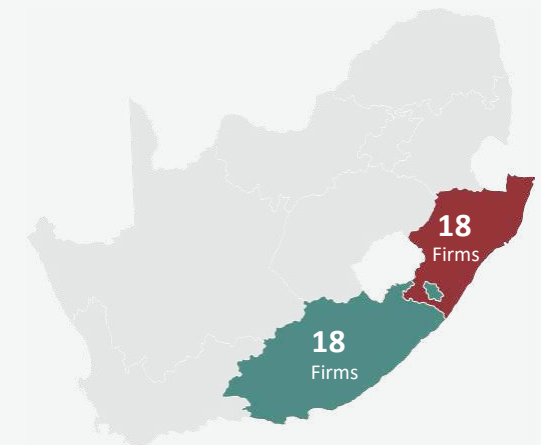
**Secondary Purpose:** To demonstrate a model for rapid, competency-based research with employers that industry associations and TVET systems can quickly and cost-effectively replicate as workforce demands change.

**The Research Method:** To guide the research with employers, High Gear adapted global industry competency models to South Africa's automotive manufacturing sector. In collaboration with the [Durban Automotive Cluster](#) (DAC) and the [East Cape Automotive Industry Forum](#) (ECAIF), High Gear rapidly interviewed 36 firms to identify the top competencies they seek from TVET graduates for entry-level jobs. The research process was co-led by IYF and B&M Analysts (the firm appointed by DAC and ECAIF to serve as their cluster service provider).

36 firms participated in the research

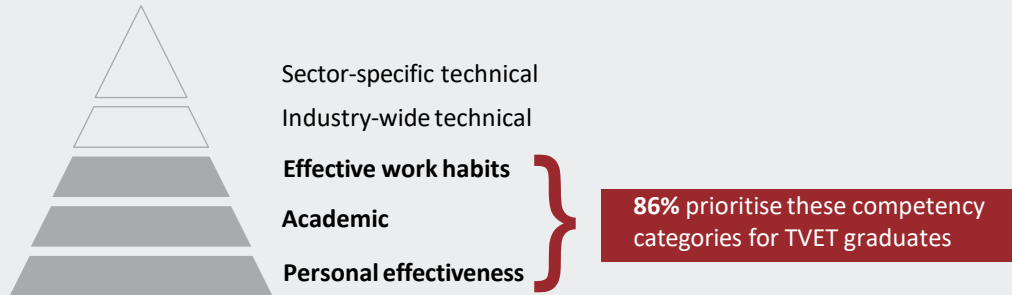
### Research methods

-  Surveys
-  Virtual workshop
-  Interviews

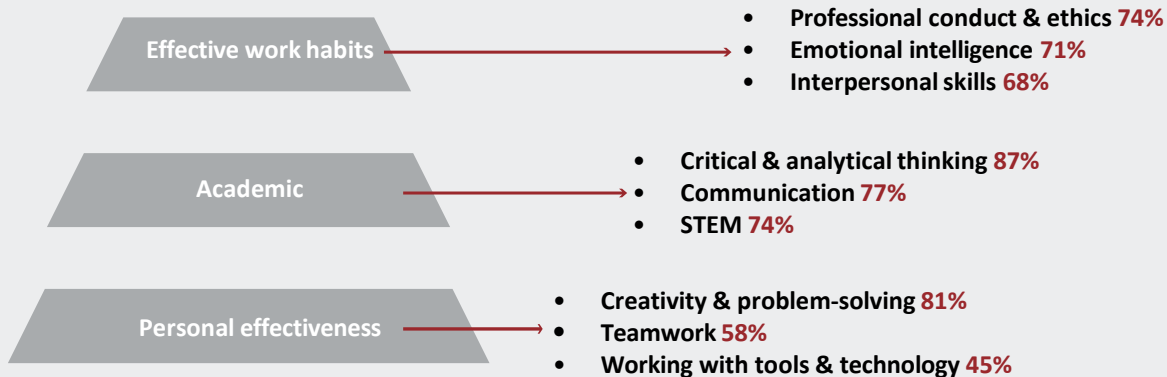


# Executive Summary: Key Findings

## 1 Employers prioritise the following competency categories for TVET graduates:



## 2 Employers also selected these top three skills within each competency category:



## 3 Main research findings:

- Automotive manufacturing firms hire TVET graduates through a variety of entrance pathways and,
- Employers are seeking a more demand-aligned TVET pipeline for entry-level positions.
- There is a misalignment between youth expectations and industry career ladders
- Foundational life skills, work readiness skills, and academic and higher-order-thinking competencies are highly valued
- TVET qualifications should reflect modern manufacturing requirements
- Covid-19 has impacted manufacturers' workforce requirements and demands

*"TVET graduate requirements are not what they were 10 years ago – technology has shifted and we require sophisticated graduates. Smiths Manufacturing is moving away from the basic operators and moving towards troubleshooters, problem-solvers and Maths and Science sophistication. We require graduates who have the ability to learn and adopt new technologies faster."*

**- Smiths Manufacturing**

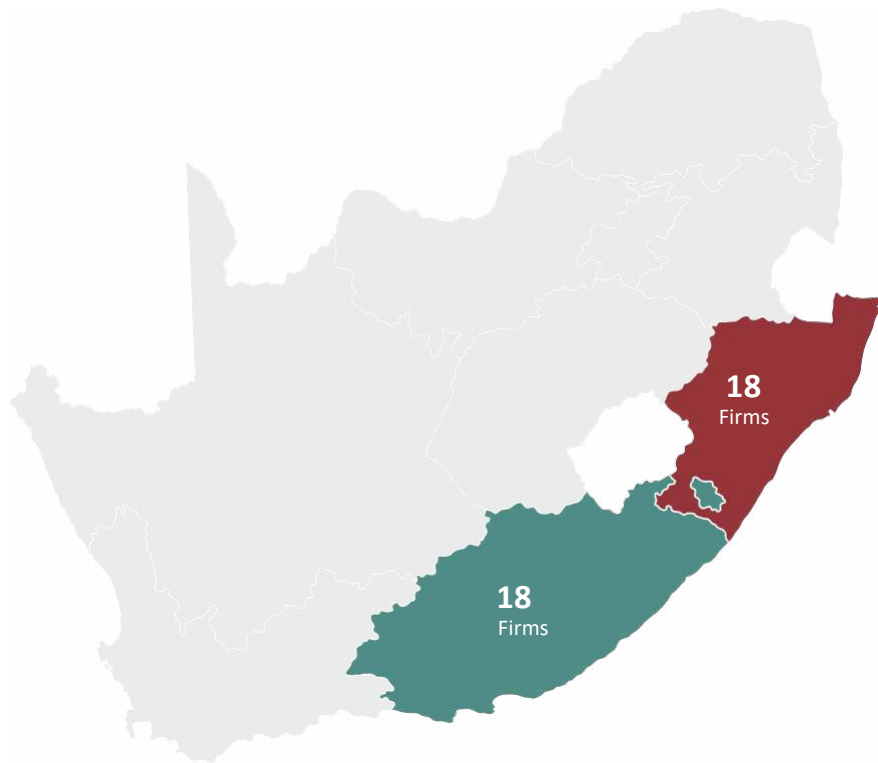
## 4 Next steps for High Gear:

High Gear will develop TVET curricula enhancements that build TVET students' competencies in the prioritised areas. The initiative will do this by creating strong, and sustainable links between the automotive industry and TVET colleges to: a) share market-driven research; b) align course content and delivery to industry needs; c) strengthen industry-led delivery of career guidance to TVET learners; and d) expand work-integrated learning opportunities for TVET staff and students.

# The Detailed Research Report

## Participating Industry Clusters

High Gear conducted the research in partnership with two provincial automotive manufacturing industry clusters: the [Durban Automotive Cluster \(DAC\)](#) and the [East Cape Automotive Industry Forum \(ECAIF\)](#). The cluster facilitator for both DAC and ECAIF – B&M Analysts – co-led this research with its member firms. This report details the key findings of the research and unpacks recommended next steps. Where necessary, differentiated findings related to DAC and ECAIF firms are highlighted.



## Automotive Manufacturer Respondents

The research sourced valuable input from 36 DAC and ECAIF member firms. The participating employers included Original Equipment Manufacturers (OEMs) – such as Toyota, Isuzu and Bell Equipment – along with a range of automotive component manufacturers from all supply chain tiers and subsectors. B&M Analysts purposefully sought input from DAC and ECAIF member firms that have prior experience employing and mentoring TVET college graduates.

36 Participating firms	
ECAIF member firms	DAC member firms
Acoustex	Aeroklas Duys
Adient	Bell Equipment
Auto X	Brink
Aveng Trident Steel	Enermous
Ebor Automotive Systems	Feltex Automotive
Feltex Automotive	GST
Foxtec-Ikhwezi	GUD Holdings
Hudson Rubber	Hesto Harnesses
Isuzu	Hulamin
Laser Mould and Die	MAHLE Behr
Linde & Wiemann	MAXE
Lumotech	Ramsay
MAHLE Behr	Smiths Manufacturing
Schaeffler	Toyota Boshoku South Africa
Senior Flexonics	Toyota South Africa Motors
Shatterprufe	Toyota Tsusho
SJM Flex	Wasomi Enterprises
Tenneco Automotive Holdings	Webroy



## Research Methodology

The research used a four-step methodology to elicit focused, competency-based findings that would provide the High Gear project with actionable information.



STEP 1

### Industry Competency Model Adaptation

Drawing on South African industry expertise, High Gear adapted open-source advanced manufacturing industry competency models so that they reflected entry-level roles and required competencies in South Africa's automotive components manufacturing sector. The open-source models were sourced from the United States government's Employment and Training Administration division, which oversees the [Industry Competency Initiative](#). An example of one of three adapted industry competency pyramids is included in Appendix B.



STEP 2

### Pre-Workshop Survey

Participants volunteered information on (Appendix C):

1. Hiring methods for TVET graduates
2. In-demand entry-level positions
3. Competencies and work-readiness skills for entry-level positions
4. Further technical competencies that are in demand
5. The impact of the Covid-19 pandemic on skills development

These survey findings informed the focus of the virtual workshop.



STEP 3

### Virtual Workshop

Employers discussed and validated the pre-survey results, and thereafter, selected the top priority automotive competencies and skills for the entry-level positions identified in the survey. The workshops were conducted virtually due to Covid-19 lockdown restrictions.



STEP 4

### Individual Interviews

Select employers further elaborated on their experiences recruiting and training TVET college graduates.



## Main Findings

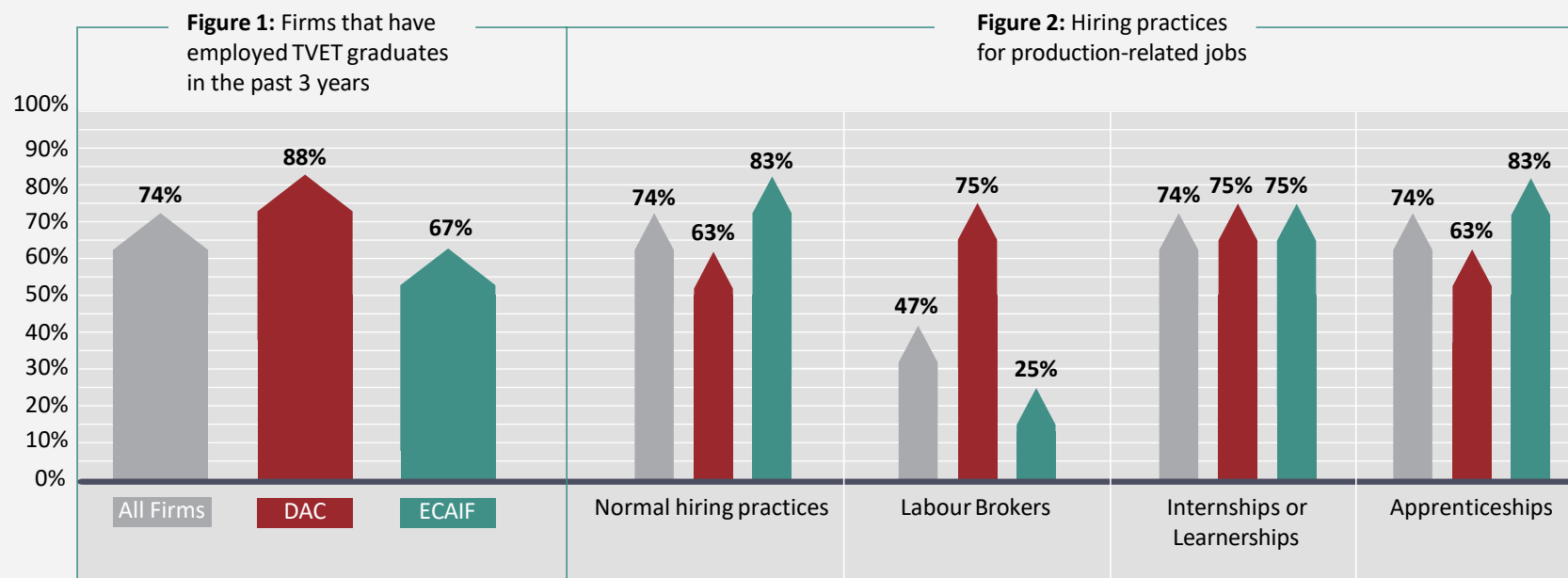
1

### Manufacturing firms are hiring TVET graduates through a variety of entrance pathways

Almost three-quarters of the firms interviewed have employed TVET graduates in the past three years (as shown in figure 1), with 88% of DAC member firms reporting to have employed TVET graduates. TVET graduates access job opportunities through various recruitment pathways (figure 2), that is, normal hiring practices, labour brokers, and participation in various employer-led, post-TVET training programmes such as internships, learnerships and apprenticeships. Firms stated that most graduates with a N6 qualification expect to start at management level, though most firms will actually only employ N6 graduates in entry-level roles (for those without prior work experience).

*“A challenge with Gen Y is that it is difficult to retain them – they expect to climb the ladder fast and if that does not happen, they move to another company.”*

- Toyota South Africa Motors



## Firms are seeking a more demand-aligned TVET pipeline for entry-level positions

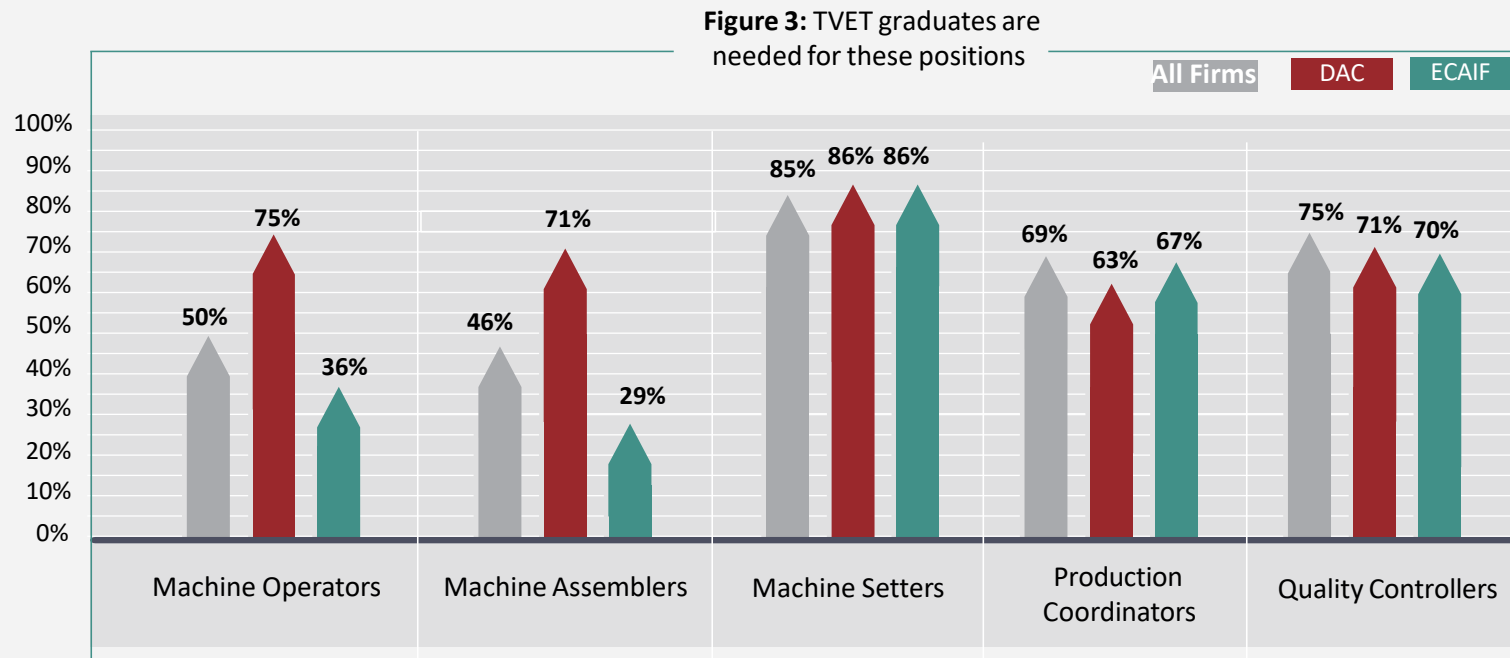
All employers indicated that they require a stronger TVET pipeline for key entry-level production roles such as Machine Setters, Production Coordinators and Quality Controllers, with DAC firms also indicating a need for a stronger pipeline of Machine Operators and Machine Assemblers.

*“What we have noticed is that we lose a lot of technical skills because technical employees follow the leadership stream due to perceived better remuneration. Going forward the industry should remunerate the technical and leadership streams equally to retain technical capabilities.”*

- Smiths Manufacturing

*“TVET graduates who are keen to be technical are the ones who succeed in the long term, more than those who want managerial positions.”*

- Toyota South Africa Motors



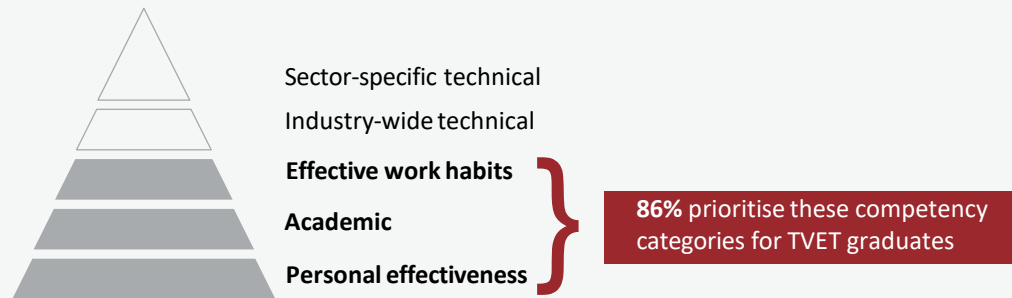


## The industry prioritises foundational life and work readiness skills

As shown in Figure 4, when presented with the High Gear-adapted industry competency models (Appendix B), 86% of participating employers selected “Effective Work Habits”, “Academic Competencies” and “Personal Effectiveness” as the priority competencies for TVET graduates seeking to enter the automotive manufacturing sector. Workshop discussions and firm interviews also revealed that employers prefer well-rounded TVET graduates with key foundational skills that help position them for further workplace-based technical training on proprietary production lines.

Drilling down into categories, High Gear also identified employers’ highest-priority skills per category. These reflect a mix of foundational life skills; academic competencies; workplace-readiness capabilities; and higher-order-thinking skills such as creativity, analytical thinking and problem-solving that are now required even for entry-level production positions. See more details in Appendix D.

**Figure 4:** Industry-prioritised competency categories for TVET graduates

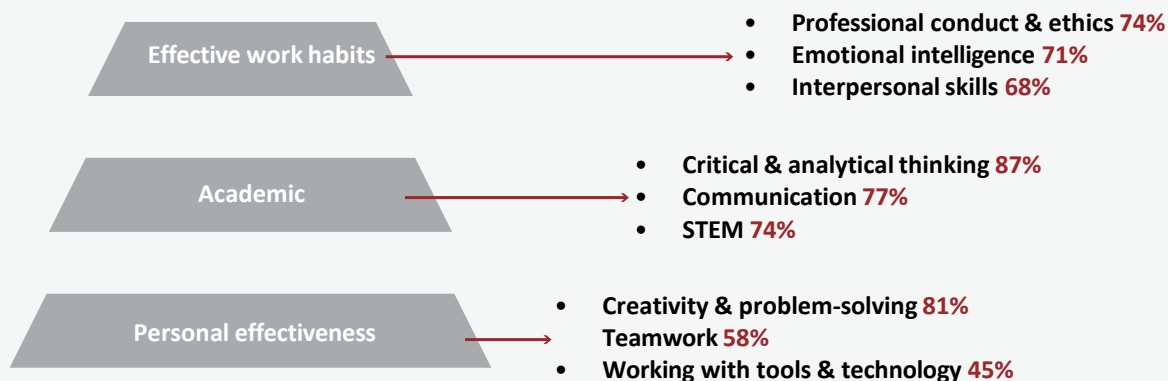


Across both regions, employers rated these competencies as essential: personal effectiveness (72%), academic (70%) and workplace (66%).

*“In our experience we have found that TVET graduates lack practical experience and critical thinking – it is as if they expect the same challenges to those they learnt in TVET colleges.”*

- Acoustex

**Figure 5:** Industry-prioritised skills for TVET graduates



*“We are looking for graduates who have Maths and Science and are problem-solvers. We need our operators to be critical thinkers who are able to solve problems before they escalate so that only complex problems are escalated.”*

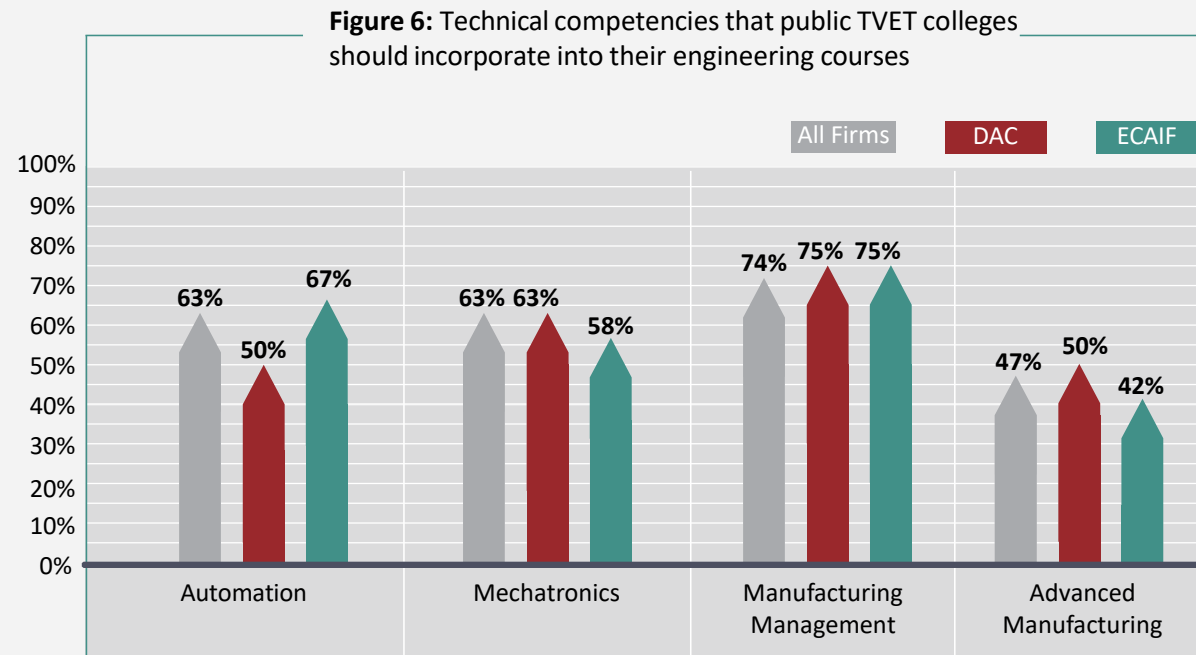
- GUD Holdings

## Firms would like TVET qualifications to better reflect modern manufacturing requirements

While firms did not prioritise industry-wide or industry-specific technical competencies as much as personal effectiveness, work readiness and academic abilities, they would still like TVET qualifications to better reflect modern industry requirements. As reflected in Figure 6, employers rated “Manufacturing Management” as the industry-wide technical requirement they would most like to see incorporated into TVET qualifications. This aligns with employers’ feedback that TVET graduates need stronger higher-order-thinking competencies such as problem-solving and critical thinking, which are often associated with management competencies. Mechatronics and automation is also rated highly, reflecting the skills requirements of modern manufacturing.

Employers also stated that they required skilled graduates in:

- Welding
- Spray-painting
- Hand skills
- Toolmaking
- Autotronics
- Problem-solving and root-cause analysis
- Basic data analysis
- Millwrighting
- Application of analytical preventative tools
- Use of measuring instruments
- Electrical and pneumatic hand tools



*“With changing requirements from OEMs, we need technically savvy individuals.”*  
- Webroy

The entry-level roles in Figure 3 represent part of a broader career ladder in the automotive manufacturing sector. Successful Machine Operators, for instance, can progress to Production Coordinators and Quality Controllers, and then, into intermediate-level management and technical roles. Employers revealed, however, that not all youth graduates wanted to progress in this way, partly, because there was a misalignment between student expectations and actual career pathways in the industry.

*“I work a lot with students and TVET graduates and what I have noticed is that they are used to the classroom mindset – they are laidback and they do not want to be moved around in the business, and this leads to a high absenteeism rate among them. Graduates with engineering qualifications do not want to start at the bottom of the ranks and work their way up.”*

**- Adient**

Employers find that millennials generally do not remain with the same company for more than two to three years, as they often seek quick promotions – even for lateral moves that may disrupt their career progression. Employers also struggle to balance TVET graduates’ career advancement expectations with actual technical and practical workplace experience requirements for upward progression in the sector. Several firms shared a belief that tertiary institutions often raise graduates’ short-term expectations. There is a misalignment to what is actually possible or standard practice in the sector, which may reflect TVET educators’ outdated understanding of industry requirements.

*“There is a broad perception that employers focus on STEM, but they are actually more interested in how the graduates approach problems. We can always train graduates in skills, but we cannot give them the right attitude. The foundational skills need to be programmed; also, at that level we need the correct conduct, ethics and attitude.”*

**- Ebor**



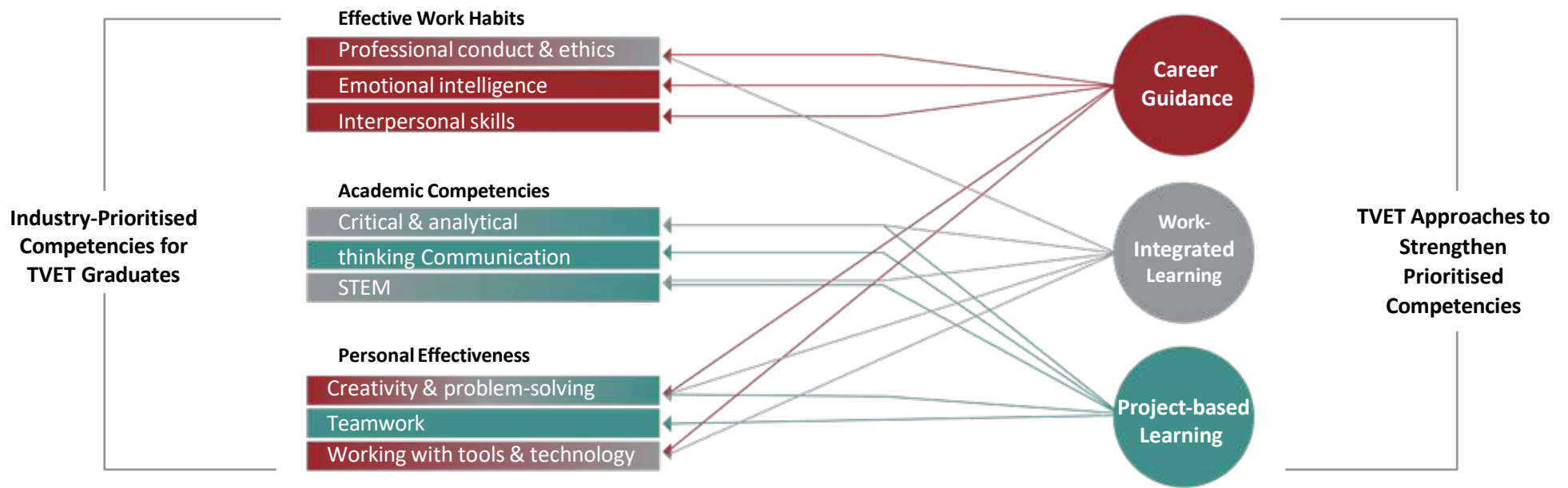
The Covid-19 pandemic has created a constrained economic environment in the automotive manufacturing sector and has affected the approach to skills development. Employers indicated that budgets for skills development were smaller, and that there were delays in employee training. Some firms have substituted face-to-face training with virtual training. Nevertheless, commitment to skills development remains and in conclusion, firms emphasised:

- 1 The **need for well-rounded individuals** – graduates with soft skills such as interpersonal skills, emotional intelligence, creative thinking and problem-solving. These skills are critical on the production plant floor and are important in waste reduction and ensuring adherence to lean processes. TVET graduates should look to apply creative-thinking skills to solve basic problems and not escalate simple problems on the plant floor
- 2 Changing requirements from OEMs and new technologies in the automotive industry mean that **TVET graduates should be tech-savvy and able to adapt easily to new technologies**
- 3 The **mismatch between the theory at TVET colleges and industry requirements**. The theory is outdated and does not focus on where the industry is currently going (4IR). TVET lecturers are not adequately equipped in 4IR and have not had any exposure to the production environment, and in some instances cannot use the machinery. This greatly disadvantages the learners

*"We have found that the practical side of the TVET graduates is not too good; it seems that the theory they do is completed as a box-ticking exercise."*

**- Foxtec-Ikhwezi**

# Recommendations and Next Steps



Based on consultations with industry and TVET partners in late 2020, High Gear identified the following pathways to strengthen priority competencies of TVET students and graduates:

## 1 Industry-led Career Guidance

**Recommendation:** Disseminate highly engaging, industry-led career guidance materials and work-readiness support to TVET students in order to:

- 1) Improve their understanding of education-to-job career pathways in the automotive manufacturing sector
- 2) Strengthen life skills and work-readiness competencies required for successful entry into the sector.

**Next Steps:** IYF and NAACAM are partnering to develop a “career experience platform” that leverages NAACAM’s knowledge of industry career ladders, and IYF’s flagship life-skills and work-readiness programming

## 2 Expanded Work-Integrated Learning (WIL)

**Recommendation:** TVET lecturers and students would benefit from expanded workplace-exposure opportunities to better understand modern manufacturing roles and requirements, and build priority competencies in structured practice job tasks.

**Next Steps:** High Gear will launch a WIL component with select TVET colleges in 2021, drawing on national and provincial industry association partnerships, existing in-country WIL management expertise, and TVET colleges’ own WIL mandates and staff resources

## 3 Integration of Project-based Learning

**Recommendation:** Work with TVET academic leadership and lecturers to incorporate project-based learning and assessment approaches into theory-based engineering qualifications, in order to bring the theory “alive” for TVET students, and to ensure TVET students are active participants in their learning journey.

**Next Steps:** High Gear is establishing TVET/industry curriculum working groups in the Eastern Cape and KwaZulu-Natal to design, test and then expand project-based learning approaches within existing engineering qualifications



## Appendix A: Automotive Manufacturer Participants

Cluster	Firm name	Pre-workshop survey	Workshop	Interviews
DAC	Aeroklas Duys		X	
DAC	Bell Equipment	X	X	X
DAC	Brink		X	
DAC	Enermous Foam Tapes and Pressure Sensitive Adhesive		X	
DAC	Feltex Automotive	X		
DAC	GST Automotive Safety South Africa		X	
DAC	GUD Holdings		X	
DAC	Hesto Harnesses	X		
DAC	Hulamin		X	
DAC	MAHLE Behr	X	X	X
DAC	Maxe		X	
DAC	Ramsay		X	
DAC	Smiths Manufacturing	X	X	X
DAC	Toyota Boshoku South Africa		X	X
DAC	Toyota South Africa Motors		X	X
DAC	Toyota Tsusho		X	
DAC	Wasomi Enterprises	X	X	X
DAC	Webroy		X	

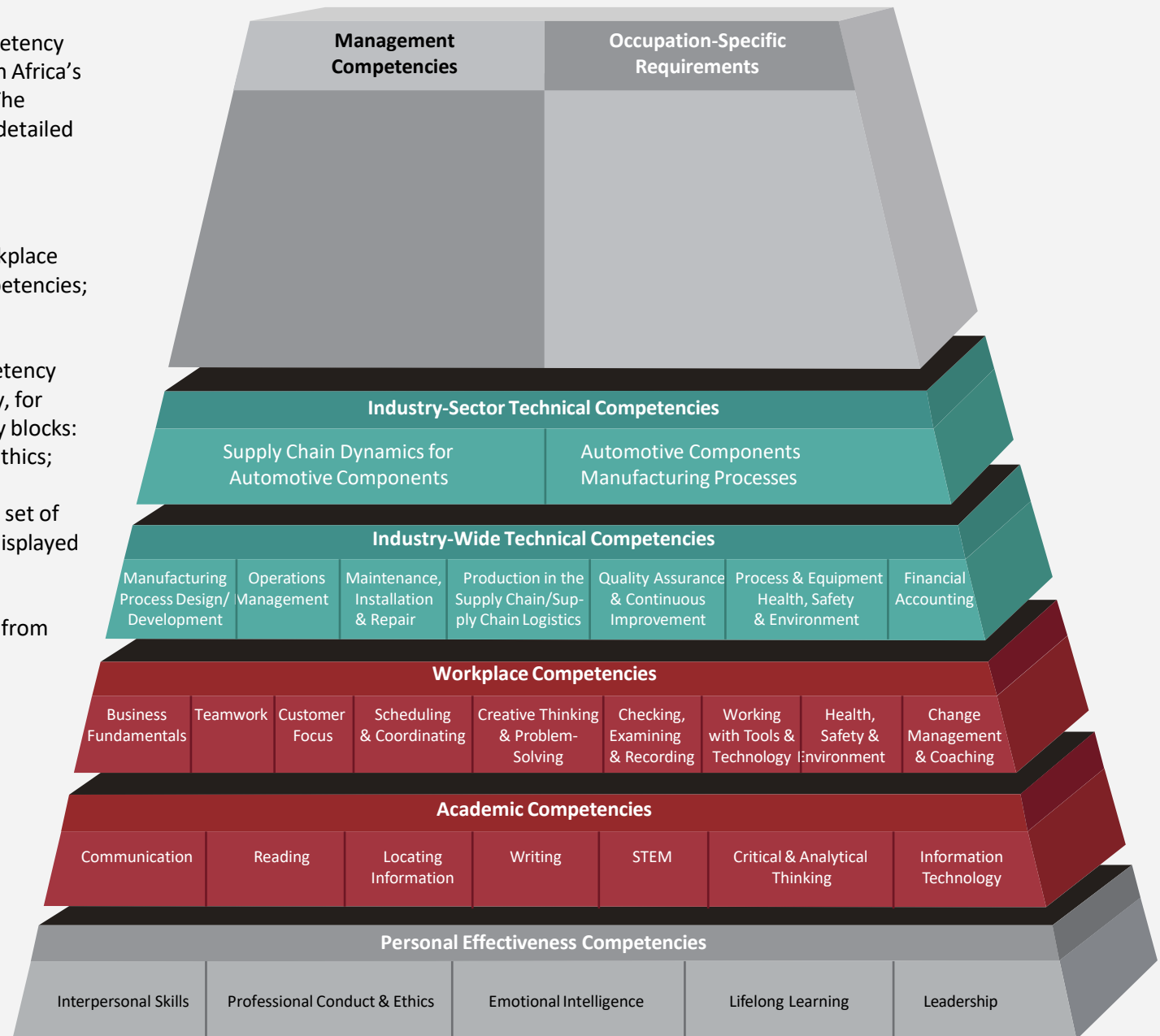
Cluster	Firm name	Pre-workshop survey	Workshop	Interviews
ECAIF	Acoustex	X		
ECAIF	Adient		X	X
ECAIF	Auto X	X		
ECAIF	Aveng Trident Steel	X	X	X
ECAIF	Ebor Automotive Systems	X	X	
ECAIF	Feltex Automotive	X		
ECAIF	Foxtec-Ikhwezi	X	X	
ECAIF	Hudson Rubber		X	
ECAIF	Isuzu	X		
ECAIF	Laser Mould and Die		X	
ECAIF	Linde & Wiemann	X		
ECAIF	Lumotech	X	X	
ECAIF	MAHLE Behr	X	X	X
ECAIF	Schaeffler		X	X
ECAIF	Senior Flexonics		X	
ECAIF	Shatterprufe	X	X	X
ECAIF	SJM Flex	X		
ECAIF	Tenneco Automotive Holdings		X	

## Appendix B: Adapted Industry Competency Model Pyramid

On the right is one of three manufacturing competency model pyramids that High Gear adapted to South Africa's automotive components manufacturing sector. The pyramid is a graphical representation of a more detailed competency model consisting of:

1. The overall competency model pyramid
2. Competency categories, including personal effectiveness; academic competencies; workplace competencies; industry-wide technical competencies; industry-sector technical competencies; and occupation-specific requirements.
3. Each competency category comprises competency blocks. The "Personal Effectiveness" category, for example, includes the following competency blocks: interpersonal skills; professional conduct & ethics; and emotional intelligence.
4. Each competency block comprises a detailed set of sub-competencies and skills, which are not displayed in the pyramid but exist in a larger guide.

The Industry Competency Model is adapted from [Industry Competency Initiative](#)





# Appendix C: Research Surveys



## International Youth Foundation (IYF) & Durban Automotive Cluster (DAC) Research Project Survey - October 2020

Firm: \_\_\_\_\_  
Date: \_\_\_\_\_

Name: \_\_\_\_\_  
Position: \_\_\_\_\_  
Email: \_\_\_\_\_

1) What are the most prominent ways that young people access production-related jobs at your firm? (SELECT ALL THAT APPLY)

a) Normal hiring practices for permanent and temporary jobs	SELECT	→
b) Use of Labour Brokers for contract employment	SELECT	→
c) Internships or Learnerships that can transition to employment	SELECT	→
d) Apprenticeships that can transition to employment	SELECT	→
e) Other (SPECIFY). Please list other ways.		
f) Other (SPECIFY). Please list other ways.		

2) Does your firm need a stronger pipeline of TVET graduates for the following positions? (SELECT - Yes / No / Not Sure / NA)

Machine Operators	Machine Assemblers	Machine Setters	Production Coordinators	Quality Controllers
SELECT	SELECT	SELECT	SELECT	SELECT

3) Which work skills competencies are most important for TVET graduates in the following positions? (SELECT - Less important / Somewhat important / Important / Essential / NA)

	Machine Operators	Machine Assemblers	Machine Setters	Production Coordinators	Quality Controllers
a) PERSONAL COMPETENCIES (e.g. interpersonal skills; professional conduct & ethics; EQ; lifelong learning; leadership)	SELECT	SELECT	SELECT	SELECT	SELECT
b) ACADEMIC COMPETENCIES (e.g. communication; reading; science; technology; engineering; mathematics)	SELECT	SELECT	SELECT	SELECT	SELECT
c) WORKPLACE COMPETENCIES (e.g. business fundamentals; teamwork; problem-solving & decision making; health, safety & environment; planning & organizing)	SELECT	SELECT	SELECT	SELECT	SELECT
d) INDUSTRY-WIDE TECHNICAL COMPETENCIES (e.g. maintenance, installation & repair; quality assurance & continuous improvement; health, safety, security & environment; operations)	SELECT	SELECT	SELECT	SELECT	SELECT
e) INDUSTRY-SECTOR TECHNICAL COMPETENCIES (e.g. automotive components manufacturing; mechatronics; mechanics; electrical; supply chain)	SELECT	SELECT	SELECT	SELECT	SELECT
f) OCCUPATION-SPECIFIC REQUIREMENTS (e.g. electrical parts; engines, motors & axle parts; suspensions & brakes; interior/exterior trim & seats)	SELECT	SELECT	SELECT	SELECT	SELECT

4) Please list any other TVET graduate skills that your firm requires? (SPECIFY)

a) Other TVET graduate skills that your firm requires (SPECIFY)	
b) Other TVET graduate skills that your firm requires (SPECIFY)	

5) Overall, which TECHNICAL COMPETENCIES should public TVET college engineering courses incorporate in a higher degree? (SELECT ALL THAT APPLY)

a) Automation	SELECT	→
b) Mechatronics	SELECT	→
c) Manufacturing Management	SELECT	→
d) Advanced Manufacturing	SELECT	→
e) None of the above	SELECT	→
f) Other (SPECIFY). Please list other technical competency.		
g) Other (SPECIFY). Please list other technical competency.		

6) Has your firm utilised TVET graduates in the last 3 years? (SELECT- Yes / No / Not Sure)

SELECT →

7) What would encourage your firm to utilise & employ TVET graduates full time?

\_\_\_\_\_

8) How has COVID-19 impacted your firm's approach to skills development?

\_\_\_\_\_

Please submit to Joshlean Chettiar (joshlean.chettiar@bmanalysts.com) by Monday, 19 October 2020







# Appendix C: Research Surveys



## International Youth Foundation (IYF) & East Cape Automotive Industry Forum (ECAIF) Research Project Survey - October 2020

Firm: \_\_\_\_\_  
Date: \_\_\_\_\_

Name: \_\_\_\_\_  
Position: \_\_\_\_\_  
Email: \_\_\_\_\_

1) What are the **most prominent ways** that young people access production-related jobs at your firm? (SELECT ALL THAT APPLY)

- a) Normal hiring practices for permanent and temporary jobs
- b) Use of Labour Brokers for contract employment
- c) Internships or Learnerships that can transition to employment
- d) Apprenticeships that can transition to employment
- e) Other (SPECIFY). Please list other ways. \_\_\_\_\_
- f) Other (SPECIFY). Please list other ways. \_\_\_\_\_

2) Does your firm need a **stronger pipeline** of TVET graduates for the following positions? (SELECT - Yes / No / Not Sure / NA)

Machine Operators	Machine Assemblers	Machine Setters	Production Coordinators	Quality Controllers
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3) Which **work skills competencies** are most important for TVET graduates in the following positions\*? (SELECT - Less important / Somewhat important / important / Essential / NA)

	Machine Operators	Machine Assemblers	Machine Setters	Production Coordinators	Quality Controllers
a) <b>PERSONAL COMPETENCIES</b> (e.g. interpersonal skills; professional conduct & ethics; EQ; lifelong learning; leadership)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) <b>ACADEMIC COMPETENCIES</b> (e.g. communication; reading; science; technology; engineering; mathematics)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) <b>WORKPLACE COMPETENCIES</b> (e.g. business fundamentals; teamwork; problem-solving & decision making; health, safety & environment; planning & organizing)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) <b>INDUSTRY-WIDE TECHNICAL COMPETENCIES</b> (e.g. maintenance, installation & repair; quality assurance & continuous improvement; health, safety, security & environment; operations)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) <b>INDUSTRY-SECTOR TECHNICAL COMPETENCIES</b> (e.g. automotive components manufacturing; mechatronics; mechanics; electrical; supply chain)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) <b>OCCUPATION-SPECIFIC REQUIREMENTS</b> (e.g. electrical parts; engines, motors & axle parts; suspensions & brakes; interior/exterior trim & seats)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4) Please list any **other TVET graduate skills** that your firm requires? (SPECIFY)

- a) Other TVET graduate skills that your firm requires (SPECIFY) \_\_\_\_\_
- b) Other TVET graduate skills that your firm requires (SPECIFY) \_\_\_\_\_

5) Overall, which **TECHNICAL COMPETENCIES** should public TVET college engineering courses incorporate in a higher degree? (SELECT ALL THAT APPLY)

- a) Automation
- b) Mechatronics
- c) Manufacturing Management
- d) Advanced Manufacturing
- e) None of the above
- f) Other (SPECIFY). Please list other technical competency. \_\_\_\_\_
- g) Other (SPECIFY). Please list other technical competency. \_\_\_\_\_

6) Has your firm **utilised TVET graduates** in the last 3 years? (SELECT- Yes / No / Not Sure)

7) What would **encourage your firm** to utilise & employ TVET graduates full time?

8) How has **COVID-19 impacted your firm's** approach to skills development?

Please submit to Joshlean Chettiar ([joshlean.chettiar@bmanalysts.com](mailto:joshlean.chettiar@bmanalysts.com)) by Monday, 19 October 2020



## Appendix D: Detailed Survey Data

All Firms	DAC	ECAIF
74%	88%	67%

**Table D1:** Firms that have employed TVET graduates in the past 3 years

**Table D2:** The most prominent ways that young people access production-related jobs at firms

	Normal hiring practices for permanent and temporary jobs	Use of Labour Brokers for contract employment	Internships or Learnerships that can transition to employment	Apprenticeships that can transition to employment
All Firms	74%	47%	74%	74%
DAC	63%	75%	75%	63%
ECAIF	83%	25%	75%	83%

**Table D3:** Firms that indicated a need for a stronger pipeline of TVET graduates for the following positions

	Machine Operators	Machine Assemblers	Machine Setters	Production Coordinators	Quality Controllers
All Firms	50%	46%	85%	69%	75%
DAC	75%	71%	86%	63%	71%
ECAIF	36%	29%	86%	67%	70%





## Appendix D: Detailed Survey Data

All Firms

DAC

ECAIF

**Table D4:** All Firms – Indication of most important/essential competencies for TVET graduates at firms

Competency	Machine Operators	Machine Assemblers	Machine Setters	Production Coordinators	Quality Controllers	AVG
Personal	79%	53%	68%	74%	84%	72%
Academic	74%	53%	68%	74%	84%	71%
Workplace	68%	47%	63%	74%	79%	66%
Industry-wide technical	42%	37%	53%	53%	58%	48%
Industry-sector technical	37%	37%	68%	58%	58%	52%
Occupation-specific requirements	32%	21%	47%	42%	47%	38%

**Table D5:** DAC Firms – Indication of most important/essential competencies for TVET graduates at firms

Competency	Machine Operators	Machine Assemblers	Machine Setters	Production Coordinators	Quality Controllers	AVG
Personal	88%	75%	75%	75%	88%	80%
Academic	88%	75%	75%	75%	88%	80%
Workplace	88%	75%	75%	75%	75%	78%
Industry-wide technical	38%	38%	38%	38%	38%	38%
Industry-sector technical	38%	25%	75%	75%	75%	58%
Occupation-specific requirements	25%	13%	63%	63%	63%	45%

**Table D6:** ECAIF Firms – Indication of most important/essential competencies for TVET graduates at firms

Competency	Machine Operators	Machine Assemblers	Machine Setters	Production Coordinators	Quality Controllers	AVG
Personal	75%	42%	67%	75%	83%	68%
Academic	67%	42%	67%	75%	83%	67%
Workplace	58%	33%	58%	75%	83%	62%
Industry-wide technical	50%	42%	67%	67%	75%	60%
Industry-sector technical	33%	42%	67%	50%	50%	48%
Occupation-specific requirements	33%	25%	42%	33%	42%	35%

**Table D7:** Technical competencies that public TVET college engineering courses should incorporate

	Automation	Mechatronics	Manufacturing Management	Advanced Manufacturing	None of the above
All Firms	63%	63%	74%	47%	16%
DAC	50%	63%	75%	50%	13%
ECAIF	67%	58%	75%	42%	17%

Research conducted by High Gear, in collaboration with the DAC and ECAIF.

