



MINISTRY OF HIGHER EDUCATION MALAYSIA

# ENHANCING ACADEMIC PRODUCTIVITY AND COST EFFICIENCY

UNIVERSITY TRANSFORMATION PROGRAMME, SILVER BOOK

# University Transformation Programme Silver Book



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## PREAMBLE

# UNIVERSITY TRANSFORMATION PROGRAMME (UniTP) SILVER BOOK

The Malaysia Education Blueprint 2015-2025 (Higher Education), or the MEB (HE), defines 10 shifts critical to sustaining continued excellence in the Malaysian higher education system.

Universities are expected to create and implement their own tailored transformation plans to put the elements of the MEB (HE) into practice. This transformation effort is known as the University Transformation Programme (UniTP). The Ministry of Higher Education (the Ministry) will support this effort by identifying and codifying best practices in a series of books with practical guidance for universities carrying out their transformation programmes.

Recognising the need for a long-term financial strategy for Malaysia's higher

education system, the Blueprint included **Shift #5: Financial Sustainability** to improve the nation's ability to provide accessible, equitable and high-quality education. One of the key initiatives under Shift #5 calls for increased productivity and improved cost efficiency in public universities. These changes will be critical for the broader transformation that universities will undergo as they implement the supporting elements of the MEB (HE). The content of the UniTP Silver Book serves the dual purpose of benefitting both the Ministry and individual university management teams:

**At the Ministry level**, the data and insights from the analyses will serve as an important baseline to monitor the overall progress of public universities as they seek to improve productivity performance.

**At the individual university level**, university management will be able to use the analytical framework and strategies derived from the insights as a starting point for improving the performance of their respective institutions.

At the simplest level, productivity is broadly defined as the amount of input required to produce a particular output. For higher education, inputs include the institution's system of governance and management, academic and support staff, the teaching and learning environment, and the research ecosystem. Some examples of outputs are the institution's reputation, its teaching and research effectiveness, as well as its broader socioeconomic impact on society at large.

The Ministry recognises that productivity can be measured against a multitude of factors. However, for the initial phase of the University Transformation Programme and in the context of the UniTP Silver Book, academic productivity is defined as cost per graduate, an internationally recognised measure used to define productivity in universities.

This intentional focus on financial costs and number of degrees awarded is appropriately aligned to Malaysia's current challenge: an overarching need to produce more graduates with a limited amount of public funds. However, as cost efficiency and intake graduation on time (*iGoT*) improve, the University Transformation Programme will expand the scope of academic productivity to include a broader set of input and output factors. Henceforth, in this book, academic productivity will refer to the cost per graduate.

The insights captured in the UniTP Silver Book regarding academic productivity were derived from data provided by public universities. However, the analyses and outlined strategies are valuable and worthwhile for both public and private universities as they reflect on their own productivity challenges and ways to improve performance.

*As universities collectively tackle productivity challenges across the higher education system, student outcomes and cost effectiveness will improve. This will set the stage for Malaysia's public universities to meet the nation's critical higher education needs and more broadly, Malaysia's bold economic development ambitions.*



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# INTRODUCTION

## EXECUTIVE SUMMARY

# KEY DRIVERS OF ACADEMIC PRODUCTIVITY

In the face of increasing costs, rising demand for higher education, and limited growth in funding, public universities must become more productive. **Chapter One** elaborates on the importance of academic productivity and outlines the definition used in this book. Chapter One also includes an overview of the two primary drivers of academic productivity – intake graduation on time (*iGoT*) and annual cost per full-time student equivalent (annual cost per FTSE).

*iGoT* is defined as the percentage of full-time students from a particular enrolment batch who graduate on or before the year that they are prescribed to graduate. Annual cost per FTSE is measured by dividing cost by the full-time student equivalent (FTSE) to normalise for different sizes of student enrolments at each university.

**Chapter Two** provides insight into the academic productivity landscape of public universities in Malaysia, using analyses driven by data from the Ministry of Higher Education (the Ministry) and verified by all 20 public universities.

The variation in outcomes is significant – even when public universities are grouped into clusters that allow for more “apple-to-apple” comparisons, there is material variation in *iGoT* and annual cost per FTSE. These variations suggest that there is room in the system to improve productivity performance.

Finally, **Chapter Three** provides a suite of “best practices” that university management can use to address various challenges that might be reducing productivity within the university. The practices outlined in this chapter are based on strategies employed in high-performing institutions of higher education in Malaysia and across the globe.

Just as there is no “one-size-fits-all” approach in education, there is also no single driver that could by itself dramatically improve productivity. Each university must reflect on its unique productivity challenges and explore potential solutions in order to improve – and the UniTP Silver Book can be a starting point and guide to universities as they embark on that journey.

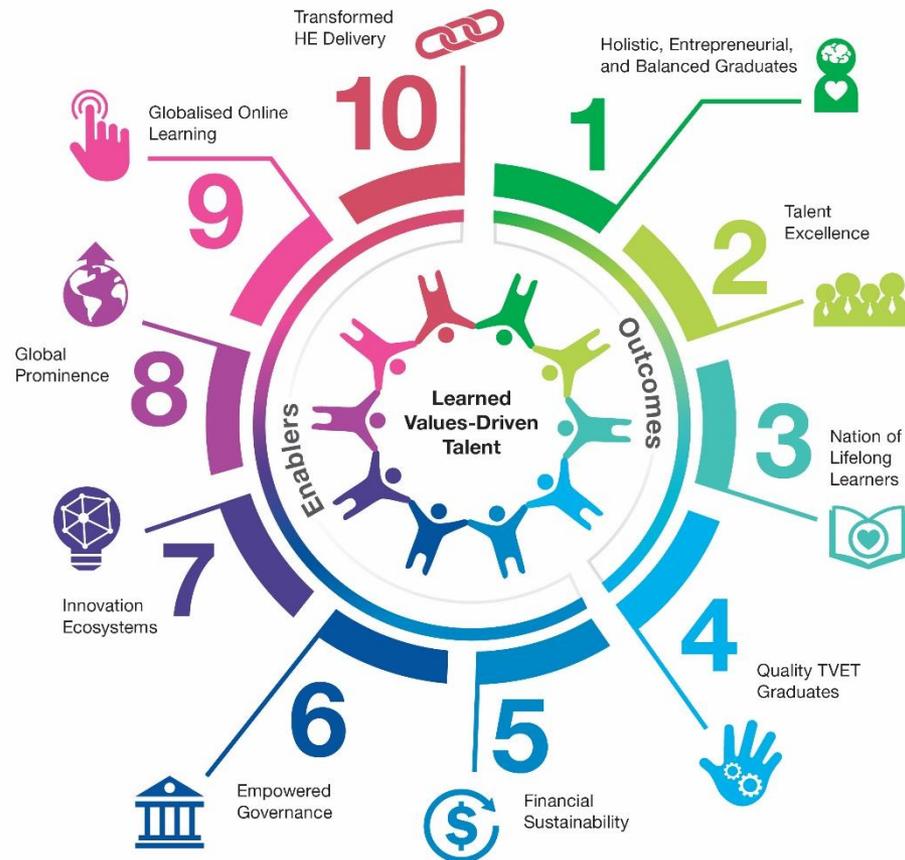
# MALAYSIA EDUCATION BLUEPRINT (HIGHER EDUCATION)

## THE TEN SHIFTS

*Financial sustainability is one of the ten shifts defined in the Malaysia Education Blueprint 2015-2025 (Higher Education), or MEB (HE).*

**Shift #5 : Financial Sustainability** focuses on improving the financial sustainability of the higher education system in Malaysia. Under the MEB (HE), the Ministry will link government funding to performance, reform existing student financing mechanisms and encourage universities to diversify funding sources.

As Malaysia's public universities begin their transformation journeys, a cost-effective and productive foundation is key to supporting the financial reforms of Shift #5. As such, the Ministry has prioritised helping universities improve their productivity and cost effectiveness with the UniTP Silver Book.



# MALAYSIA EDUCATION BLUEPRINT (HIGHER EDUCATION)

## THE UNIVERSITY TRANSFORMATION PROGRAMME

Every university is unique. The role, operating model, and even composition of a university board must be tailored to the university's specific context – its history, its current situation, and its priorities. Consequently, implementation of the transformation programme needs to be structured in a modular manner, so that universities can adopt the elements that are best suited to their situation and pace. Accordingly, the UniTP has been developed as an important initiative under the MEB (HE) to help Malaysia's 20 public universities accelerate their transformation journeys.

**The UniTP consists of eight elements.** Four elements focus on helping universities develop their own transformation plan by ensuring that universities have the right tools and support available to them. These four elements include the development of transformation playbooks for the most important reform areas, the involvement of pilot universities to “lead the way” in playbook implementation, the development of tailored transformation plans by each university, and the establishment of the Putrajaya Higher Education Taskforce to enable cross-ministry decision-making.

The remaining four elements focus on improving accountability for better performance and outcomes. These include developing Headline Key Performance Indicators (KPIs) and Key Intangible Performance Indicators (KIPs) to monitor the overall performance and health of universities, establishing performance contracts linked to those KPIs and KIPs, defining a new funding formula that shifts universities towards performance-based funding, and lastly, ongoing consultation, monitoring and reporting by the Ministry.

The first element under the UniTP is the development of five transformation playbooks, which contain best practice guidance and tools, on the topics of (i) university governance, (ii) academic productivity, (iii) talent development, (iv) income generation and (v) performance management. Pilot universities have been identified to “lead the way” in implementation, and lessons will be shared with all universities upon completion of the pilot programmes.



### 5 Transformation Playbooks include:

- Enhancing University Board Governance and Effectiveness
- Enhancing Academic Productivity and Cost Efficiency
- Strengthening Academic Career Pathways and Leadership Development
- Strengthening University Performance Management and Financial Reporting
- Enhancing University Income Generation, Endowment and *Waqf*

## SOURCE MATERIAL AND SPECIAL THANKS

# APPROACH TO DEVELOPING THE SILVER BOOK

The UniTP Silver Book was developed by the Ministry of Higher Education with the support and guidance of a core team of senior advisors and administrators from Malaysian public universities and the Ministry. It draws upon global best practices in higher education and lessons learned from the implementation of the Government-Linked Companies (GLC) Transformation Programme.

Collaborative discussions between the Ministry and universities, including with Bursars and iPMOs, ensured the accuracy and relevance of both the data as well as the calculation methodologies used in the UniTP Silver Book.

The calculations and data found in this book have been reviewed and collectively approved by these stakeholders, and were used to develop the productivity baseline and current productivity outcomes for Malaysian public universities as used in Chapter 2.

All public university Vice-Chancellors, Deputy Vice-Chancellors (Academics), Bursars and iPMOs were invited to provide feedback on early drafts of this book. Participants provided input on key content areas of the book, including the definition of productivity, the review of analyses, and the development of best-practice solutions to tackle common challenges faced by Malaysian public universities.

Action Planning Workshops were piloted with universities. During these workshops, universities shared the root causes of the specific challenges they were facing, and developed solutions through interactive discussions. Solutions were then prioritised and reviewed in depth to begin formulating implementation plans. The participating pilots have since submitted to the Ministry their action plans that are focused on improving *iGoT* and cost per full-time student equivalent (FTSE).

*The Ministry would like to extend its thanks to all who contributed to the creation of this book, including university leaders and Ministry staff.*

CHAPTER ONE

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# UNDERSTANDING ACADEMIC PRODUCTIVITY

## CHAPTER ONE

# IMPROVING ACADEMIC PRODUCTIVITY AND COST EFFICIENCY

### The quality of Malaysia's higher education system is on the rise

Malaysia is currently ranked 27<sup>th</sup> out of 50 higher education systems, based on the 2015 Universitas 21 rankings, and has been steadily climbing upwards. This improvement has brought with it an increase in demand from students for higher education, and this growth is both quantitative and qualitative – more students are pursuing higher education, and in more technical areas, as employers increasingly seek higher-skilled graduates.

### Costs are rising faster than available funding

Malaysia's deep investment in higher education enabled the achievements described previously, with spending on higher education growing at a rate of 7% per annum from 2004 to 2013. However, Malaysia currently ranks 44<sup>th</sup> in terms of academic output, but 12<sup>th</sup> in terms of spending on higher education, suggesting more can be done.

As demand for education grows, so will the costs that public universities must bear. However, public funding for higher education is unlikely to grow at the same pace as costs. To confront both issues of increasing costs and limited funding, Malaysia's public universities will need to maximise the value of every ringgit spent. This means providing more students with access to quality education – without compromising standards – for the same level of resources.

# IMPROVING ACADEMIC PRODUCTIVITY IS THE KEY TO EDUCATING MORE STUDENTS WITH THE SAME RESOURCES

## Definition of academic productivity

The Ministry recognises that academic productivity may be measured in many different ways given the wide range of academic inputs and outcomes used in describing productivity.

The UniTP Silver Book's focus will be on cost per graduate, in order to address the unique challenge of keeping costs under control while meeting the demand for higher education.

As cost efficiency and *iGoT* begin to improve, the University Transformation Programme will expand the scope of academic productivity to include a broader set of input and output factors.

The definition of academic productivity used in the UniTP Silver Book is in line with international standards and underpins other possible measures of productivity. Additionally, focusing on only one measure of productivity during the initial stages of improvement will foster targeted initiatives with faster results.

In addition to improved productivity, universities can enhance income generation through drivers such as fundraising, partnering with the private sector in research and development.

This is in addition to the development of endowments and/or *Waqf*, which can be a major contributor to income over time. Guidance on these drivers can be found in the UniTP Purple Book, "Enhancing University Income Generation, Endowment and *Waqf*".

# ACADEMIC PRODUCTIVITY VARIES ACROSS UNIVERSITIES, BASED ON PROGRAMME MIX AND COST STRUCTURE

The Ministry recognises and encourages different types of institutional excellence among higher learning institutions<sup>1</sup>, based on their strengths and focus areas. The Ministry acknowledges that the different aspirations and programme mix of public universities can result in different cost structures. For meaningful comparison in the Silver Book, public universities have been analysed in the 3 groups:

- Malaysian Research Universities (MRU)
- Malaysian Technical University Network (MTUN)
- Malaysian Comprehensive Universities (MCU<sup>2</sup>)



## Malaysian Research Universities (MRU)

### Profile

- High population of post-graduate students
- High priority on R&D and engage in extensive research activities across multiple faculties and multi-disciplinary areas

### Potential aspirations

- Aspire for overall research excellence with research partnerships across broad set of leading universities globally

### Universities in grouping

UKM  
UM  
UPM  
UTM  
USM



## Malaysian Technical University Network (MTUN)

- Specialisation in technical programmes; including technical vocational education and training (TVET)
- Strong focus on employer linkages in technical and professional fields

- Typically aspire for excellence in technical or professional fields, whether in teaching and instruction or in niche areas of technical research

UTeM  
UTHM  
UNIMAP  
UMP



## Malaysian Comprehensive Universities (MCU)

- Primary focus on undergraduate and postgraduate instruction across broad range of subjects
- High priority on high quality education and training, innovations in programme design

- Typically aspire for excellence in overall teaching and instruction in areas of specialisation

UIAM    UniSZA  
UiTM    UPSI  
UMK    UMS  
UMT    UPNM  
UUM    UNIMAS  
USIM

<sup>1</sup> Refer to Malaysia Education Blueprint 2015 – 2025 (Higher Education)

<sup>2</sup> MCU is not the official name for this group of universities in Malaysia, but is used in the Silver Book for comparison and analysis purposes

# THERE ARE TWO KEY LEVERS TO IMPROVE ACADEMIC PRODUCTIVITY IN MALAYSIAN UNIVERSITIES

## ① Intake Graduation on Time (*iGoT*)

*iGoT* measures the number of students from an intake cohort that graduates within the expected duration of their programme<sup>1</sup> (e.g. 4 years for a bachelor's degree). In this sense, *iGoT* measures one type of "output" of the university – the number of graduates produced. Holding costs steady, the university becomes more productive as the number of graduates produced increases.

The need to measure *iGoT* tied to a cohort instead of a total annual graduation rate is critical. Even though students who take longer to graduate still receives a degree, that degree took more time than intended, and therefore costs more for the university. There are, of course, instances in which some students will reasonably need more time to complete a programme of study – but in other instances, delays could have been avoided to improve productivity.

## ② Annual Cost per Full-Time Student Equivalent (Cost per FTSE)

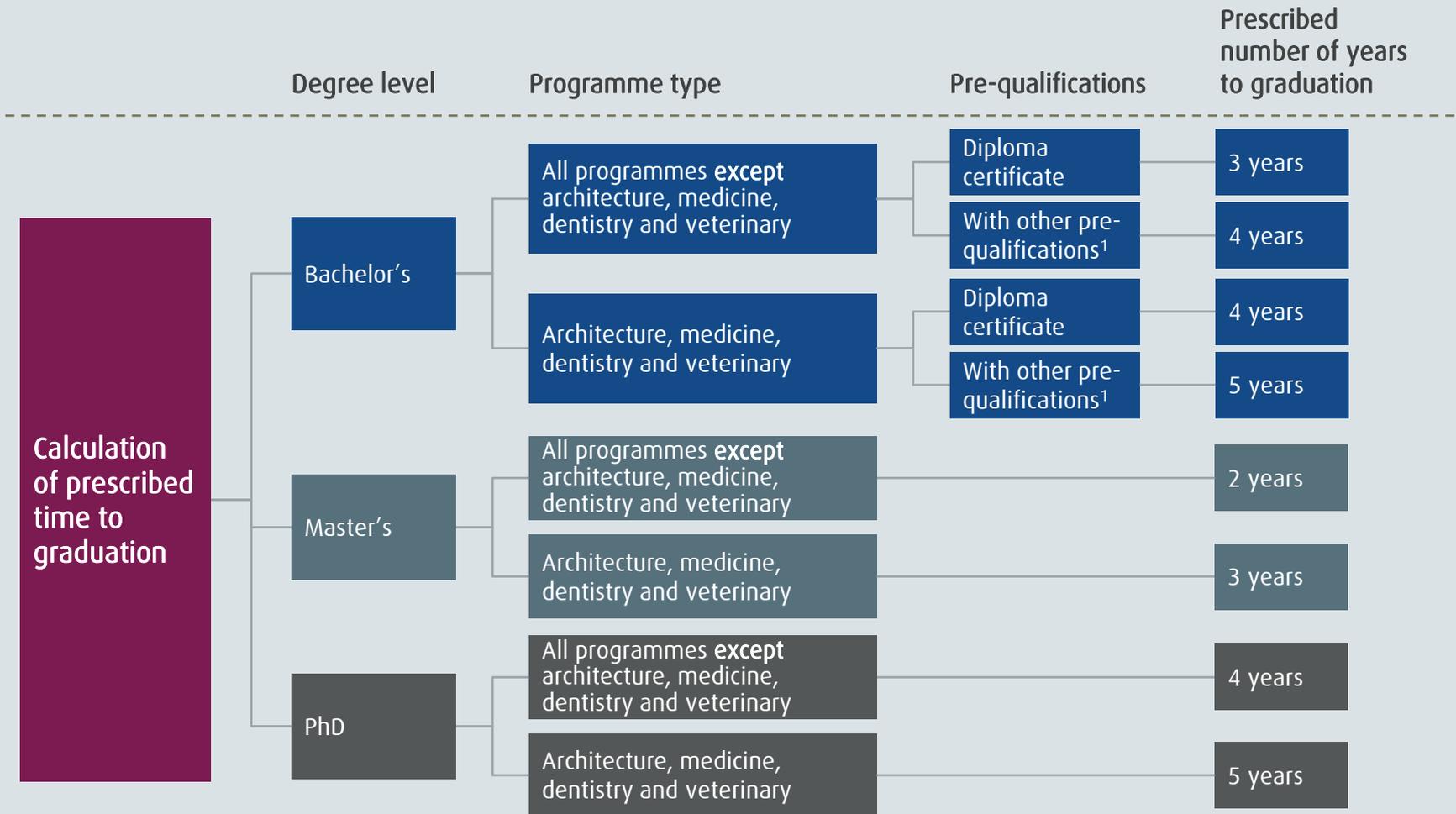
For universities to understand how they can improve cost efficiency, it is important for them to know how they currently perform relative to other universities in the same cluster. However, total costs cannot be fairly compared across universities, even in the same cluster, due to the varying sizes of each university. To normalise for size, the UniTP Silver Book will focus on annual cost per FTSE. Annual cost per FTSE represents the total annual costs of a university divided by the number of FTSEs enrolled<sup>2</sup>. As cost per FTSE goes down, cost per degree will also decrease.

1 Three variables (namely degree level, incoming qualifications and programme of study) determine the expected duration to graduation

2 Number of FTSEs enrolled is calculated by multiplying the number of part time students by a "part time : full time" conversion factor. This is equivalent to the proportion of credits that are taken by the average part time student to the credits taken by the average full time student. For most institutions, this ratio is 1:3.

## Exhibit 1

## Prescribed *iGoT* depends on three factors: degree level, type of programme and the student's incoming pre-qualifications



<sup>1</sup> Undergraduate students who come in to the programme with other qualifications, which include STPM, polytechnic or other equivalent pre-qualifications.

## *Improving iGoT helps ensure that resources invested in students are used efficiently*

Graduation is the capstone in the journey towards a degree. While some students may take a longer time to complete a degree, others drop out due to a number of reasons. Improving *iGoT* will not only increase productivity for universities, but also help more students gain access to post-degree opportunities.

Median *iGoT* today is 72% across all Malaysian public universities; however, it varies largely between universities. Low *iGoT* and high variance are driven by multiple factors. One factor affecting *iGoT* is the different ways in which universities recognise credits from diploma programmes – the *iGoT* of students entering with diplomas is 52%, meaning one out of two students either dropout or graduate later than their prescribed time. This implies that not all diploma credits are recognised by

universities, forcing some students to repeat courses and extend the length of their studies.

Another factor is the high dropout rates of master's and PhD students, due to a variety of causes, including students choosing to join the workforce over completing their studies. The loss in instructional resources for every student who repeats a course or drop out of a programme cannot be recouped.

One way to increase *iGoT* is to optimise curriculum design for flexibility and efficiency to ensure students move smoothly towards graduation, avoiding delays caused by programme design. Another way is to reduce the number of redundant credits students take by creating policies that optimise transferability of credits, among others.

Finally, providing consistent and targeted structural support for students throughout their course of study will also help improve *iGoT*.

As with cost optimisation, instructional quality should not be compromised and should be a key priority in guiding universities towards improving their productivity. The path towards graduation should be clear with good structure and support, without lowering the bar for achieving graduation.

**Chapter 3 provides further detail on the specific actions across each of these three levers**

## Exhibit 2

Working example of *iGoT*

## Illustration

University ABC has an intake of 100 full-time students for a bachelor's degree programme in 2009. The prescribed time to graduation for this degree programme is four years, therefore the prescribed graduation year is 2013.

By 2013, 10 students from the 2009 enrolment intake had dropped out of the programme.

85 students from the 2009 intake graduate in 2013. The rest are still enrolled, are expected to graduate after 2013.

An additional 5 students from other intake years graduate in 2013.

$$iGoT_{2013} = \frac{\text{Number of students graduating in prescribed graduation year}_{2013}}{\text{Number of students enrolled in intake year}_{2009}} = \frac{85}{100} = 85\%$$

$$GoT_{2013} = \frac{\text{Number of students graduating in prescribed graduation year}_{2013}}{\text{Number of students enrolled in intake year}_{2009} - \text{Drop outs}_{2009 \text{ to } 2013}} = \frac{85}{100 - 10} \approx 94\%$$

$$\text{Attrition}_{2013} = \frac{\text{Number of students who dropped out by prescribed graduation year}_{2013}}{\text{Number of students enrolled in intake year}_{2009}} = \frac{10}{100} = 10\%$$

$$\text{Graduation rate}_{2013} = \frac{\text{Number of degrees awarded}_{2013}}{\text{Number of students enrolled in intake year}_{2009}} = \frac{90}{100} = 90\%$$

## Features

Reflects impact of both dropouts and late graduates

Only reflects impact of late graduates

Reflects impact of drop outs

Reflects graduation status of students from multiple intake years

1 Includes students who transfer out (to another university/institution), those who join the workforce etc., those who were dropped and those who failed the programme

## *Reducing annual cost per FTSE will unlock additional funds*

The UniTP Silver Book uses two main measures of comparison: **median and percentage relative standard deviation (% RSD)**. **Median** is the measure of central tendency for a set of values, and chosen instead of mean to mitigate the effect of outliers on averages. **% RSD** indicates how far values in the data set deviate from the median. A high % RSD reflects high variability; in other words, a large range of values for a particular data point.

Reducing costs is critical for improving the productivity of the higher education system. However, any cost-reducing activities must be implemented without sacrificing the mission of delivering high-quality tertiary education to Malaysians.

Annual cost per FTSE can be divided into two parts – instructional costs and non-instructional costs. Instructional costs include all costs that are required for direct instruction such as lab equipment, textbooks, and faculty salaries. Non-instructional costs include all other costs required for the operations of the university including support functions like IT, human resources, finance, maintenance, etc. Currently, the median annual cost per FTSE across all public universities – averaged over 2013 and 2014 – is RM 21,408 (see page 38), with a relative standard deviation (% RSD) of 40%, suggesting that there is room for improvement in both these areas.

Reducing instructional costs typically focuses on re-designing instruction to enable faculty to engage students more efficiently.

This can be achieved using levers such as new mediums of technology or innovations in class scheduling. For example, classroom time spent on reviewing previous subject matter can be replaced with online delivery of the same modules to reduce cost. In addition to instructional re-design, improving procurement of services and supplies necessary for instruction, such as lab equipment, can help reduce instructional costs.

Non-instructional costs are often decentralised and duplicated across departments, leading to waste. These functions often do not generate sufficient revenue to cover the costs they incur, such as canteens and parking lots. This can be resolved by consolidating duplicated services and functions, as well as applying lean operations practices. Universities can review services they offer to understand how pricing can be adjusted to limit losses.

**Chapter 3 will go into further detail on specific actions that can be taken to improve cost management across these dimensions**

## Exhibit 3

Impact on productivity from changes in *iGoT*, cost per FTSE or both

University ABC takes in 100 full-time students into its bachelor's degree programme annually. The prescribed time to graduation for this degree programme is four years, therefore the university has a total enrolment of 400 students. With the total annual operating cost for the university is RM1,000,000. This means that the cost per student per annum is RM2,500.

Assuming that *iGoT* is 100%<sup>1</sup>, the academic productivity is therefore RM10,000 per degree awarded:

$$\begin{aligned} \frac{\text{Total annual operating cost}_{2014}}{\text{Number of degrees awarded}_{2014}} \\ = \frac{1,000,000}{100} = \mathbf{RM\ 10,000} \end{aligned}$$

Note that with 100% *iGoT*, cost per graduate is simply 4X annual operating cost per student, 4 being the average prescribed time to graduation.

**Scenario A:  
*iGoT* drops to  
50%**

With an *iGoT* of 50%, only 50% of the full-time students enrolled in the bachelor's degree programme would graduate within 4 years. This would cause a drop in productivity, as it now costs RM20,000 to produce one graduate, as compared to RM10,000 previously.

$$\frac{\text{Total annual operating cost}_{2014}}{\text{Number of degrees awarded}_{2014}} = \frac{1,000,000}{50} = \mathbf{RM\ 20,000}$$

**Scenario B: Cost  
per student per  
annum increases  
to RM 5,000**

An increase in the number of non-academic staff, as well as a significant jump in prices of lab materials for students, have led to an increase in operating costs from RM1,000,000 to RM2,000,000. This increases the cost per student per annum from RM2,500 to RM5,000, and consequently leads to a drop in productivity, similar to Scenario A.

$$\frac{\text{Total annual operating cost}_{2014}}{\text{Number of degrees awarded}_{2014}} = \frac{2,000,000}{100} = \mathbf{RM\ 20,000}$$

**Scenario C:  
*iGoT* drops to  
50% and cost  
per student  
increases to  
RM 5,000**

A combination of Scenarios A and B results in combined reduced productivity, which means producing the same degree will cost four times as much.

$$\frac{\text{Total annual operating cost}_{2014}}{\text{Number of degrees awarded}_{2014}} = \frac{2,000,000}{50} = \mathbf{RM\ 40,000}$$

<sup>1</sup> In this illustration, we take the simplified assumption that all the students who graduate on time graduate in the fourth (final) year of study.

CHAPTER TWO

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**ACADEMIC  
PRODUCTIVITY  
IN MALAYSIAN  
PUBLIC  
UNIVERSITIES**

## CHAPTER TWO

# ACADEMIC PRODUCTIVITY IN MALAYSIAN PUBLIC UNIVERSITIES

This Chapter examines the performance and key drivers of academic productivity for Malaysian public universities. The Chapter begins by describing the clusters used to group universities for comparison, and the key factors differentiating the clusters. The rest of the Chapter focuses on the current performance of public universities along the metrics of intake graduation on time (*iGoT*) and annual cost per FTSE, highlighting common opportunities and challenges.

Malaysia's public universities vary according to multiple factors such as age, enrolment size, mix of programmes, and degree levels, among others. All factors were considered in the grouping of universities into clusters, and two key factors were prioritised. :

- A** **Type of programmes offered:** The type of programmes offered significantly impact the operating costs for universities.
- B** **Degree levels offered:** The degree levels offered at public universities impact both cost and *iGoT* metrics.

These two factors were found to have underlying cost drivers that significantly impact productivity performance in the individual universities, compared to other factors such as age and enrolment size.

For instance, there was no visible pattern when the productivity of older universities was compared with younger universities, as a multitude of cost drivers may work to push the costs up or down with age. An older university may be more cost efficient as it has more experience, but younger universities may have lower enrolment costs due to a smaller pool of tenured faculty.

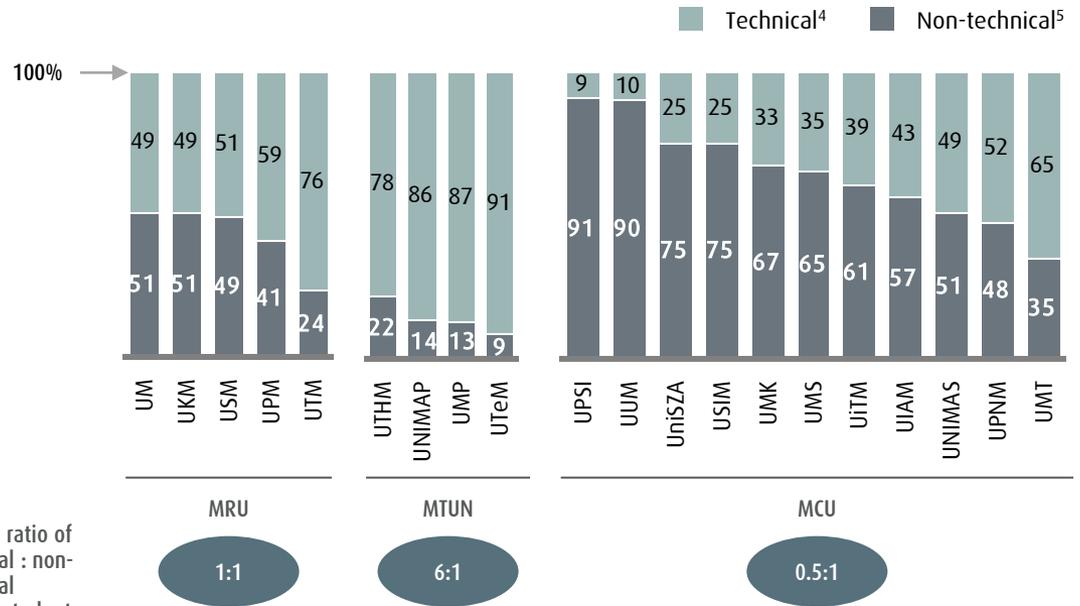
## A Programme Types

It is clear from Chart 1 that the universities in the MTUN cluster have a significantly higher percentage of students enrolled in technical programmes.

The broad field categorisations from the Ministry of Higher Education National Education Code (NEC)<sup>1</sup> have been used to split student enrolment into “technical” and “non-technical” programmes. Broad Fields Four, Five, Six and Seven have been defined as “technical”, while Broad Fields Zero, One, Two, Three and Eight are defined as “non-technical”<sup>2</sup>.

Many technical programmes require students to spend a large amount of time in labs, which entails additional infrastructure and operating costs in maintaining the lab and lab equipment, whereas non-technical programmes are more focused on classroom instruction that is typically less expensive.

Chart 1  
Split between technical and non-technical student enrolment for each public university<sup>3</sup>



Source: 2014 student enrolment, student outcomes, graduation and staff statistics from MyMOHES database

1 Refer to Appendix C for a breakdown of the National Education Code (NEC) Broad Field categorisations.

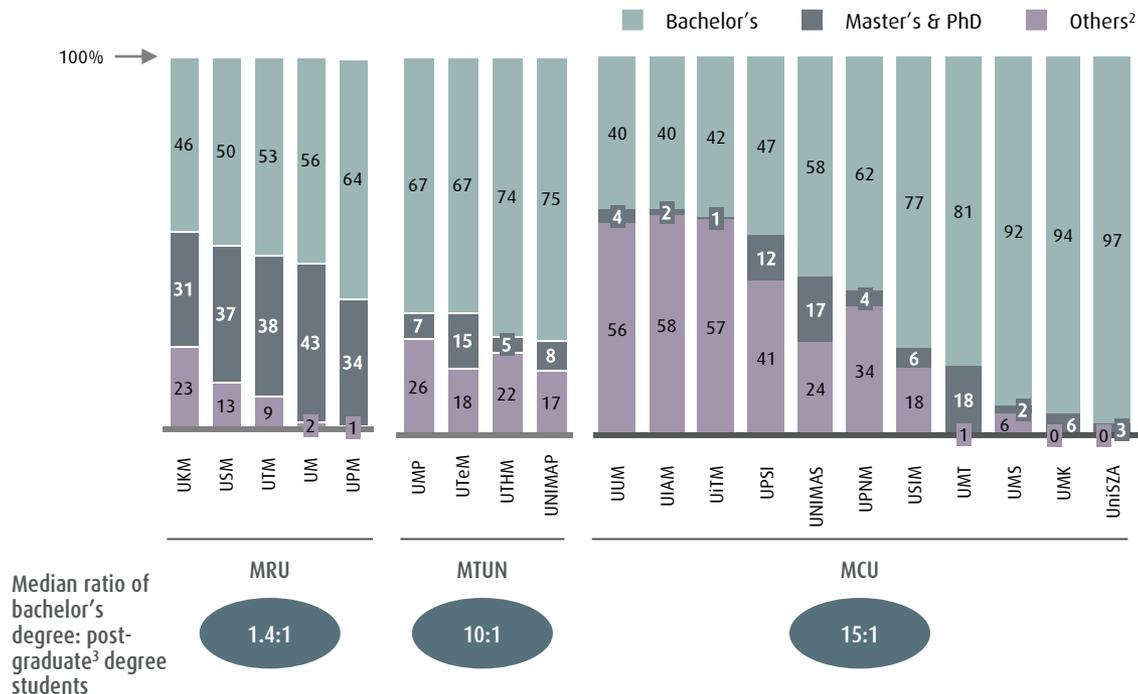
2 It should be noted that NEC Broad Fields have been defined as “technical” and “non-technical” depending on the nature of the majority of the specific fields, meaning that there may be a few programmes that do not necessarily fit within the specified categorisation

3 2014 enrolment numbers were used in the calculation of percentage split between technical and non-technical

4 Technical programmes include programmes within MOHE-recognised Broad Field 4 (Science, Mathematics & Computing), Field 5 (Engineering, Manufacturing & Construction), Field 6 (Agriculture & Veterinary) and Field 7 (Health & Welfare; includes Medicine)

5 Non-technical programmes are all programmes within the 5 other Broad Fields: Field 0 (General Programmes), Field 1 (Education), Field 2 (Arts & Humanities), Field 3 (Social Sciences, Businesses & Law) and Field 8 (Services)

Chart 2  
Student enrolment by degree level for each public university<sup>1</sup>



Source: 2014 student enrolment, student outcomes, graduation and staff statistics from MyMOHES database

<sup>1</sup> Total full-time, part-time and flex-time students were included in the student number calculation. Since enrolment numbers were all obtained through MyMOHES, post-graduate student numbers may differ from those reflected in MyRA reports

<sup>2</sup> Others include post-graduate diploma, diploma, *asasi* (foundation) and professional students

<sup>3</sup> Total number of bachelor's degree students is calculated by summing up the number of students enrolled under bachelor's degree programmes, and total number of post-graduate students is calculated by summing up the number of students enrolled for master's and PhD degree programmes

## B

## Degree Levels

As expected, Chart 2 shows that the universities in the MRU cluster have a disproportionately high percentage of post-graduate students.

Undergraduate and post-graduate students have to fulfil different requirements to complete their respective degrees. Post-graduate students usually spend more time in research labs rather than the classroom, and the student to teacher ratio is usually lower for post-graduate programmes. Research-based programmes require professors to serve as supervisors to students on their research projects, with every professor taking on only a few students at a time.

Undergraduate students tend to have a higher involvement in out-of-classroom student activities, which require the institution to invest in the necessary infrastructure (e.g. residential facilities, badminton courts, recreational centres) to support those activities.

# PRODUCTIVITY DIFFERS AMONG UNIVERSITIES WITHIN THE SAME CLUSTER, SUGGESTING ROOM FOR IMPROVEMENT

Today, the median cost per graduate across all public universities is RM106,540, and the percentage of relative standard deviation (% RSD) is 43%. Chart 3 shows that when grouped into similar clusters, the % RSD in cost per graduate decreases for both MRU and MTUN clusters, but increases for the MCU cluster.

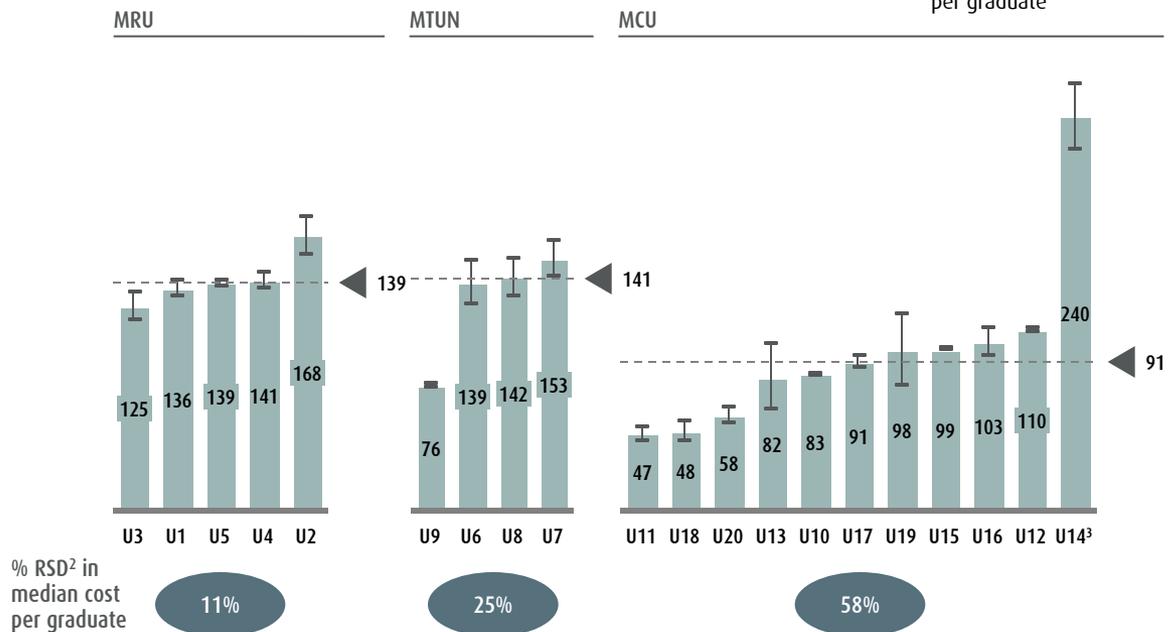
Nevertheless, the variation within each cluster is non-trivial, suggesting that there may be productivity gaps with causes unique to each university. For instance, the MTUN universities have roughly the same ratio of technical to non-technical students, but cost per graduate varies. This may be caused by aspects of cost management such as procurement practices or utilisation of economies of scale.

The remaining part of this chapter will disaggregate the variation in cost per graduate by the two key productivity drivers:

- 1 *iGoT*
- 2 Annual Cost per FTSE

Chart 3  
Average cost per graduate<sup>1</sup> at public universities by cluster

RM '000



Source: 2013 and 2014 cost data submitted and verified by universities; 2013 and 2014 student enrolment, student outcomes, graduation and staff statistics from MyMOHES database

1 Cost per graduate is measured by dividing the annual cost by the total number of students who graduate from the university in that year. An average of 2013 and 2014 cost per graduate is used to adjust for anomalies in either year.

2 % RSD indicates how far values in the data set deviate from the median. A high % RSD reflects high variability; in other words, a large range of values for a particular data point.

3 Universities with high cost per graduate figures will not be explicitly discussed in the Silver Book; however, the content within Chapter 2 and 3 will address potential issues faced by these universities and how to overcome them

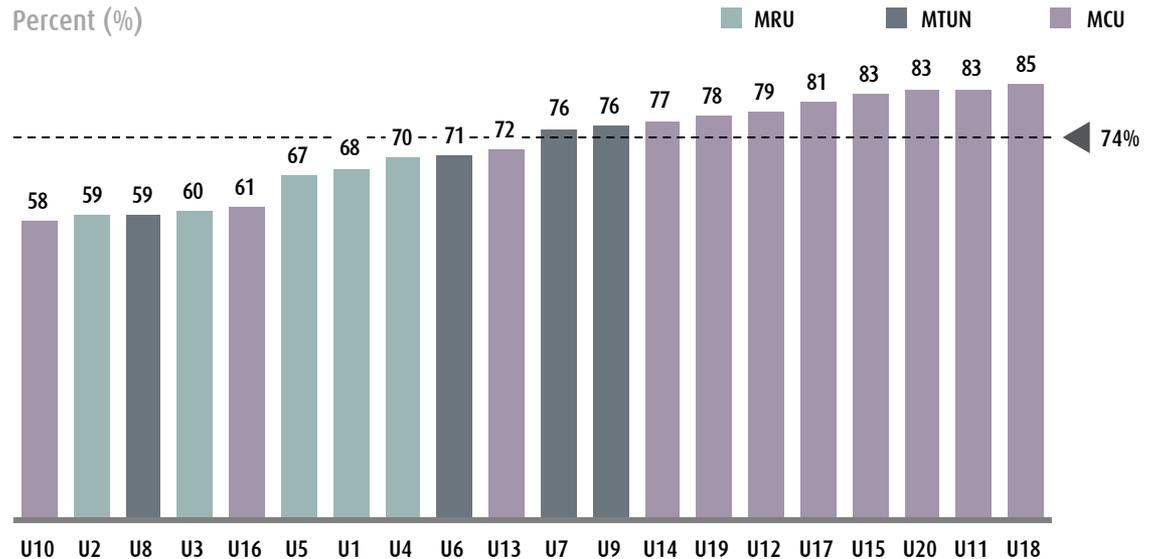
# *iGoT* VARIES ACROSS UNIVERSITIES, INDICATING A GAP IN PRODUCTIVITY

For both undergraduate and post-graduates, median *iGoT* is 74% across public universities, with a % RSD of 12%. When the *iGoT* figures are compared, there is a large gap between the universities with the highest and lowest *iGoT*. For half of public universities, 25% or more of enrolled students (from both undergraduate and post-graduate degrees) do not graduate on time.

While *iGoT* can be improved across universities, it is important to note that any actions taken to improve *iGoT* should be **limited only to areas where delayed graduation is an avoidable outcome** and that **universities should not lower the quality bar for graduation** as a means to ensure higher numbers of students graduate.

Chart 4  
***iGoT*<sup>1</sup> for each public university**

Percent (%)



Source: 2013 and 2014 cost data submitted and verified by universities; 2013 and 2014 student enrolment, student outcomes, graduation and staff statistics from MyMOHES database

<sup>1</sup> For this analysis, **only 2014 *iGoT*** figures are shown, as data quality only allows us to use data from intake batches 2009 and later. *iGoT* is only calculated for bachelor's degree, master's degree and PhD students. *iGoT* is defined as the completion of undergraduate degrees for students with a diploma certificate within three years (with the exception of medicine, dentistry and architecture, which are prescribed four years), students without a diploma certificate within four years (with the exception of medicine, dentistry and architecture, which are prescribed five years), Master's degrees, within two years and PhD degrees within four years. Enrolment batch of 2009 is used for bachelor's degree and PhD students, and 2011 is used for master's students.

## Overall *iGoT* is affected most by performance at the post-graduate level

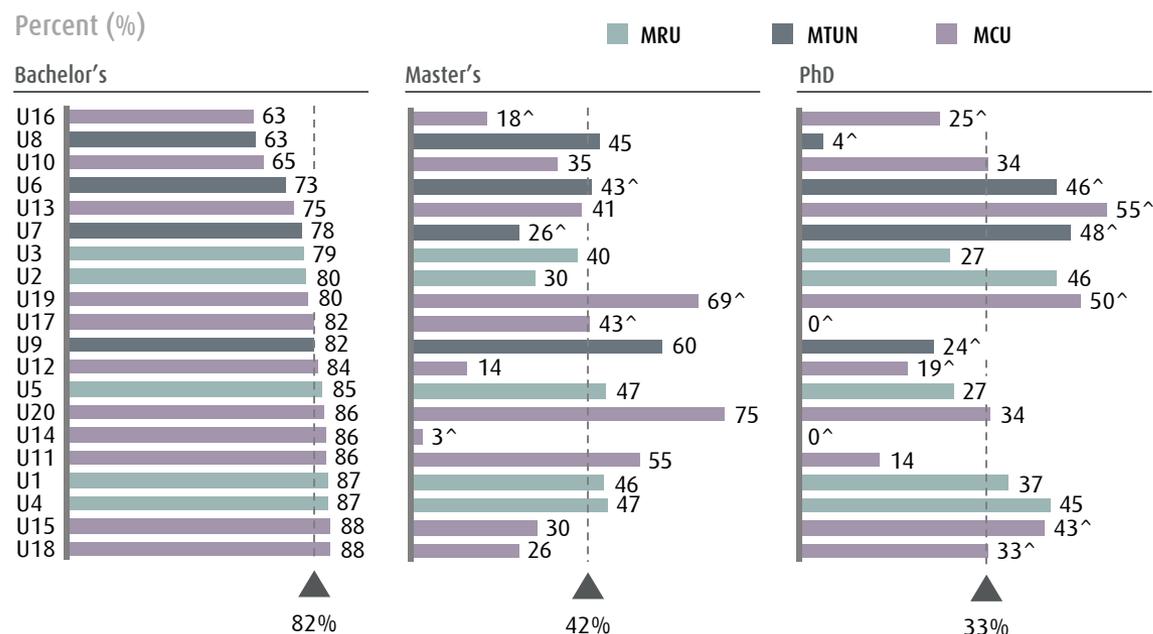
While the median *iGoT* for bachelor's degrees is 82%, the median *iGoT* for master's degrees is 42%, and the median *iGoT* for PhDs is 33%. On average, 2 in 5 post-graduate degree (master's and PhD) students graduate on time.

Lower *iGoT* among post-graduate students relative to undergraduates is a consistent pattern observed around the world.

However, Malaysia's post-graduate *iGoT* of below 50% is still cause for concern and will require a more thorough analysis by each university.

The wide range in *iGoT* for post-graduate students suggests that university-specific factors may also be at play, and universities should reflect and assess what can be done to improve the *iGoT* in their own university.

Chart 5  
***iGoT* for Malaysia's public universities, by degree level**



<sup>^</sup> Universities with intake batches of less than 100 for their master's/PhD programmes

Source: 2013 and 2014 cost data submitted and verified by universities; 2013 and 2014 student enrolment, student outcomes, graduation and staff statistics from MyMOHES database

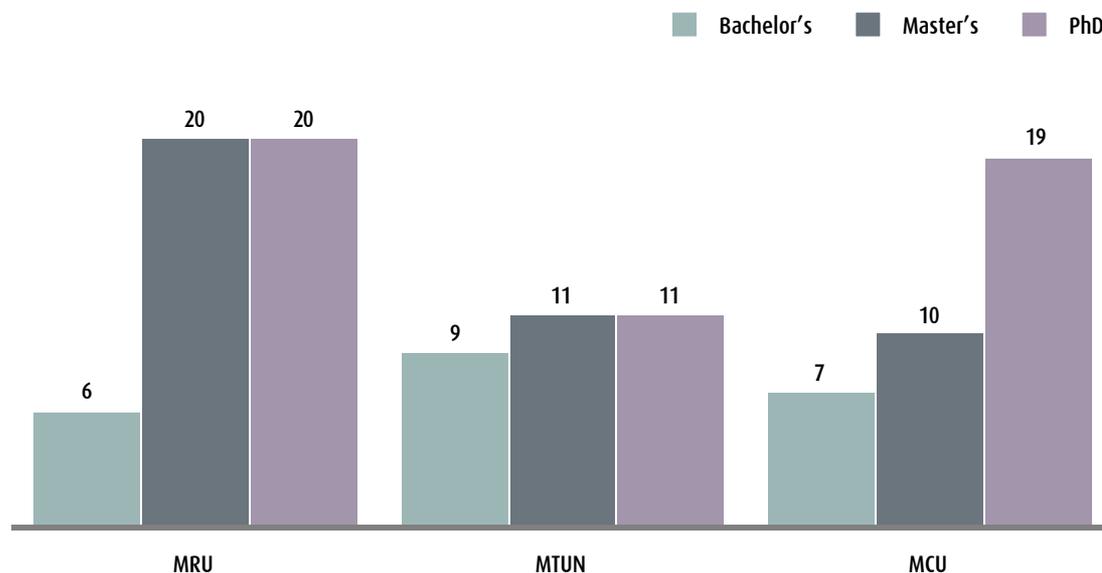
## Attrition is comparatively high at the post-graduate levels

As illustrated in Chart 6, attrition is higher for post-graduate degrees than they are for bachelor's degrees for all three clusters. One in 13 students drop out from their bachelor's degree programmes within the MRU cluster, as compared to one in five from the master's and PhD programmes from the same university cluster.

While this pattern is observed internationally, it is important to note that these students have still utilised resources without generating meaningful outcomes and which could have been directed to educate other students.

Chart 6  
Attrition by cluster

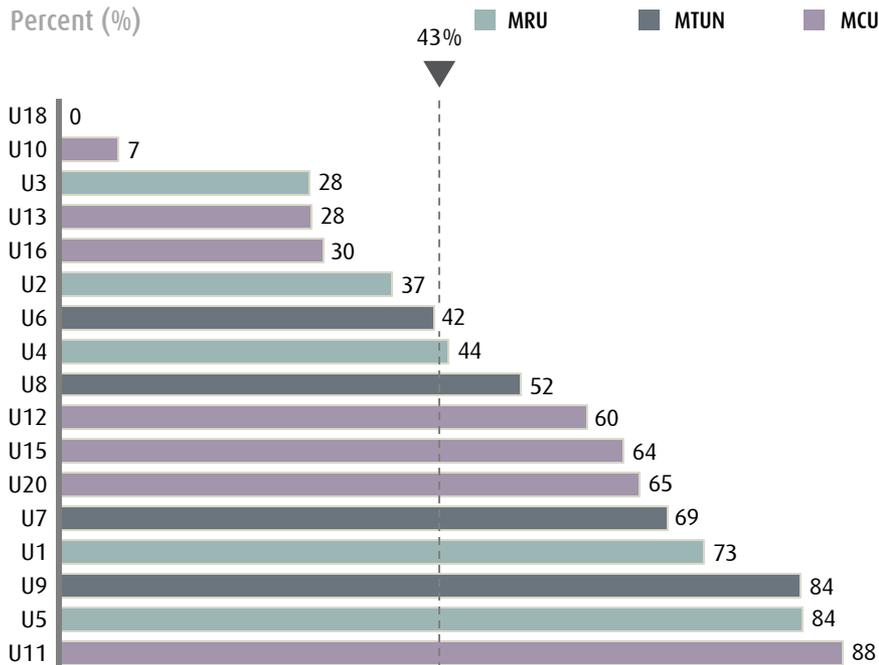
Percent (%)



Source: 2013 and 2014 cost data submitted and verified by universities; 2013 and 2014 student enrolment, student outcomes, graduation and staff statistics from MyMOHES database

## At the same time, there is also room for improvement in undergraduate *iGoT*

Chart 7  
Average *iGoT* for undergraduate students entering with diploma<sup>1</sup>



<sup>1</sup> Three individual universities' *iGoT* excluded as the intake batch of their undergraduate students who enter with diploma were below 100

Source: 2013 and 2014 cost data submitted and verified by universities; 2013 and 2014 student enrolment, student outcomes, graduation and staff statistics from MyMOHES database

At the undergraduate level, one area for improvement is the *iGoT* of bachelor's degree students entering with a diploma pre-qualification. These students are usually able to transfer up to a year's worth of credits, and therefore should graduate up to a year earlier than bachelor's degree students who do not have diploma qualifications.

However, analysis of the average time to graduation for undergraduate students with diploma certificates and those without reveals that the former are much likelier to experience delayed graduation.

For post-graduate students, the large variation in *iGoT* for undergraduate students entering with diploma pre-qualifications across universities suggests there may be structural differences in how universities approach pathways to graduation for diploma students.

Lower *iGoT* among students with diploma certificate pre-qualifications may be due to the fact that the incoming students' diplomas were unrelated to the programme they ultimately choose to pursue, and/or that there was a lack of articulation around the credit transfer mechanism used in the universities.

As data was not available to test this hypothesis at the national level, individual universities are encouraged to run this analysis independently.



A young man with dark hair, wearing a dark jacket over a white t-shirt and blue jeans, is smiling and looking towards the group. He is holding a stack of books in his arms.

A young woman with dark hair, wearing a blue and white patterned shirt and dark pants, is smiling and looking towards the man on the left. She is holding a red book.

A man with dark hair, wearing a white button-down shirt and black pants, is smiling and looking towards the group. He is holding a stack of books in his hands.

A young woman with brown hair, wearing a plaid shirt and dark pants, is smiling and looking towards the man in the white shirt. She is holding a stack of books.

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# ANNUAL COST PER FTSE VARIES WITHIN EACH CLUSTER, SUGGESTING THAT PRACTICES CAN BE IMPROVED

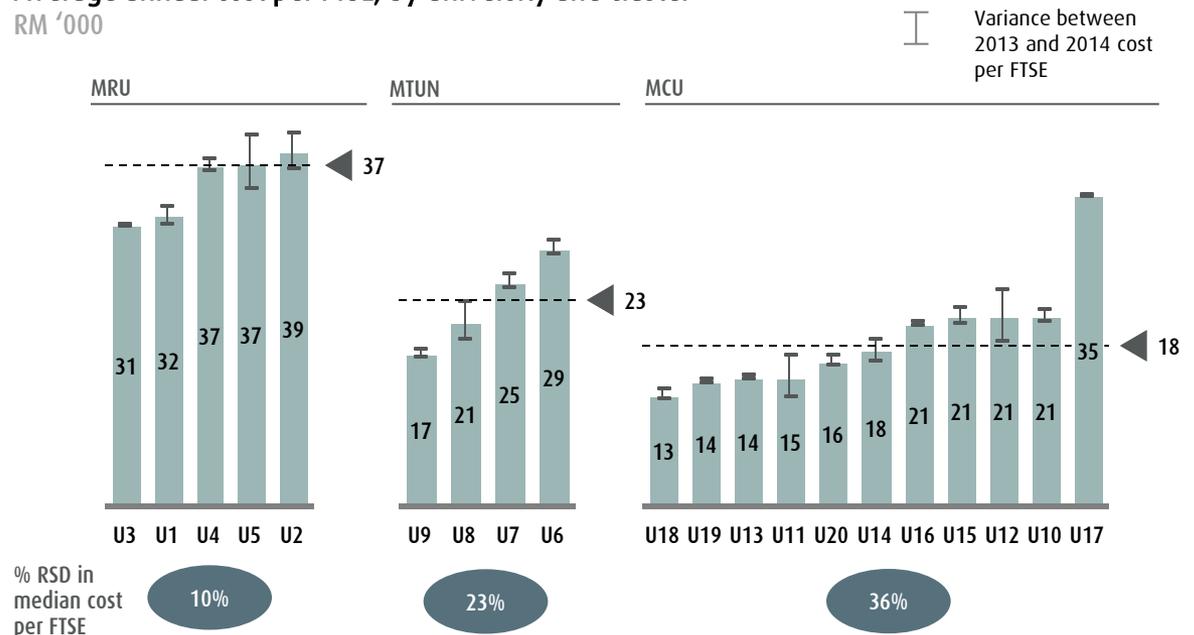
An analysis of annual cost per FTSE<sup>1</sup>, averaged over the years 2013 and 2014, across public universities reveals that there is significant variability, even within clusters. The MRU cluster has the highest median annual cost per FTSE, whereas the MCU cluster displays the highest variability<sup>2</sup>.

Within each cluster, there are opportunities to realise significant savings. For example, if all MRUs were able to lower their annual cost per FTSE to match that of U3 – the university with the lowest costs in the cluster – it would unlock slightly under RM600 million in resources that could be reinvested in more value-added activities such as higher-quality research facilities, and instructor training. Similar opportunities exist for MTUN universities and MCUs.

Chart 8

## Average annual cost per FTSE, by university and cluster

RM '000



Source: 2013 and 2014 cost data submitted and verified by universities; 2013 and 2014 student enrolment, student outcomes, graduation and staff statistics from MyMOHES database

<sup>1</sup> **Annual cost per FTSE** is measured by dividing annual cost by the full-time student equivalent (FTSE) to normalize for different sizes of student enrolments at each university. An average of **2013 and 2014** annual cost per FTSE was used to adjust for any anomalies in either year. Annual cost per FTSE is a driver of **cost per graduate**.

<sup>2</sup> It should be noted that analysis on drivers of low/high cost is limited due to lack of comprehensive and standardised information available at the national level. Moving forward, universities can consider using activity-based costing in order to fully understand how to optimise their costs

## *Cost allocation varies greatly across individual universities, though emolument is typically the largest component*

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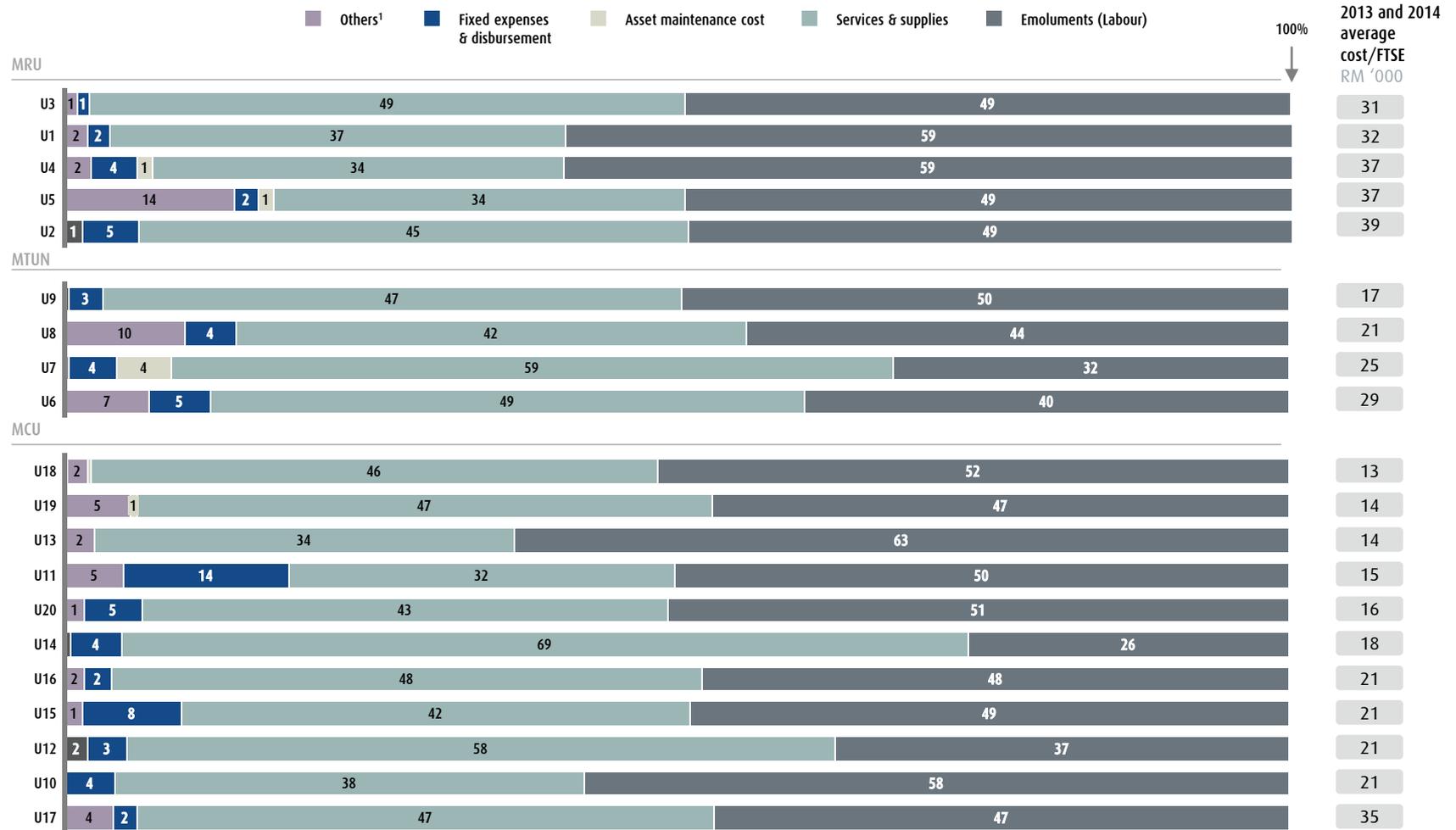
The drivers of annual cost per FTSE can be broken down into categories defined by the Ministry which include emoluments, services and supplies, asset maintenance, donations and scholarships, and other expenditures. Among these, emoluments form the largest percentage of total expenses for most universities.

This emolument expense includes the salaries, wages, and benefits for both academic and non-academic staff members employed by the university. The proportion of cost allocated to emoluments ranges from as low as 26% up to 63%.

Though the significant variation in proportion of total expenditure spent on emoluments may be a result of varying cost structures in different universities, it may also be driven by inconsistencies in financial reporting.

Moving forward, universities are encouraged to follow the guidelines in the UniTP Blue Book, "Financial Reporting" in order to further improve financial reporting standardisation and comparability across the universities.

Chart 9  
Average annual cost per FTSE broken down into components, shown by cluster  
Percent (%)



Source: 2013 and 2014 cost data submitted and verified by universities; 2013 and 2014 student enrolment, student outcomes, graduation and staff statistics from MyMOHES database

## *Key drivers of emolument spent per FTSE are the salaries of staff and the number of staff employed*

Emoluments grow quickly when the remuneration of staff, the number of staff employed, or both, are above average. In order to make fair comparisons, both remuneration of staff and number of staff employed must be normalised to account for differences in university size.

The remuneration of staff is reviewed by using a 'emolument per staff member' metric. The number of staff employed is reviewed by using the ratio of number of students to staff member, which can be further broken down into the number of students to academic and non-academic staff member. Chart 11 divides annual emoluments per FTSE (shown on the left) into these two metrics (shown on the right).

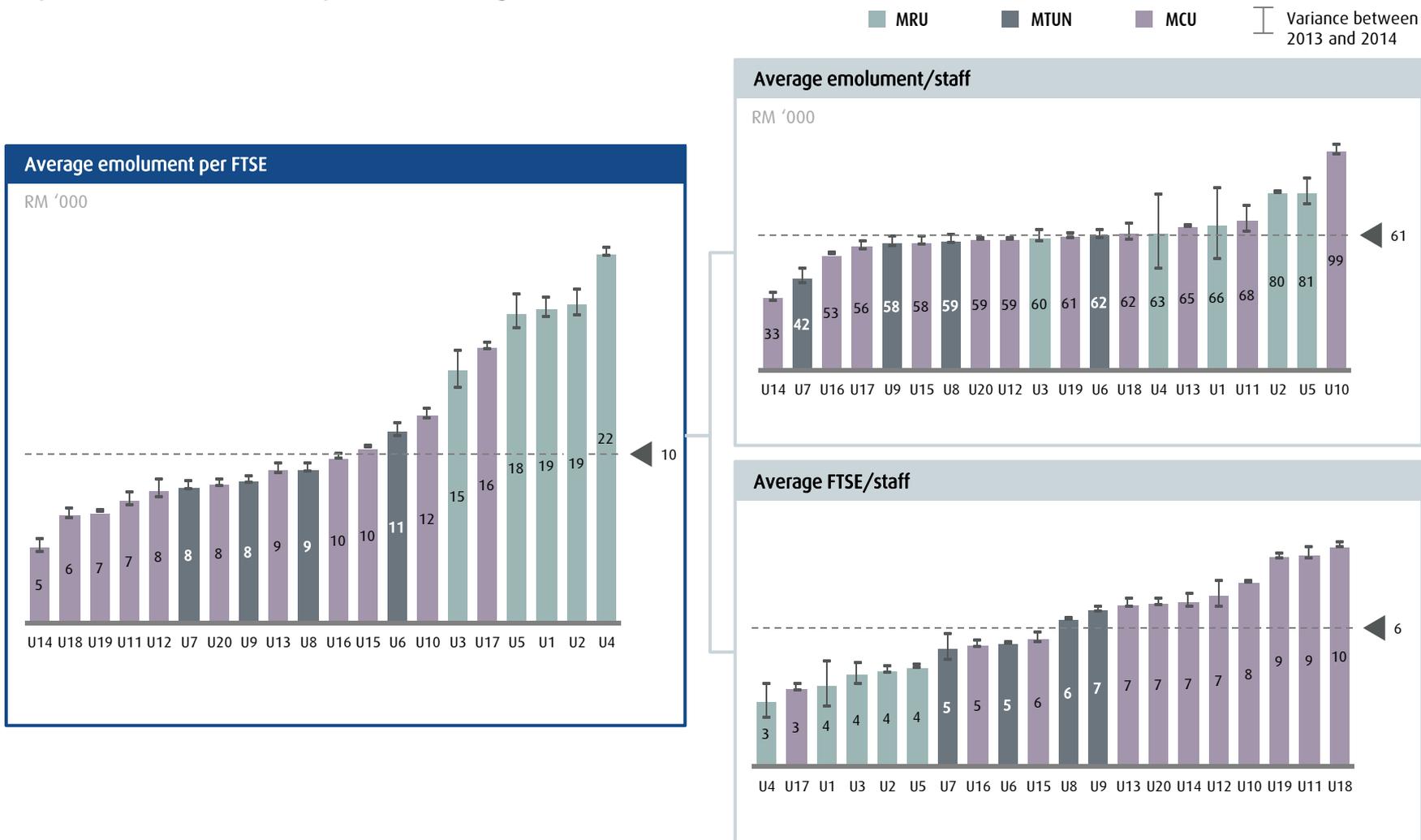
Across the universities, The labour cost per staff member varies significantly between universities — the average cost of each staff member (including both academic and non-academic) ranges from RM33,133 to RM99,147.

In addition, the range in the ratio of students to staff varies significantly. Breaking this down into academic and non-academic staff further highlights the gaps: for academic staff, the student to staff ratio ranges from 9 to 23 students. For non-academic staff, the range is from 4 to 18 students.

For universities with especially low student to staff ratios, there may be opportunities to adopt a leaner staffing model in which more students are covered by each staff member. The increased capacity will leave universities more prepared to handle the growing numbers of students without having to increase costs with new hires.

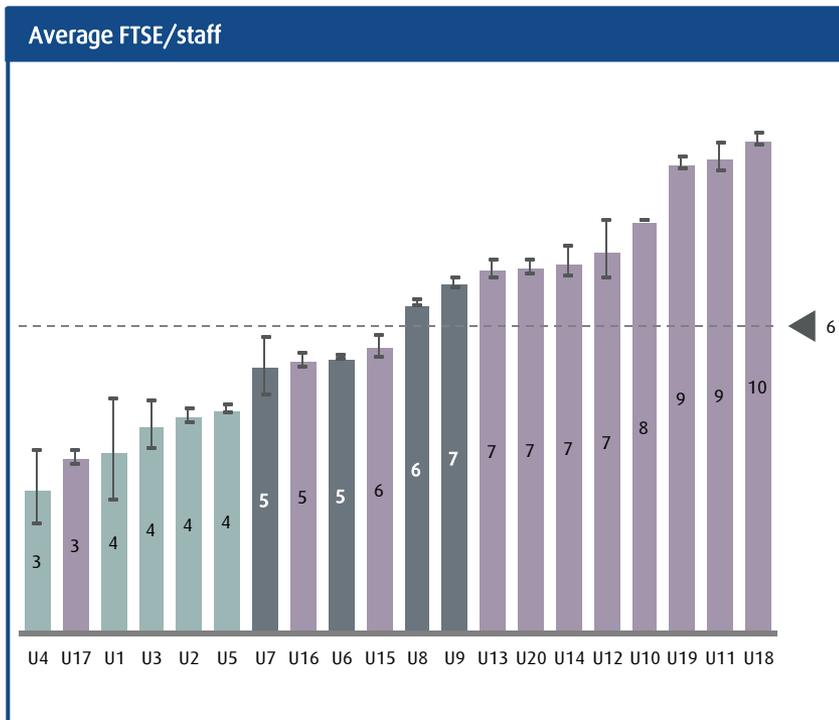
Chart 10

Key drivers of emolument per FTSE are high staff costs and low student to staff ratio

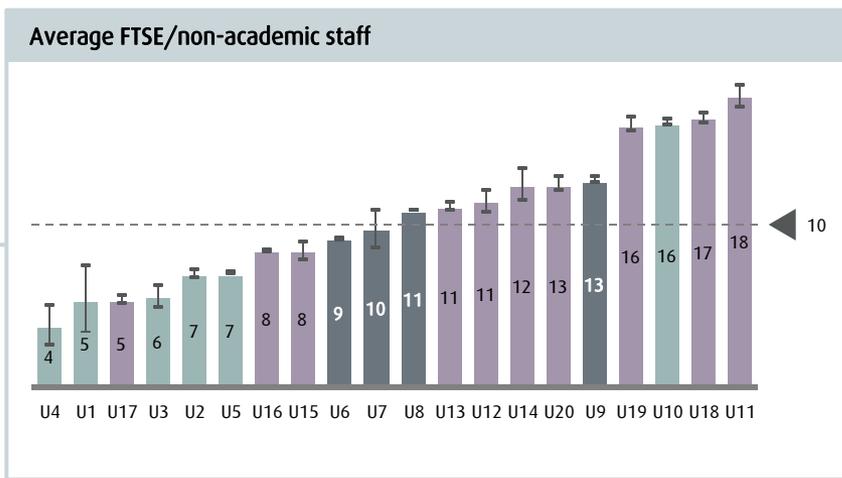
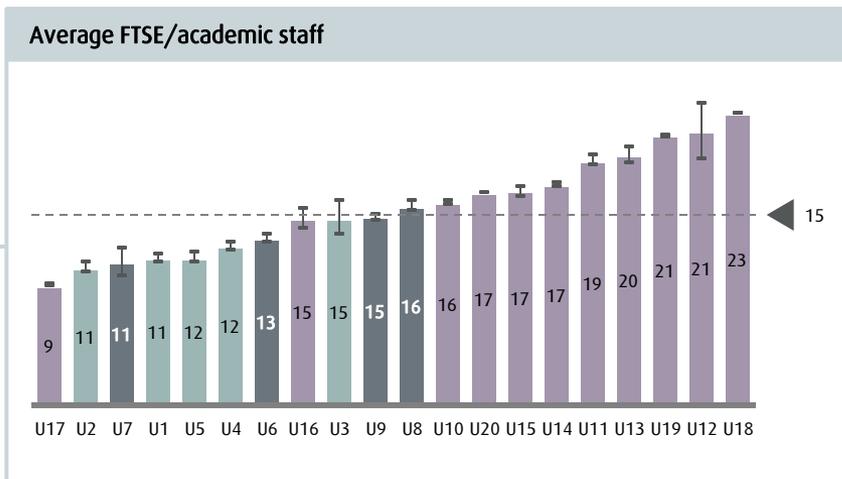


Source: 2013 and 2014 cost data submitted and verified by universities; 2013 and 2014 student enrolment, student outcomes, graduation and staff statistics from MyMOHES database

Chart 11  
Ratio of students to academic and non-academic staff



MRU MTUN MCU Variance between 2013 and 2014



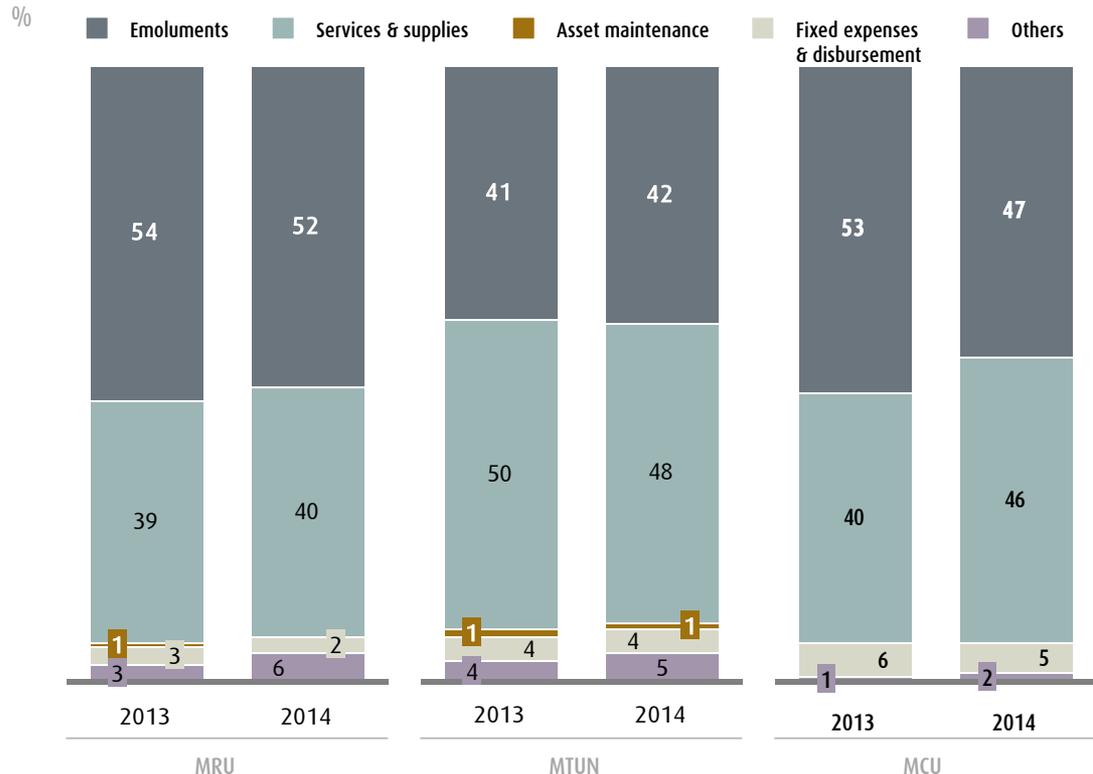
Source: 2013 and 2014 cost data submitted and verified by universities; 2013 and 2014 student enrolment, student outcomes, graduation and staff statistics from MyMOHES database

## Services and supplies are the largest expenditure component for the MTUN cluster

Services and supplies are the second largest portion of expenditure, with an average of 41% in 2013 and 42% in 2014 across all public universities. Services and supplies account for all procured goods and services – an area many universities have noted can be improved in terms of cost reduction. The remaining buckets – asset maintenance, donations and scholarships, and other expenditures – are small and in combination, account for less than 10% of the total expenditure by universities.

The larger allocation of labour expense observed in the MRU cluster is linked to the structural need for more faculty to support the larger number of post-graduate students. However, for the MTUN and MCU cluster, the split between labour and services and supplies is much closer.

Chart 12  
Annual cost per FTSE per university cluster, broken down into components



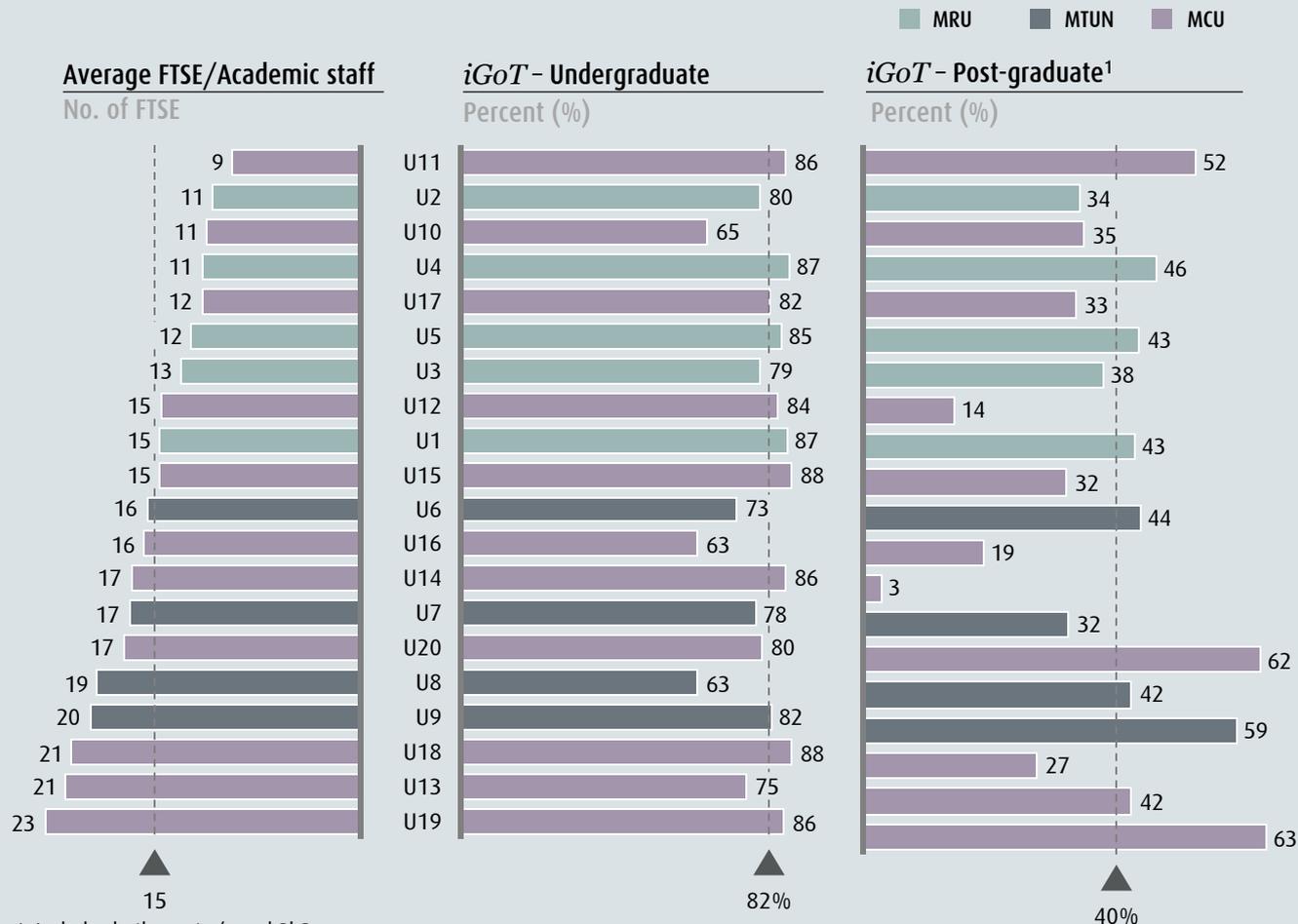
Source: 2013 and 2014 cost data submitted and verified by universities; 2013 and 2014 student enrolment, student outcomes, graduation and staff statistics from MyMOHES database

## Exhibit 4

# Low student to academic staff ratio and higher staff salaries do not correlate with improved *iGoT*

Chart 13

Low student : teacher ratio does not correlate directly to improved *iGoT*



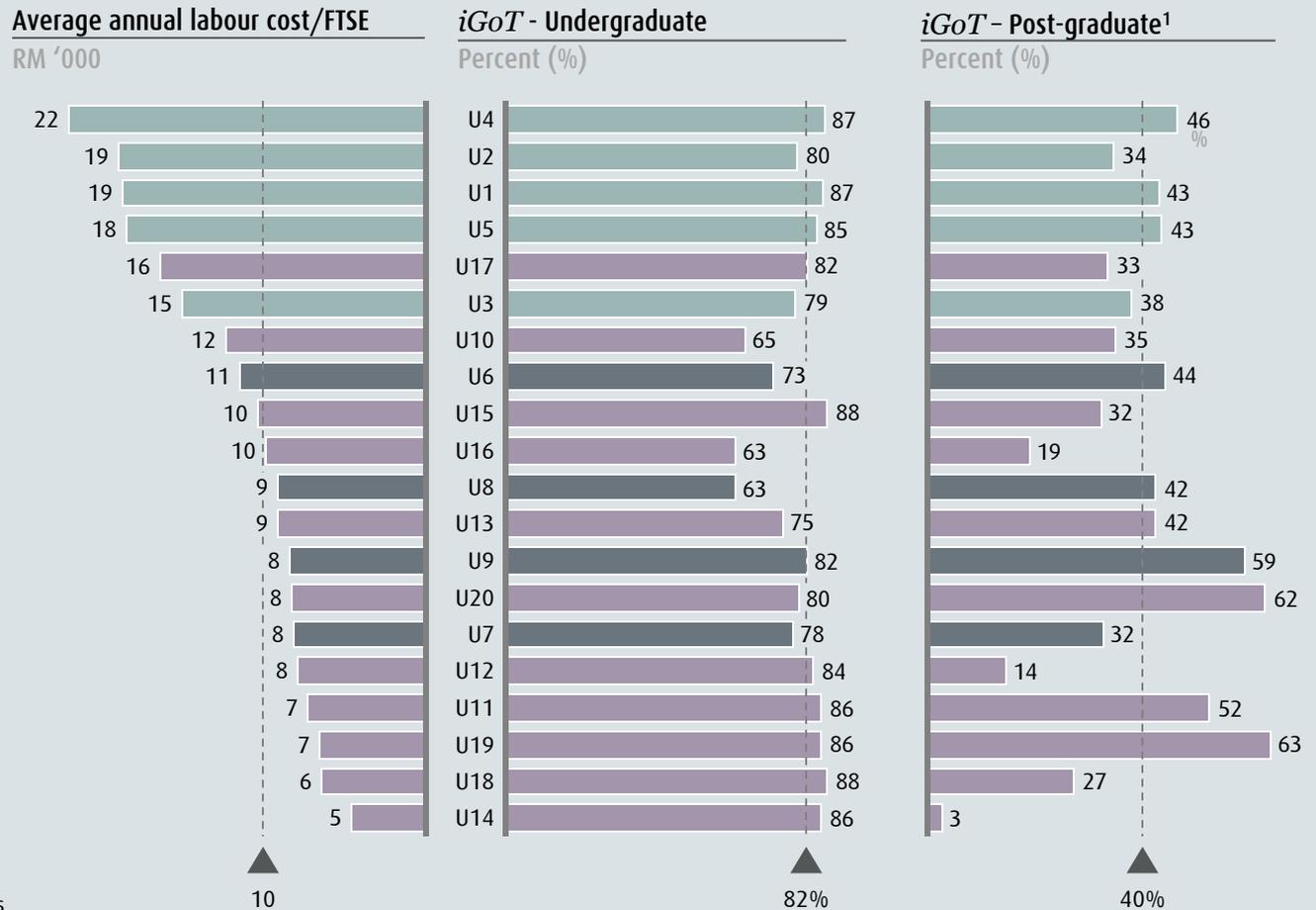
<sup>1</sup> Includes both master's and PhD programmes

Source: 2013 and 2014 cost data submitted and verified by universities; 2013 and 2014 student enrolment, student outcomes, graduation and staff statistics from MyMOHES database

There is concern that increasing the student to academic staff ratio may negatively impact student outcomes due to less individualised attention. However, the analysis in Chart 14 suggests that low student to academic staff ratios do not correlate directly to improved outcomes in the form of higher *iGoT*. This is particularly true for undergraduates.

There may also be an assumption that higher labour cost per staff member will attract higher quality faculty and thus result in improved student outcomes. However, the analysis indicates that higher staff costs per student do not correlate directly to improved outcomes in the form of higher *iGoT*.

Chart 14  
Neither does high annual labour cost per FTSE imply better *iGoT*



Source: 2013 and 2014 cost data submitted and verified by universities; 2013 and 2014 student enrolment, student outcomes, graduation and staff statistics from MyMOHES database

## Costs can also be viewed as instructional and non-instructional

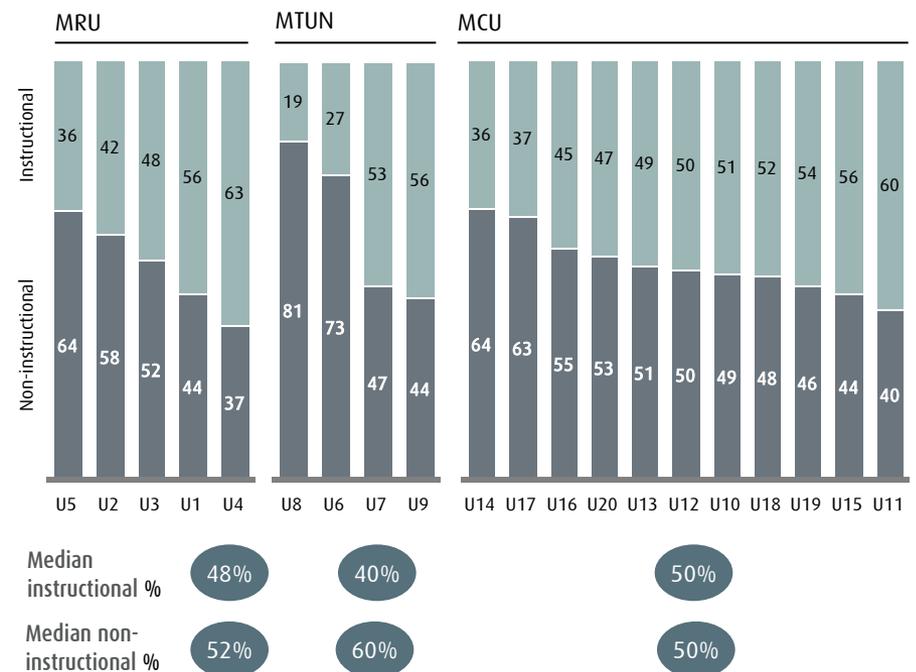
Annual cost per FTSE can be further divided into costs associated with instructional activities and non-instructional activities, which varies across universities. Though it is expected that this split would vary among universities according to different clusters, the analysis in Chart 15 reveals significant variation even within the same cluster.

**Instructional costs** are costs incurred for activities that are part of an institution's instruction programme. This includes expenditures related to an institution's academic, occupational and vocational instruction, and research activities (e.g. faculty and other teaching staff salaries and benefits; lab and research equipment; teaching materials and maintenance; and teaching facilities).

**Non-instructional costs** are costs incurred in providing non-instructional support, which includes any support services provided by the university that are directly related to instruction, e.g. academic support and student services, and services that are not integral to the university's mission e.g. car parks, canteens, gymnasiums

As public universities in Malaysia do not follow activity-based accounting, the following analyses using the instructional/non-instructional categorisation are based on estimates of cost allocation provided by the universities that have not been officially audited by an external, independent auditor.

Chart 15  
Instructional vs. non-instructional annual costs per FTSE<sup>1</sup> by cluster



Source: 2013 and 2014 cost data submitted and verified by universities; 2013 and 2014 student enrolment, student outcomes, graduation and staff statistics from MyMOHES database

<sup>1</sup> Only 2014 numbers were used for this chart (not average of 2013 and 2014) as universities were not able to provide good enough quality data for their 2013 costs to support the analysis

CHAPTER THREE

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**OPTIMISING  
ACADEMIC  
PRODUCTIVITY  
AND COST  
EFFICIENCY**

## CHAPTER THREE

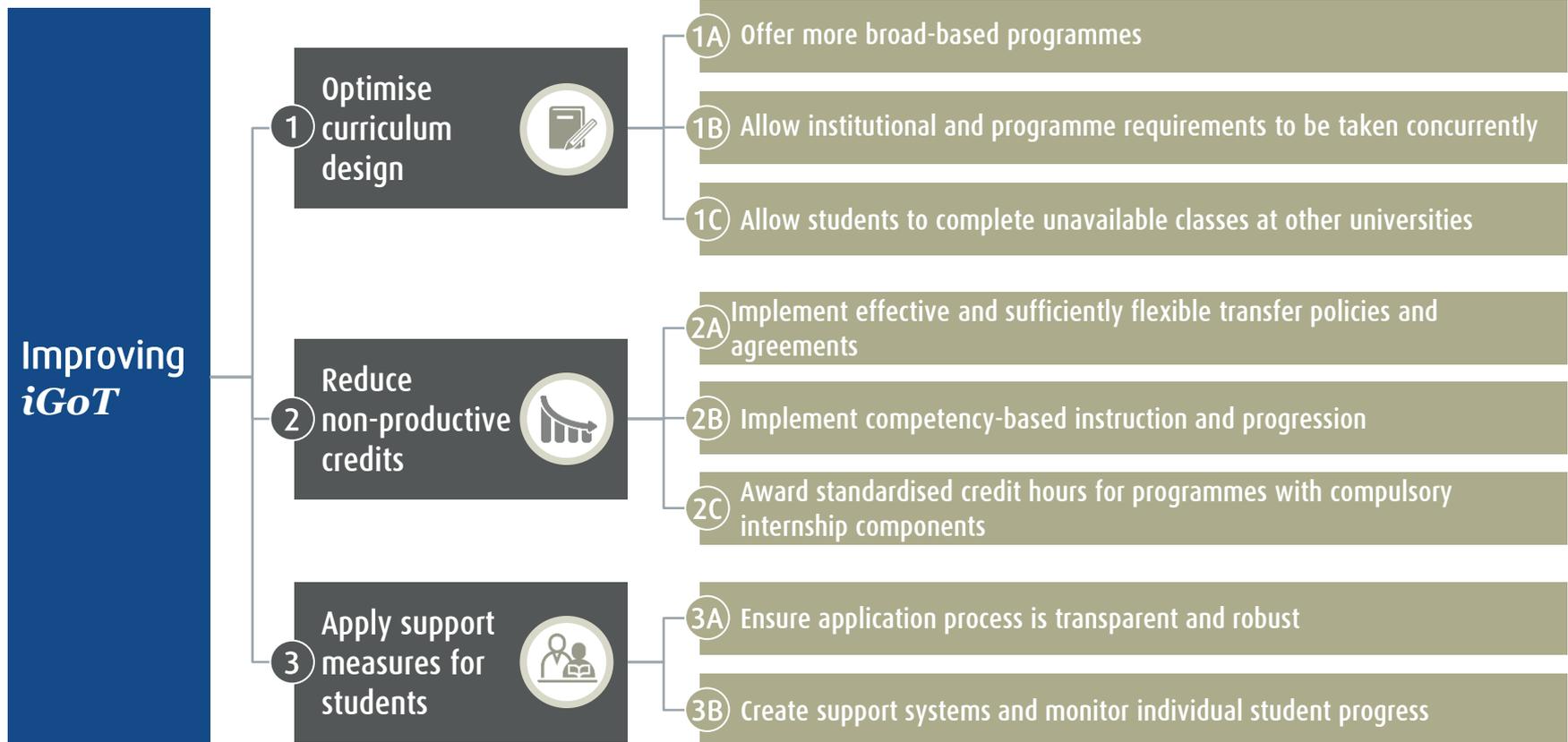
# OPTIMISING ACADEMIC PRODUCTIVITY AND COST EFFICIENCY IN MALAYSIA

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As the previous section has shown, academic productivity varies significantly among universities in Malaysia. This is to be expected given the variations in degree level and programme type. However, even within clusters that normalise for these differences, there still exists significant variation.

This highlights the need to improve productivity and cost efficiency. Becoming more cost efficient should not be thought of as simply cutting costs, which may lead to a decrease in the quality of education. Rather, universities should identify how to utilise available funding more effectively. Chapter Three will address the specific actions universities can take to become more productive.

# IMPROVING INTAKE GRADUATION ON TIME (*iGoT*)



# 1 UNIVERSITIES CAN OPTIMISE DESIGN OF PROGRAMME CURRICULUM COMPONENTS



Inefficiencies in the curriculum structure may hinder students from graduating on time. Though there are different sets of inefficiencies specific to each university, a few span across all Malaysian public universities – solutions to those challenges will be discussed in this section.

## 1A Offer more broad-based programmes

Undergraduate students in Malaysia must make a decision regarding the programme they intend to pursue before they enter the university. This is reasonable and necessary for programmes that are linked to professional qualifications (e.g. Bachelor's in Medicine, Law or Accountancy), as such programmes usually require the students to take a very specialised set of classes. However, in some universities, students in other programmes are also required to declare their area of speciality prior to entry (e.g. Business with Finance Specialisation).

This early declaration means that students start taking specialised classes early, making switching hard to achieve. It may also result in students pursuing a programme that they may not be passionate about. Both of these imply delayed graduation.

For these programmes, universities may consider a general faculty-based degree (e.g. business, arts, science) for incoming undergraduates, and allow them to declare their specialisation one to two years later, when students have a better sense of which sub-area within their chosen field of study is of particular interest to them. This reduces the likelihood of them changing their programme – which would delay their time to graduation – or dropping out along the way.

## 1B Allow institutional requirements to be taken concurrently with programme-specific requirements

Some universities require students to meet certain academic institutional requirements such as language proficiency.

For example, UIAM requires all students to demonstrate proficiency in Arabic and English prior to beginning coursework. Enrolment in coursework is prohibited until students pass the specified prerequisites, even though the student remains registered as a full-time student without passing the requirement. This results in lower *iGoT*.

Ministry will review and clarify semester-system approach for public universities to allow universities to define start and end dates as well as introduce a trimester system (instead of a two-semester system that is currently in place) as long as they fulfil the MQA requirement.

This translates into more flexibility for public universities in course scheduling and more students being able to take on internships during school breaks.

If the university prefers to retain its pre-requisite courses, one approach could be to integrate institutional requirements, such as language, to run in parallel with academic coursework. Students can then continue with their studies, as long as their academic performance is unhindered, such as by lack of language proficiency. An alternative solution is to disallow registration or entry to the university until these requirements are met.

### **10 Allow students to complete unavailable classes in other universities**

Due to resource constraints, universities may not be able to make every class available in every academic semester. In some cases, students may have to wait up to a year for their desired class to be offered again. In those cases, students may be held back a semester or more as a direct effect of the university's inability to meet the demand from students.

A possible solution to this problem is to allow students to complete select classes at other universities. Factors to take into consideration when evaluating a partnership include curricular content (e.g. teaching methodology, grading requirements) and physical proximity of campuses.

In terms of execution, partner universities must come up with a profit-sharing model to account for the resources used and revenue earned by having a student enrolled in one school and taking courses in another. The Ministry acknowledges that some universities have made concrete steps in this direction, and that successful partnerships are not far off on the horizon.

An additional solution would be to offer larger classes for core courses utilising blended learning models to maintain or improve quality of teaching. This would require some investment in technology. However, long-term benefits of the shift should justify the necessary investments.

## 2 UNIVERSITIES CAN REDUCE NON-PRODUCTIVE CREDITS



“Non-productive” credits are defined as credits that do not optimally contribute to a degree because of any of the following reasons:

- They are failed or withdrawn classes,
- They are taken at other institutions and cannot be transferred to the student’s new university
- They are taken in excess of that which is required, or
- They are mandatory for the curriculum, but are worth less than normal credits

Non-productive credits take time and resources without bringing a student closer to graduation, subsequently reducing *iGoT*.

In order for public universities in Malaysia to reduce the number of non-productive credits, credit policies should be reassessed. The credit policies governing university programmes in Malaysia are determined not only by the university, but also by the Malaysia Qualification Agency (MQA). As rulings under MQA are not directly under the control of the university, university management can focus on credit policy areas that are in their control. These include:

- ②A Implement effective and sufficiently flexible transfer policies and agreements
- ②B Explore competency-based instruction and progression
- ②C Award standardised credit hours for programmes with compulsory internship components



## *Implement effective and sufficiently flexible transfer policies and agreements*

Transfer policies affect students who enter the university with a pre-university qualification that should shorten their time to graduation, and students who switch programmes or institutions. With regard to these groups of students, Malaysian public universities have observed that students are admitted with the same or equivalent pre-university qualifications but come with varying capability. A lack of standardisation in the approval of transferable diploma programme credits is also a common issue across universities (i.e. some universities only award 30 credits transferred when others award 60).

Universities should strike agreements with each other and with relevant pre-university institutions for comprehensive, transparent, and consistently applied credit transfer systems. These credit transfer systems should cover the different types of programmes offered locally and internationally, yet also be flexible enough to accommodate each student's unique set of circumstances.

A robust credit transfer system includes a fair assessment process of the quality of students entering with pre-university qualifications, or from other public universities. This can be

achieved by implementing an entry test, on a case-by-case basis, that covers the content knowledge of the programme. This would serve as an additional filtering mechanism to ensure that students who are skipping the fundamental classes are truly well-equipped to do so.

As an alternative to credit transfers, students should also be allowed to fulfil certain credit requirements through an examination if the same knowledge has been gained through vocational or other experience outside a formal educational setting. This can be done through the Recognition of Prior Experiential (or Informal) Learning (RPEL) and Accreditation of Prior Experiential Learning (APEL), which exist in Malaysia, but are not applied consistently.



## *Explore competency-based instruction and progression to allow students to progress at a pace suited to them*

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Students who fail a course are usually required to re-sit the entire class to gain credit towards graduation, even if the student has retained partial knowledge. This extends time to graduation, though little new knowledge may actually be acquired. An alternative is introducing a competency-based progression.

Competency-based education measures learning by demonstrated mastery of learning objectives, regardless of the time students spend in class, which allows some students to progress faster. In a competency-based curriculum, assessments do not take place at the end of the learning process as with traditional instruction. Instead, the student has the option of taking an assessment multiple times, making corrections or revisions until he or she can demonstrate understanding.

While some universities may not choose to broadly deploy a competency-based model, institutions may choose to develop and deploy such systems in targeted ways, such as delivering an alternative, simplified curriculum or offering an online-class supplement as an option for students who have completed but failed a course. The simplified curriculum or online supplement would only focus on a segment of core content, instead of the entire class – saving students from having to repeat content they may have otherwise mastered.



## *Award standardised credit hours for programmes with compulsory internship components*

More universities are moving towards course structures that combine classroom-based learning with compulsory on-the-job learning in the form of industrial or entrepreneurial trainings, particularly universities in the MTUN cluster, which have a higher proportion of students in hard-skills-based programmes. Other universities such as UUM have both local and international industrial training programmes for their practicum students, an effort in line with the Ministry's push to produce graduates with extensive exposure to local and international working environments.

Though credits are usually awarded when these students complete the internship, the number of credits awarded are not commensurate with what the students would have received if they had taken a full semester load of classes. This disadvantages the students as they then fall behind their peers in credit count and *iGoT*.

To avoid this outcome, credit mapping processes and protocols have to be clearly defined. The university can either choose to:

(i) Allocate the same number of credits for the on-the-job stint as would be allocated for a normal semester load of courses

(ii) Allocate fewer credits than the full load for the on-the-job stint, supported with additional class offerings in the evenings or during semester breaks (or "short semesters") in order to ensure that students are still able to graduate on time

These structures and their relevant paths to graduation should be mapped during the course-planning stage and clearly articulated to students at the start of their academic career.

## 3

## UNIVERSITIES CAN APPLY SUPPORT MEASURES TO ENABLE STUDENTS TO REACH GRADUATION



Malaysian public universities should also ensure that there is sufficient structural support provided for the students. This includes universities' ability to give students a clear view of opportunities that are available – both academic and non-academic – and motivating students toward successful, on-time completion of their university education. This is a critical component of both undergraduate and post-graduate studies, especially in the first year of enrolment, when many students are in a transitional stage and require the most support.

Two key strategies that can improve support systems include:

### ③A Ensure application process is transparent and robust

This means having sufficient transparency about programme requirements in communications to students, and ensuring robust student selection in the degree programme-matching process.

### ③B Create support systems and monitor individual student progress

This means having a dependable support mechanism to guide students through their university journey, coupled with the necessary intelligence systems to monitor their individual progress. Red flags will be triggered for students who show signs of delay in their academic progression and consequently have a higher likelihood of delaying graduation or dropping out.

As most public universities would have already implemented the aforementioned strategies in some form or other, the next section will focus on learning from best practices in order to make these processes as effective as possible.



## Ensure the application process is sufficiently transparent and robust

Though all Malaysian public universities have outreach events to inform prospective students about the programmes offered, challenges in the transparency of information between prospective students and universities still persist.

With the multitude of undergraduate programmes on offer and *Bahagian Pengurusan Kemasukan Pelajar* (BPKP)'s recent shift from allowing students to apply for three programmes to twelve, it is especially crucial that universities are clear in their communications with prospective students.

At the post-graduate level, post-graduate programmes struggle to help students understand the commitment they are making by enrolling. Nearly 15 percent of all post-graduate students in Malaysian public universities drop out of post-graduate programmes, which may be due to the perceived opportunity cost of completing their studies.

To address the aforementioned issues, efforts can be made to ensure students are informed about the following three key areas prior to committing to a degree programme and programme of study:

### Programme requirements and performance expectations

Students enter programmes fully aware of the prerequisite knowledge, content that will be covered and expectations for them to complete their degree including: credit transfer policies, timelines for completion of degree, consequences of failing to meet requirements and expectations of academic performance.

### Post-graduation career opportunities

Students are clear about the opportunities that will be available to them after completion of their degree and the steps they can take to increase their chances of embarking on their desired career path.

### Support systems at the university including educational and career counselling

Students are aware of the support resources available to them during their study so they know where to turn to if they need help.



## Create support systems and monitor individual student progress

Many universities already have support systems for students, but existing systems can always be improved. Among the undergraduate population at public universities, a common problem that arises is the high ratio of students to academic advisors<sup>1</sup> due to the large student population. This results in a severe shortage of one-on-one time between the academic advisor and the student.

For post-graduate students, the major challenge lies in the lack of consistent communication between students and their academic supervisors<sup>1</sup>.

Students have been known to wait for up to a year between the submission of their thesis and receiving the invitation to defend. This is a major factor in low *iGoT* rates for post-graduate students.

As post-graduate students are also relatively older than undergraduate students, they also tend to have more financial responsibilities, which sometimes lead to problems in completing their degree on time.

Multiple levers can be used to address these two issues; these will be expounded upon in the next page.

<sup>1</sup> A clear distinction has to be made in the use of “academic advisor” and “academic supervisor”. In the context of this Playbook, “academic advisors” are defined as the academic staff who fulfil a mentoring/advisory role for undergraduate students. “Academic supervisors”, on the other hand, are the faculty who work closely with master’s (especially research) and PhD students throughout the course of their post-graduate degree, culminating in an assessment of their thesis.

## Support for undergraduate students:

**Have an academic advising centre, where staff are solely dedicated to advising and helping students**

Having staff in the academic advising centre specifically hired for the dedicated purpose of academic advising has multiple benefits:

- Frees up faculty time, so they are able to focus on their teaching and research roles;
- Dedicated staff with specific expertise in academic advising results in higher-quality services provided to the student; and
- Students have more opportunity to engage through regular and drop-in appointments.

**Use alternative pedagogical models for more effective student engagement**

Alternative pedagogical models, such as the tutoring system in Oxford and Cambridge, could also be considered in working towards greater, more effective student engagement.

In these universities, there is regular and unofficial contact between students and tutors to preserve continuity of teaching and to provide additional support to students so that they can meet the rigorous academic demands at these top universities.

**Leverage big data to target intervention for “high-risk” students**

Intelligent systems may be utilised to monitor students’ academic performance and to identify students with higher risks of graduating late or dropping out. The consistent monitoring allows targeted measures to be applied for those identified as “high-risk”. This could be translated into a two-tier support system, where students are given baseline support if they are in the low risk zone, and more concentrated support if they are of higher risk levels.

Students who trigger red flags would then be brought to the attention of their advisor, who can help develop a tailored support programme, which may be in various forms, such as tutoring and counselling.

**Explore alternative means to conduct targeted support for weaker students**

Mentoring programmes, where stronger students are paired with weaker peers to provide academic and non-academic support is a common practice among universities in Malaysia with higher *iGoT*. These sessions are beneficial for both parties, as the weaker students have an avenue to gain a better understanding of academic content in a safe and supportive environment, while the stronger students are able to use the sessions as a form of revision to strengthen their own understanding.

## Exhibit 5

# Case study: Academic Strengthening Programme (ASP) in Universiti Malaysia Terengganu (UMT)

*The first out of two sample cases that describe how a university can implement a tailored programme for “high-risk” students*

UMT conducts an Academic Strengthening Programme (ASP), an annual programme which centres around a three-day camp for its undergraduate students who have been identified as “academically weak”. The selection criteria for students who are “academically weak” are those with cumulative grade point average scores of 2.19 and below. In UMT, approximately 200 students attend the programme annually.

The programme aims to address two pertinent issues faced by these students: (1) common motivation issues across all programme types; and (2) programme-specific issues. The first session is conducted by a guest speaker, and the second by lecturers from the respective programmes. After the ASP camp, students’ results are monitored over the next semester.

Though this programme is only held once a year, the benefits have been significant – 75% of the students showed a marked increase in their CGPAs in the following semester.

The ASP takes the form of a three-day camp and is not held on campus premises (it is usually held in either a hotel or resort). This deliberate choice of programme type and location helps to alleviate some negative perceptions that may be attached to the ASP.

## Exhibit 6

# Case study: Peer-Assisted Learning Services (PALS) at Taylors' University

*The second out of two sample cases that describe how a university can implement a tailored programme for “high-risk” students*

PALS is a structured additional support programme conducted by trained senior students for junior students seeking assistance in their studies. The programme has two key objectives; first, to provide academic assistance to all students undertaking a specific module, and second, to provide peer-to-peer (P2P) learning and more personal support for students in the high risk category.

PALS classes are one-hour sessions, conducted twice a week, and are designed not to repeat the prior lecture or tutorial conducted by faculty. The programme's main aim is to focus on parts of the module that are complex or challenging, and to share senior students' successful approaches of mastering these topics.

While PALS is compulsory for “high risk” students, it is open to all students seeking academic assistance. This approach leads

to a mixed composition of both “ high and low risk” students in PALS classes, and helps ensure that PALS is not perceived as a “remedial class” for weak students.

The factors driving the success of the PALS classes are outlined below:

- **Coordination between module lecturers and the Peer Leaders:** Feedback from the Peer Leaders to faculty about the “ high risk” students helped lecturers to ensure that PALS classes focus on the real issues faced by students, and to make the appropriate modifications to the delivery and content of their lectures.
- **Coordinating student timetables:** PALS classes are scheduled into students' timetables to ensure that they do not obstruct students from attending regular lectures or other learning and co-curricular activities.

- **Training of Peer Leaders:** Peer leaders are coached in basic lesson preparation and teaching delivery. Their teaching performance is monitored through student evaluations and the tracking of students' eventual grade improvement.
- **Constant feedback and monitoring of PALS sessions:** Analysis of students' attendance and performance in class is used to assess how to tailor PALS to students' needs, including scheduling, content delivery, etc.

## Results

Based on the early intervention and PALS classes, the students' academic performance in the 2014 January cohort showed marked improvement. Pass rates climbed to 88% against 78% for the corresponding cohort in 2013. The measures undertaken also helped to drastically reduce dropout rates – from 21% in January 2012 to about 3% by July 2014.

## Exhibit 7

# Case study: Centre of Academic Excellence & Student Advisory and Development (CDAE) and Student Academic Intervention Programme (SIAP) in University Sains Malaysia (USM)

*Two USM cases illustrate how a university can have its own academic tutoring centre and an intervention programme for “high-risk” students*

## Centre of Academic Excellence & Student Advisory and Development (CDAE)

As part of its efforts to improve teaching and learning (T&L) quality, USM has set up a Centre for Development of Academic Excellence (CDAE). USM’s CDAE team aims to transform the university’s T&L towards excellence by encouraging the implementation of student-centred learning. This is in parallel with the National Higher Education Strategic Plan, National e-Learning Policy, and the USM APEX Transformation Plan.

The CDAE continually conducts efforts designed to challenge and broaden conventional perspectives of T&L, while also providing a vast spectrum of services and programmes.

The availability of dedicated advisory staff provides students with the high-quality advisory support needed when selecting programmes and navigating both personal and academic challenges.

## Student Academic Intervention Programme (SIAP)

Of the numerous programmes organised by CDAE, the Student Academic Intervention Programme, otherwise known as *Sistem Intervensi Akademik Pelajar* (SIAP), plays a vital role in ensuring that weaker students are provided with the necessary support systems to help them persist through to graduation.

SIAP was first devised to monitor and assist students who have CGPAs lower than 2.0. It identifies these students by looking at their results from the first semester of that academic year.

Currently the programme provides additional academic support for the students, which is supplemented by six booklets, four of which are supervised by the students’ respective schools, and the two remaining booklets presented to students by the CDAE during a one-and-a-half day seminar.

In addition to this supplementary programme, the students are also brought on a hiking trip to Greenlane Hill, during which various lecturers and facilitators conduct seminars on topics such as stress management, self-potential, time management, and learning tools.

Team-building activities and aerobic exercises are also conducted to help motivate students and boost their morale.

## Support for post-graduate students:

### Introduce defined Standard Operating Procedures (SOPs) and Key Performance Indicators (KPIs)

Universities can set expectations by creating precise SOPs and KPIs that outline how supervisors should engage with students. These should contain details as precise as the maximum time an advisor can take to respond to a student, or the expected frequency of meetings, where both the student and the academic advisor are held accountable. For example, at USM, academic supervisors are held accountable to advising expectations outlined in a detailed SOP provided to all supervisors. Supervisors who do not meet SOP requirements or are not engaging with students are counselled to improve engagement.

### Ensure tight process management in student evaluation and assessment

In addition to having clear expectations set for both students and faculty, universities should ensure that there is the right level of discipline in process follow-through. To this end, online systems can be put in place in order to make sure that both parties are not only aware of checkpoints and timelines are met, but also to manage capacity and scheduling throughout the whole evaluation process.

### Offer financial advisory services for post-graduate students

Universities can also consider supporting students who feel pressured to leave their post-graduate degree due to financial concerns by providing financial advisory services. This service could be offered by the student support division of the post-graduate programme of the university, and made available to students before entering the programme so they are able to address any potential issues early on.

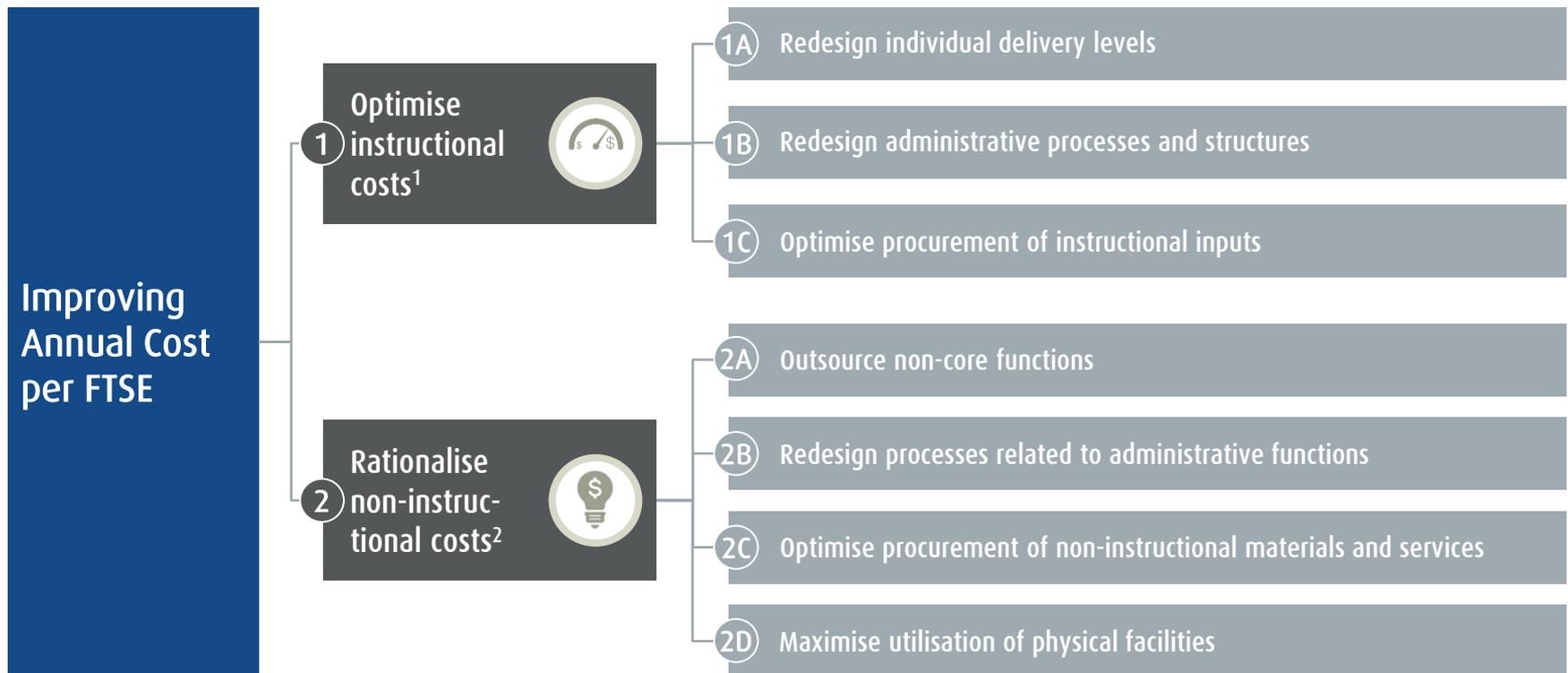
In addition, universities should ensure that students are aware of available financial aid/scholarship programmes. For example, the expansion of the MyBrain15 programme to civil servants should be emphasised by public universities to prospective post-graduate students.

### Introduce more corporate partnerships

Similar to several international scholarship programmes that exist with government linked companies (GLCs) and other government entities (e.g. Petronas, Bank Negara), universities could actively seek partnership with other corporate and government organisations for top students considering entry to post-graduate programmes. These partnerships could take the form of scholarships, internships, mentorship programmes, and research support, among others. For direct financial benefits such as a scholarship, support should be contingent upon guarantee of the completion of the degree programme, barring which, the student would be required to repay the cost of the scholarship.



# IMPROVING ANNUAL COST PER FTSE



<sup>1</sup> Instructional costs include all costs that are required for direct instruction such as lab equipment, textbooks, and faculty salaries

<sup>2</sup> Non-instructional costs include all other costs required for the operations of the university including support functions like IT, human resources, finance, maintenance, etc

# 1 UNIVERSITIES CAN USE A RANGE OF METHODS TO OPTIMISE INSTRUCTIONAL COSTS



1A

## Redesign individual delivery levels

A common measure used to optimise instructional costs is the introduction of blended learning, in which part of the student's instruction experience is delivered via digital and online media with some element of student control over time, place, path, or pace.

1B

## Redesign administrative processes and structures

Administrative processes and structures can be redesigned to create savings in instructional costs without jeopardising the quality of education.

1C

## Optimise procurement of instructional inputs

In addition to faculty, there are other physical inputs for instructional cost. These include textbooks, lab materials and equipment, computers, and so on. The procurement and use of these goods can also be managed in a way that leads to cost savings.

## 1A

## *Redesign individual delivery levels to continually reduce instructional costs in the long run*

The Ministry intends to increase the use of blended learning solutions to account for 30 percent of courses through the implementation of MEB (HE). In Malaysia, all universities have begun experimenting with Massive Open Online Courses (MOOCs) as part of this effort. However, more can be done.

In order to continually reduce instructional costs in the long run and remain up-to-date with modern modes of instruction, universities can explore multiple avenues of instructional design, including using adaptive learning tools and having formal student-led supplemental sessions.

### **Adaptive learning tools**

Universities may make use of adaptive learning<sup>1</sup> tools to engage students with content in multiple ways. These include using technological solutions during classroom time, supplementing classroom-based courses with online material or even completely replacing some of the classroom time with online content. This software can also be used to collect data on individual student performance, so that the instructor can still track their students' progress throughout the class.

The use of this technology in classrooms saves instructional cost by reducing the load on instructors for every class taught, and allows their time to be spent on more value-adding work. More importantly, adaptive tools support the personalisation of learning, unlocking the unique potential of each individual student.

### **Out-of-class peer learning sessions**

Integrating peer learning sessions such as labs or group work into the programme curriculum could be useful for students to self-explore content reviewed in class, with the support of classmates. The group dynamic enables students to reinforce the content learned in the classroom, and allows them to learn from each other. This is a practice already utilised by many universities in Malaysia, especially for TVET programmes.

However, the practice can be expanded to non-TVET programmes as well. By shifting these activities out of the classroom, costs in instruction can be saved, without sacrificing time for students to engage with content covered in class.

<sup>1</sup> Adaptive learning is an educational method which uses computers as interactive teaching devices, and to orchestrate the allocation of human and mediated resources according to the unique needs of each learner. Computers adapt the presentation of educational material according to students' learning needs, as indicated by their responses to questions, tasks and experiences.

**1B**

## *Redesign administrative processes and structures to create savings in instructional costs*

### Programme audit

When evaluating programmes, universities should consider the graduate employability of students after completing programmes and whether the programmes are consistently well-subscribed. For example, at one local university, 800 programmes out of approximately 1000 had less than 10 applicants each year. Though this trend was observed over multiple years, the universities still continued to offer those programmes.

In situations where the programmes have low enrolment, poor graduate potential employability levels, or both, universities should consider eliminating them, redesigning them, or offering them in conjunction with a partner university.

### Class consolidation

In Malaysian universities, it is common for the same core introductory classes to be taught by multiple faculties (e.g. multiple faculties teaching a mandatory class on writing research papers, foundations of accounting, or basic statistics).

This is inefficient as the number of overall hours spent by faculty staff teaching the same content is duplicated and some classes may be too small to be cost-efficient. These classes could be combined into a larger one, thereby reducing instructional cost. For universities that are located close to each other, classes could also be consolidated across universities.

### Non-faculty teaching staff

Universities should also consider using non-faculty staff (e.g. post-graduate students, scholars) in instructional roles where relevant and in areas where the quality of content delivery will not be sacrificed by doing so.

Though these non-faculty staff are not expected to take over the role of tenured faculty in delivering lectures or teaching capstone classes, it would be feasible for them to run small tutorial group sessions for foundation classes, remedial sessions, or short semester classes.



## *Optimise procurement of instructional inputs for additional cost savings*

### **Optimise purchasing of academic materials**

The procurement and use of materials like textbooks, lab equipment and other physical goods can be managed in a way that leads to cost savings.

Some instructional materials are not centrally purchased and rationed, but instead procured and managed at the faculty level. This can result in poor pricing.

Faculty could pool the purchasing of such goods across multiple departments or order in bulk and stockpile as a means of exerting greater negotiating power when purchasing materials for the classroom.

### **Demand management**

In some cases, materials used for instruction may be consumed in a wasteful manner due to a lack of monitoring or management of such resources. For example, resources such as notebooks, paper or chemicals in a lab may be used unreservedly as there are no restrictions on the volume of usage.

Similarly, other goods may be disposed of unnecessarily when they could be recycled, such as unused chemicals in a chemistry lab. By instituting policies on managing the demand of such goods, universities could further save on costs.

### **Shift to digital literature**

Increasing numbers of universities are making the shift from using physical books in the classroom to encouraging students to download e-books. This is a practice that many universities are shifting towards in order to align with the new MOOCs initiatives as outlined in the MEB (HE). Universities should continue to encourage and expand this practice.

### **Individualised Profit & Loss (P&L) accountability**

The introduction of individualised accountability of P&L can create strong incentives for staff to introduce cost-saving behaviour. Individualised accountability for P&L must, however, be balanced with autonomy; departments or campuses that own their P&L must be given a free hand to manage their operations as long as they continue to meet financial and academic KPIs. As such, only universities that are confident in the abilities of their department or campus management teams to handle the increased autonomy should consider this as an option.

## Exhibit 8

# Case study: Course rationalisation at Taylors' University

*A sample case to describe how a university can conduct a course audit exercise*

### Context

Various schools in the university run their own foundation programmes. In Taylors', there were a total of 103 modules delivered, a number of which were the same or contained similar learning outcomes. However, as each module was delivered by individual schools and class sizes varied, many were operating at a sub-optimal level. This resulted in the university expending its resources (academic staff, tutorial rooms, lecture theatres, course management) inefficiently.

Schools also faced difficulties in academic staff recruitment and management of non-specialist modules that did not naturally belong to a school, such as the School of Architecture having to source for Psychology lecturers, or the School of Communication having to source for a Business Enterprise lecturer.

### Consolidation of foundation modules

An analysis of the 103 foundation modules revealed that it was possible to consolidate 52 common modules to 24 modules.

(see Table 1), representing a 54 percent reduction in common modules offered or a 27 percent reduction in total foundation modules offered.

Scheduling common modules for delivery was achieved through detailed planning, consultations and negotiations. Common modules were conducted in larger lecture theatres, while the tutorial sessions were mostly held in groups specific to a foundation programme.

Manpower utilisation was optimised, with less dependency on part timers. Specialised schools utilised existing manpower to cover additional teaching hours required for the consolidation of common modules.

### Results

Efficiencies in resource management, particularly the lower dependency on part timers, and the reduction of 8,289 classroom utilisation hours led to an annual financial savings of RM760,000.

The delivery of the consolidated common modules was closely monitored by measuring student satisfaction, to ensure minimal impact to students and that learning outcomes were achieved.

**Table 1**

Modules	Before Consolidation	After Consolidation	Offered by
English I	6	1	Language Centre
English II	6	1	
Physics	3	2	Engineering School
Information Technology	2	1	Computing School
Creative Thinking Skills	2	1	Design School
Mathematics	8	5	Engineering School
Communication	7	3	Communication School
Psychology	4	2	Communication School
Business	5	2	Business School
Accounting	2	1	Business School
Economics	3	1	Business School
Drawing	2	2	No change, as no consolidation
Design	2	2	
<b>TOTAL</b>	<b>52</b>	<b>24</b>	

## Exhibit 9

# Case study: Centralised lab management at Universiti Teknologi Malaysia (UTM)

*A sample case to describe how a university optimises purchasing of academic materials*

Cost efficiencies can also be realised by managing resources centrally. UTM has done this by setting up a University Lab Management Unit (LMU). This unit's sole function is to centralise the organisation and administration of the university's laboratory resources, including building facilities, equipment and other materials for common use and purposes.

Through LMU's efforts, UTM is able to keep records of all existing laboratory resources organised and up-to-date, optimising their usage. Maintenance services for instrument components, and the operational and power supply systems are also coordinated and managed in a timely manner. Additionally, LMU has implemented an online Laboratory Information Management System (LIMS), which makes reservation of laboratory facilities and equipment efficient and convenient for all students and staff.

However, efficiencies are not only gained operationally - they are also realised at the human resource level, where training is centralised for technical and maintenance staff, and therefore conducted in a more structured and focused way.

Through these efforts, the university strongly believes that two of its most important mandates, teaching and research, are being addressed more effectively while also ensuring that their resource management is optimised.

## 2 UNIVERSITIES CAN TARGET NON-INSTRUCTIONAL SAVINGS VIA FOUR METHODS



### 2A

#### Outsource non-core functions

Malaysian public universities outsource services and functions at varied levels – many universities outsource ineffectively, and some do not outsource at all. Universities may wish to consider outsourcing functions to include services such as operation of bookstores, dining or food catering services, residence halls, computing and information technology, among others.

### 2B

#### Redesign processes related to administrative functions

The process redesign exercise is most relevant to administrative functions (i.e. finance, IT, HR, etc.). Universities can begin by redesigning the processes most closely related to a prioritised set of common administrative services, which could be found to be high in both cost and usage.

### 2C

#### Optimise procurement of non-instructional materials and services

Procurement decision-making for Malaysian public universities is not entirely in the hands of universities; many of the policies that guide procurement with public funds are strictly defined by circulars from the Ministry of Finance. Even so, there are still actions that can be taken to optimise procurement practices.

### 2D

#### Maximise utilisation of physical facilities

Facilities are essential in all universities as they represent a significant portion of most of their assets and their operating costs. The purpose of facility utilisation is not only to optimise operational costs of buildings, but also to raise efficiency of the management of space and associated resources for people and processes.



## *Outsource non-core functions to allow universities to focus on their main operations*

By outsourcing their non-core functions, universities are able to focus on the most value-adding parts of their operations, such as teaching & learning and research. There are already systems in place in Malaysia that have been set up to facilitate such processes, one of which is eBidding, an online bidding platform provided by the Ministry of Finance (MOF).

Additionally, the Ministry is also currently exploring the formation of consortiums of public universities to establish shared services to obtain cost savings in areas such as payroll and procurement.

However, when making decisions to outsource functions, the university should first ensure the services can be carried out independently from the core activities of the university. When deciding whether to outsource any service or function, university administrators should consider a number of factors:

### **Financial implications**

Universities should ensure that the total costs of outsourcing (including maintenance and troubleshooting costs) would truly result in cost saving instead of cost addition.

### **Human resource implications**

University management should also be aware that outsourcing may result in certain job scopes becoming redundant, and would have to consider the potential impact on its current set of employees.

### **Service quality implications**

The outsourced vendor should provide quality of service that is at the same level, or better, than if the university carried out the service in-house.

### **Legal implications**

Universities should be aware of the level of potential liability and risk for each option, tax ramifications, and any potential conflicts of interest – especially in outsourcing sensitive functions such as payroll.



## *Redesign administrative processes and structures to create savings in instructional costs*

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The process redesign exercise is most relevant to administrative functions (i.e. finance, IT, HR, etc.). Universities can begin by redesigning the processes most closely related to a prioritised set of common administrative services which are found to be high in both cost and usage.

Typical areas of waste that a redesign usually focuses on include the following operational shifts:

- Reducing errors and exceptions
- Removing extraneous steps
- Balancing workload
- Standardising processes

Feedback from faculties across multiple universities in Malaysia reveal that layered decision-making approvals and long, convoluted processes are common, which are perceived as wasting the time and resources of departments. For example, if a purchasing invoice for lab supplies requires four approvals for the same decision, the approval process can be streamlined into a single one, which would save time for the billing team while reducing unnecessary hierarchy and red tape.



## *Optimise procurement of non-instructional inputs for cost savings*

Procurement decision-making for Malaysian public universities is not entirely in the hands of universities; many of the policies that guide procurement with public funds are strictly defined by circulars from the Ministry of Finance. Even so, for universities using public funds, there are still actions that can be taken by focusing on e-procurement and vendor evaluation to optimise procurement practices within the guidelines of the prevailing circulars.

For funds that are not linked to public sources, universities will have the full flexibility of managing their procurement from end to end. In these instances, universities should consider the following procurement factors to ensure pricing is optimised:

- **Combined contracting and bulk ordering across multiple departments:** Centralising the procurement of identical goods needed by multiple departments will allow for larger orders and thus lower the prices.
- **Rationalisation of Stock Keeping Units (SKUs):** This practice will reduce variability in purchasing. For example, placing a larger order for two types of notepads rather than making 10 smaller orders for 10 types of notepads will typically result in a lower pricing.



## *Maximise physical facilities owned by the university to allow the existing asset value to be fully realised*

Facilities are essential in all universities as they represent a significant portion of most of their assets and their operating costs. The purpose of facility utilisation is not only to optimise operational costs of buildings, but also to increase efficiency in the management of space and associated resources for people and processes.

### Space utilisation

Universities can carry out a space utilisation analysis to assess the areas in the university that are under- or over-utilised. With this information, the management can make informed decisions on how to fully utilise their space's potential, and can save costs in the process. These costs can then be channelled towards more value-added activities.

### Energy efficiency

Aging infrastructure, financial constraints, increasing energy costs, and environmental responsibility should spur universities to re-evaluate their energy demands, and current conservation programs.

Energy efficiency means using less energy in order to accomplish the same tasks, such as adjusting energy use to conform with user need, and optimising the efficiency of distribution system components. Some of these are mentioned in UTM's case study in Exhibit 12.

Across universities, communications and utilities make up 5 percent of the total operating expenditure, which comes up to more than RM680 million every year. There are many areas of potential savings that can come out of being energy efficient, and universities must take every measure possible to reduce this sizeable line item in the budget.

## Exhibit 10

## Case study: Convocation procedures and prudent spending in UTM

*A sample case to describe how a university can carry out process redesign and practices procurement excellence*

### Convocation Procedures

UTM uses the Lean Six Sigma principle in managing its convocation ceremonies. Application of Lean Six Sigma has enabled time spent during the convocation to be optimised and has reduced cost incurred in running the ceremony. Efforts include optimising the usage of the convocation ceremony hall, reducing printing costs and shortening the sessions.

The effect of each effort has been measured:

Cost saving initiative	Efficiencies gained
Optimising the usage of the convocation space hall <ul style="list-style-type: none"> <li>▪ Used a Queuing Management System to facilitate distribution of graduation robes</li> <li>▪ Distributed graduation certificates in the graduation robe room</li> </ul>	Shorter conferment sessions, which reduced the number of convocation sessions from seven to five sessions. This resulted in reduced allowance payments to officials on duty, amounting to savings of more than RM5,000 for each convocation ceremony
Provided guests and parents with programme books instead of convocation books (with all the names of graduating students printed)	Savings of RM10,000 for each convocation ceremony
Eliminated the need for vehicle stickers for staff on duty	Savings of RM1,000 per convocation ceremony
Collaborated with UTMSPACE, a subsidiary company of the university, in managing the convocation ceremony	Gained a sponsorship of RM5,000 for each convocation ceremony

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## Prudent Spending

Not all efforts to optimise costs require major changes to the university's core operations. UTM has demonstrated the power of small policy shifts by implementing initiatives contributing towards savings in entertainment allowance, travelling expenses and office expenses.

- **Savings in entertainment spending:** By cutting the entertainment allowance for the top management group of the university (JUSA Grade C and above) by approximately 5 to 10 percent, UTM realized savings of RM640,000 in 2014, more than a 25 percent reduction from total entertainment spending of RM2.47 million in 2013.
- **Savings in travel expenses:** A policy shift restricted eligibility for business or first class domestic flight tickets to only those ranked JUSA B and above. This resulted in travel expenses for domestic flight tickets being reduced from RM3.65 million (2013) to RM3.03 million (2014). Concurrently, only the Vice-Chancellor and Deputy Vice-Chancellors were deemed eligible for international flight tickets in business or first class, further reducing travel expenses from RM1.98 million (2013) to RM1.48 million (2014).

- **Savings in office expenses:** The implementation of paperless meetings and tighter spending on the purchase of stationeries, toner and paper enabled UTM to cut office expenses from RM1.36 million in 2013 to RM1.07 million in 2014.

These initiatives have amounted to RM2.05 million in savings in 2014, which the university can now reallocate to more meaningful purposes.

## Exhibit 11

### Case study: Vendor evaluation in UPM

*A sample case to describe how a university practices procurement excellence*

UPM has developed a system that allows the university to consistently evaluate vendors that it purchases from. This evaluation takes place after every round of supply and service delivery. A scoring metric is used to assess various aspects of the goods and services, including timeliness, quality and quantity, among others. This assessment is then sent to the university's Treasury Department, which collates the scores and determines whether the vendor requires an intervention. Several criteria are used in this determination, including but not limited to:

- When the vendor has severely underperformed in a particular delivery; and
- When the vendor has underperformed consistently across faculties and departments, or across multiple deliveries.

The objective of the intervention is not only to reprimand the vendor for their underperformance, but also to help understand the reasons for the poor performance. Vendor evaluation is crucial as first, it sends a clear signal regarding expectations, and second, it can be used and taken into consideration in the selection process of vendors for any following rounds of procurement.

## Exhibit 12

# Case study: Sustainable energy management programme in Universiti Teknologi Malaysia (UTM)

*A sample case to describe how a university practices energy efficiency*

### Energy-saving initiatives

UTM's Sustainability Energy Management Program (SEMP) is a holistic approach to effective and sustainable energy management. The SEMP involves the integration of energy management into UTM's organisational structure and practice, and the implementation of a wide range of energy improvement options in order to sustain energy-efficiency practices and cost savings.

Notable energy-saving initiatives include:

- Changing the operating hours of centralised air-conditioning to end at 4.30 pm instead of 5.00 pm;
- Developing an Electrical Billing Management System (EBMS) which enables monthly electricity bill statements to be sent to the respective Centres of Responsibility;
- Switching to energy-efficient lighting retrofits; and
- Switching to the Off-peak Tariff Rider (OPTR) <sup>1</sup>

### Efficiencies gained

UTM has managed to achieve an average reduction of 16 percent in the Energy Efficiency Index (EEI) for 2014 compared with the base year 2009. This is equivalent to a savings of 29.7 million kWh, or RM12.8 million since the launch of the Sustainable Energy Management Programme in 2009.

UTM's initiative in switching to the OPTR, starting 19<sup>th</sup> July, 2011, has enabled UTM to enjoy a 20 percent discount on its monthly electricity bill. As of December 2014, UTM has enjoyed discounts amounting to RM2.9 million, or approximately RM100,000 per month, via the OPTR scheme.

In October 2014 UTM was awarded the "Three-Star ASEAN Energy Management Scheme (AEMAS) Award" which is in recognition of the effectiveness of the SEMP Program. The Three-Star AEMAS Award received by UTM was the first Three-Star Award given to any organisation in ASEAN, including companies, government institutions, as well as public and private organisations.

<sup>1</sup> The Off Peak Tariff Rider (OPTR) scheme is offered to all medium voltage commercial and industrial customers who are not already enjoying any off-peak usage tariff rates. Customers enrolled in this scheme enjoy a 20% discount on electricity usage during off-peak hours (10.00 p.m. to 8.00 a.m.) every day.



# STRONG INSTITUTIONAL FOUNDATION FOR TRANSFORMATION

As universities begin implementing these levers of transformation to drive productivity and cost efficiency, they must be supported by a combination of three factors that are intrinsic to building a strong institutional foundation.

With these factors in place, systems will find early momentum quickly being translated into meaningful, long-term improvements in productivity across the entire university.

## Performance Management

Universities can introduce a culture of measuring for success by discussing team performance and key performance indicators (KPIs) on a regular basis while defining targets for continuous improvement. This does not only refer to the performance contracts and headline KPIs that universities are accountable for at the institutional level (as part of UniTP), but also refers to creating a high-performance culture at the working administrative team levels, where they would be equally focused on defining and managing their own KPIs. This is a critical component of productivity transformation – institutional change often begins at the working team level.

## Mindset and Behaviour

Universities should also introduce a shift in the cultural mindset and consequently the behaviour of teams known for inefficiency. This begins with changes to communication channels, enhancing teamwork, and building a culture of continuous improvement. An example of this would be shifting a grounds maintenance team from having a reactionary mindset to a proactive one; instead of waiting for the manager to tell them to change a light bulb, the team takes action to fix any issues they notice.

## Organisation and Skills

In order to enable shifts in mindset and performance management, some organisational redesign and skill building will be required. This begins with identifying champions and appointing owners of initiatives, and introducing cross-training and coaching on new skills that may be required to implement new practices. This could include everything from training new faculty advisors on supporting PhD students writing theses, to training a purchasing manager on how to run a tender effectively.

## Exhibit 13

# Case study: University management culture at UTM

*A sample case to describe a strong institutional foundation for transformation*

### Context

A crucial part of driving change comes from a consistent university-wide culture with common shared values. Since the year 2010, UTM has endeavoured to become a sustainable campus, which entailed the university undertaking serious efforts to develop sustainable campus policies. These efforts have been expounded on UTM's "energy efficiency" case in Exhibit 12.

Insofar as these efforts have been assessed, the university has been largely successful. It has won numerous accolades – including being the first institution to be awarded by ASEAN Energy Management Accreditation Scheme (AEMAS) – which are testament to the school's commitment to driving its various green initiatives.

### Initiatives to build a strong culture

This would not have been possible without these key messages being communicated and repeatedly reinforced within the university. These are done via certain specific activities that UTM has practiced regularly and mind-sets that UTM has consistently worked to change:

- **Greater levels of departmental autonomy:** Departments are given "loans" by central management to start new initiatives, and will have to pay them back with the revenue generated; and
- **High level of engagement between the Vice-Chancellor and members of university:** The Vice-Chancellor tables a meeting every month, where best practices and new initiatives are shared

by any department and faculty. For these meetings, attendance is tracked and publicised for both academic and non-academic staff. Presentations from each meeting are shared on social media; and

- **Culture of best-practice sharing and continual follow-up from prior initiatives:** In the monthly meetings, the Vice-Chancellor will also show tracked indicators of old initiatives (e.g. green initiative – amount of electricity used by each department) to commend high performance and provide incentives to improve for lower performers.



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# APPENDICES

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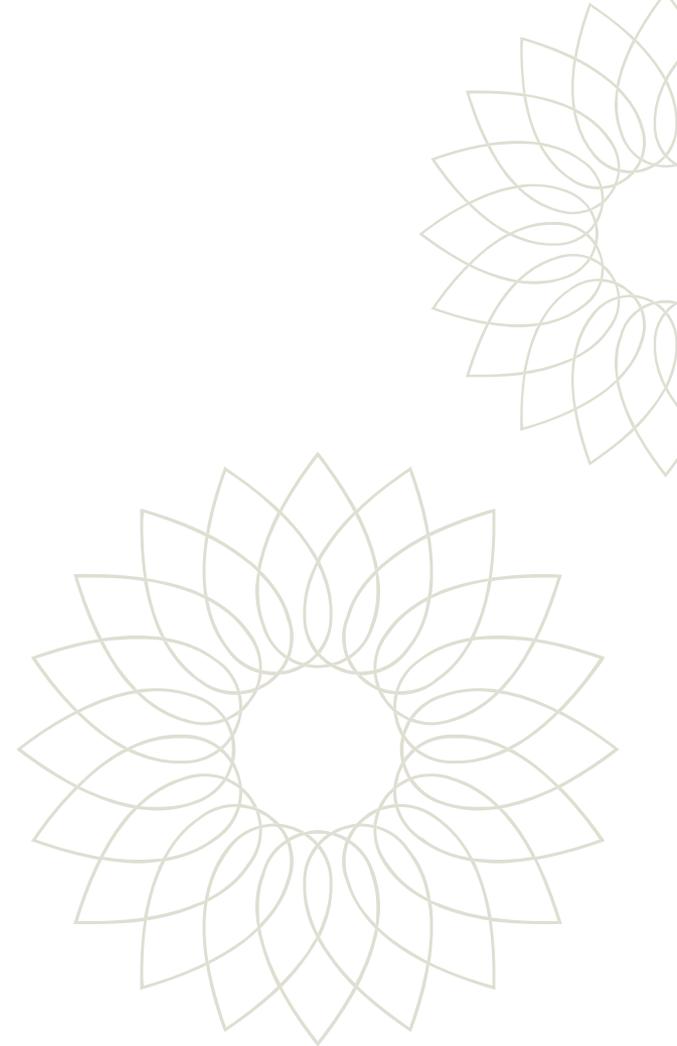
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# APPENDIX A

# GLOSSARY OF TERMS

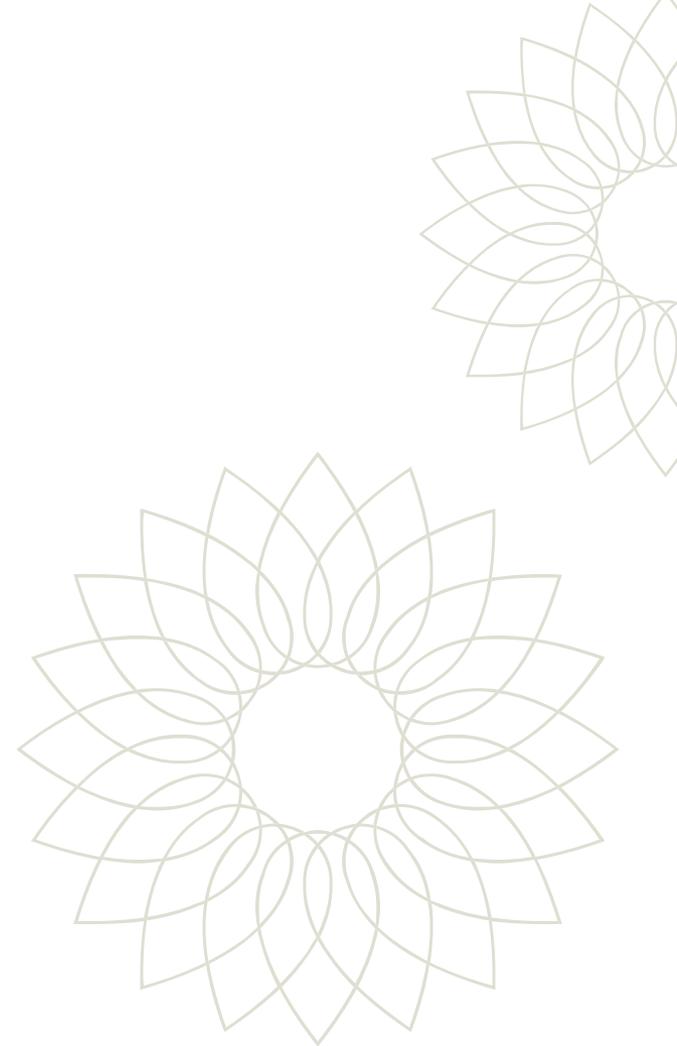


# WE NEED A SHARED UNDERSTANDING OF METRICS USED IN ANALYSING UNIVERSITIES' PRODUCTIVITY

Metric	Unit	Definition	Worked Example
<b>Annual cost per graduate</b>	RM/ grad	<b>Annual cost per graduate</b> is measured by using the number of students who graduate in a particular year as the output, while input is measured as the costs for that same year. The key drivers for this metric are cost per FTSE and <i>iGoT</i> .	In 2014, the total operating expenditure of a university is RM1,000,000. The number of students who graduated in 2014 is 100. Therefore, the productivity for the university is RM10,000 per graduate.
<b>Annual cost per FTSE</b>	RM/ FTSE	<b>Annual cost per FTSE</b> is measured by dividing cost by the full-time student equivalent (FTSE) to normalise for different sizes of student enrolments at each university.	A university's total operating expenditure in 2014 is RM1,000,000, while the total full-time student equivalent enrolment is 400. The cost per FTSE would be RM2,500.
<b>Cost</b>	RM	<b>Cost</b> in the UniTP Silver Book refers to the 2013 and 2014 actual operating expenditure (consolidated from all funds) <sup>1</sup> . The number excludes expenditure for running hospitals (i.e. UM, USM, UKM), and any private financing initiative (PFI) expenditures.	A university has a total expenditure of RM1.1 million (excluding hospital and PFI expenditure). The amount takes into account the depreciation expense, which is RM 0.1 million. This translates to a total of RM1 million.
<b>Full-time student equivalent (FTSE)</b>	No.	<b>FTSE</b> is calculated based on 2014 enrolment figures by adding the number of full-time students to the estimated full-time equivalent for part-time students. The number of part-time students is multiplied by a "part-time:full-time" conversion factor, which is the proportion of credits taken by the average part-time student to the credits taken by the average full-time student for each institution. For most institutions, this ratio is 1:3. Therefore, the conversion factor used in the analysis is 1/3.	A university with a total enrolment of 160 has 100 full-time students and 60 part-time students. The part-time students take 1/3 of the credit load as compared to the full-time students. Therefore, the number of FTSEs in the university is $100 + ((1/3) * 60) = 120$ students.
<b>Number of graduates</b>	No.	<b>Number of graduates</b> is the number of students who have graduated from any programme in the university.	If the size of the 2014 graduating class is 100, the number of graduates is equivalent to this number.
<b>Intake graduation on-time (<i>iGoT</i>)</b>	%	<b><i>iGoT</i></b> is defined as the percentage of full-time students from a particular enrolment batch who graduate on or before the year that they are prescribed to graduate. Prescribed time to graduation varies according to different types of degrees, programme types, and entry qualifications. See Exhibit 2 for details. Students who do not graduate on time either leave the university or graduate later than their stipulated graduation year.	The 2009 enrolment batch for a three-year programme and a four-year programme in a university are 100 and 200 respectively. By 2012, 75 of the 100 from the three-year programme had graduated, and by 2013, 120 out of the 200 from the four-year programme had graduated. The overall <i>iGoT</i> is the weighted <i>iGoT</i> of the two batches of students within the 2009 intake. Therefore, overall <i>iGoT</i> is: $[(75/100) * (100/300)] + [(120/200) * (200/300)] = 65\%$

## APPENDIX B

# SUMMARY OF MALAYSIA PRODUCTIVITY COMMISSION (MPC) REPORT



# SUMMARY OF MALAYSIA PRODUCTIVITY COMMISSION (MPC) REPORT

Upon the Prime Minister's request, MPC has been working towards preparing a productivity index at the national level.

Towards this objective, MPC has chosen to collect and analyse productivity across three sectors – education (both basic and higher education), health and safety – as these make up ~70% of the government budget. This data will be used to gain a preliminary understanding of the national productivity level in Malaysia.

The report prepared for the higher education sector was split into two main parts:

- Performance Indicators
- Productivity Index

## Performance Indicators

The performance indicators used for public universities were split into three types of programmes undertaken by universities:

- Generation of knowledge: Research
  - E.g. publications in indexed journals per academic staff, filed patents, % of principal investigators out of total academic staff
- Dissemination of knowledge: Teaching and Learning
  - E.g. Number of students, number of graduates employed
- Facilitation of knowledge: Commercialisation and extension of knowledge into community and industry

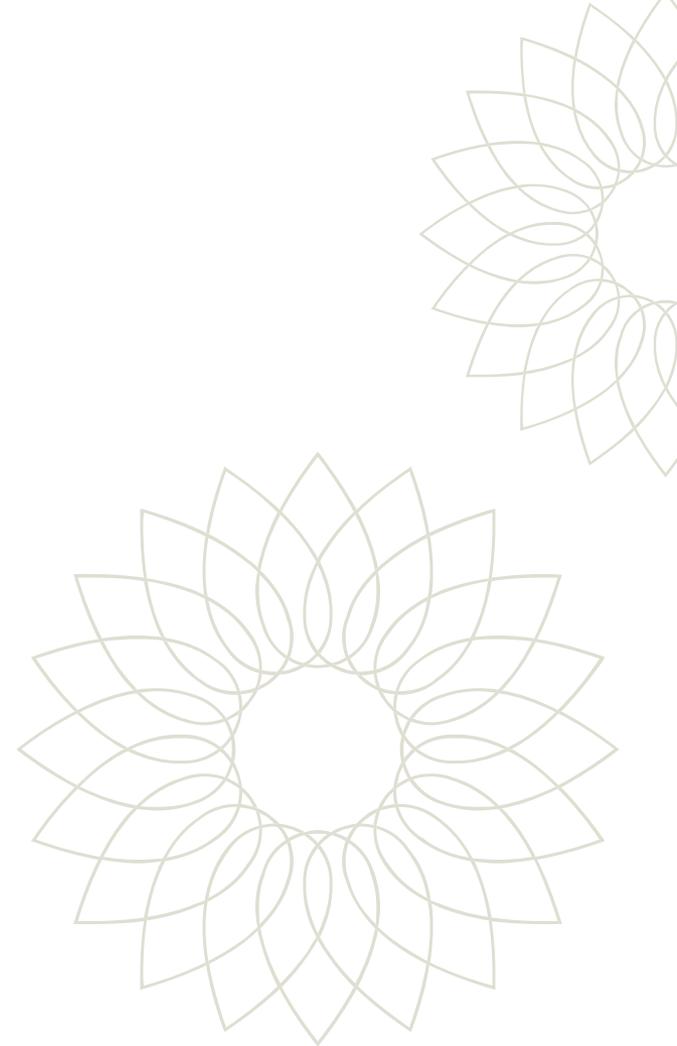
## Productivity Index

The Productivity Index is calculated using a simple formula of input divided by output.

The input value used by MPC is a weighted average of the cost of academic staff, services and supplies and assets, and the output value used is the number of students enrolled

## APPENDIX C

# NATIONAL EDUCATION CODE (NEC) FIELDS OF EDUCATION AND TRAINING



# LISTING OF THE NEC FIELDS OF EDUCATION AND TRAINING (1/2)

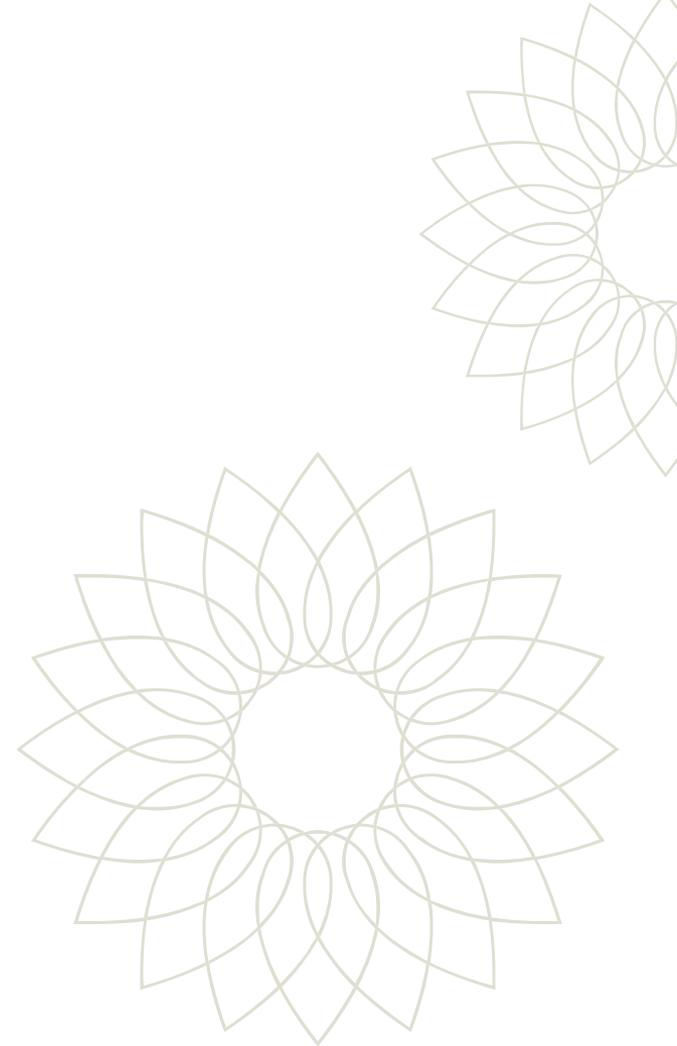
Broad Field	Narrow Field	Detailed Field
0 General programmes	01 Basic/broad, general programmes	010 Basic/broad, general programmes
	08 Literacy and numeracy	080 Literacy and numeracy
	09 Personal skills	090 Personal skills
1 Education	14 Teaching and training and education sciences	141 Teaching and training = 143+144+145+146
		142 Education science
		143 Training for preschool teachers
		144 Training for teachers at basic levels
		145 Training for teachers with subject specialisation
		146 Training for teachers of vocational subjects
		211 Fine arts
2 Arts and Humanities	21 Arts	212 Music and performing arts
		213 Audio-visual techniques and media production
		214 Design
		215 Craft skills
		221 Religion
		222 Languages = 223+224
		223 National Language
	22 Humanities	224 Other languages
		225 History and archaeology
		226 Philosophy and ethics
		227 History, philosophy and related subjects = 225+226
		311 Psychology
		312 Sociology and cultural studies
		313 Political science and civics
3 Social sciences, Business and law	31 Social and behavioural science	314 Economics
		321 Journalism and reporting.
	32 Journalism and information	322 Library, information, archive
		341 Wholesale and retail sales
	34 Business and administration	342 Marketing and advertising
		343 Finance, banking, insurance
		344 Accounting and taxation
		345 Management and administration
		346 Secretarial and office work
		347 Working life
381 Syariah Law		
38 Law		381 Syariah Law
4 Science, mathematics and computing	42 Life science	421 Biology and biochemistry
		422 Environmental science
	44 Physical science	441 Physics
		442 Chemistry
		443 Earth science
	46 Mathematics and statistics	461 Mathematics
462 Statistics		

## LISTING OF THE NEC FIELDS OF EDUCATION AND TRAINING (2/2)

Broad Field	Narrow Field	Detailed Field
	48 Computing	481 Computer science 482 Computer use
5 Engineering, Manufacturing and Construction	52 Engineering and engineering trades	521 Mechanics and metal work 522 Electricity and energy 523 Electronics and automation 524 Chemical and process 525 Motor vehicles, ships and aircraft 526 Civil engineering 527 Material engineering
	54 Manufacturing and processing	541 Food processing 542 Textiles, clothes, footwear and leather 543 Materials (wood, paper, plastic and glass) 544 Mining and extraction 545 Applied science
	58 Architecture and building	581 Architecture and town planning 582 Building
6 Agriculture and Veterinary	62 Agriculture, forestry and fishery	621 Crop and livestock production 622 Horticulture 623 Forestry 624 Fisheries
	64 Veterinary	641 Veterinary
7 Health and welfare	72 Health	721 Medicine 722 Medical services = 725+726+727 723 Nursing and caring 724 Dental studies 725 Medical diagnostic and treatment technology 726 Therapy and rehabilitation 727 Pharmacy
	76 Social services	761 Child care and youth services 762 Social work and counselling
8 Services	81 Personal services	811 Hotel, restaurant and catering 812 Travel, tourism and leisure 813 Sports 814 Domestic services 815 Hair and beauty services
	84 Transport services	840 Transport services
	85 Environmental protection	851 Environmental protection technology 852 Natural environments and wildlife 853 Community sanitation services
	86 Security services	861 Protection of persons and property 862 Occupational health and safety 863 Military and defence

## APPENDIX D

# MATERIALS FOR CONDUCTING AN ACTION PLANNING WORKSHOP



# ACTION PLANNING WORKSHOPS CAN BE USED TO ADDRESS FUNDAMENTAL CHALLENGES UNIQUE TO EACH UNIVERSITY

Action Planning Workshops are used to identify the real causes of the issues facing each university and to generate efficient, effective and high impact solutions. The workshop is most effective in a group setting with active involvement of all relevant stakeholders.

Workshops start with participants sharing their perspective on potential root causes of the specific challenges they face. After root causes are identified, stakeholders generate possible solutions, which are then prioritised based on ease of implementation and potential impact on the organisation.

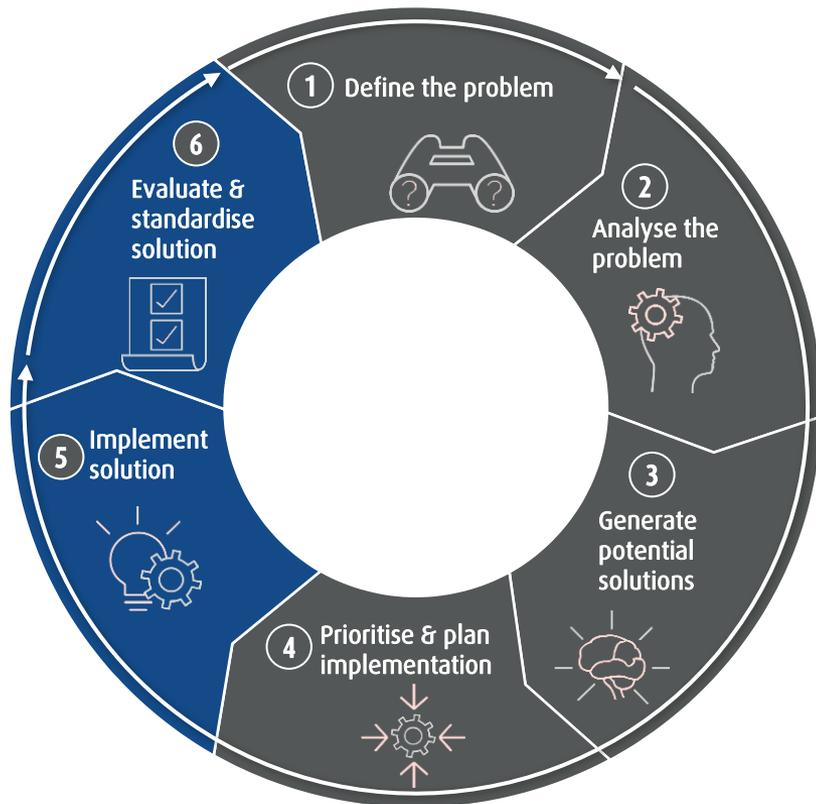
To be effective, Action Planning Workshops necessarily require scrutiny of details in an iterative process. The six-step root cause problem solving framework enables workshop participants to stay on course.

	Key processes	Key deliverables	Page
<b>1</b> Pre-workshop	<ul style="list-style-type: none"> <li>Define problems</li> <li>Identify root causes</li> </ul>	<ul style="list-style-type: none"> <li>Root cause analysis template</li> </ul>	99
<b>2</b> Workshop	<ul style="list-style-type: none"> <li>Refine and categorise root causes</li> <li>Brainstorm solutions</li> <li>Prioritise solutions</li> </ul>	<ul style="list-style-type: none"> <li>Solution priority matrix</li> </ul>	104
<b>3</b> Follow-up	<ul style="list-style-type: none"> <li>Fill up charter template for follow up actions after workshop</li> </ul>	<ul style="list-style-type: none"> <li>Initiative charter for each prioritised solution</li> </ul>	107 to 109

# AGENDA OF ACTION PLANNING WORKSHOP SHOULD BE WELL-PACED TO ENSURE ALL PARTICIPANTS ARE ACTIVELY INVOLVED

Duration	Agenda item	Rationale
10 min	Overview of objectives of session	Aligns and anchors all participants to key outcomes of session
30 min	Guided gallery walk of root causes	Actively engages all participants in discussion and thinking behind root causes
35 min	Solutions brain-writing session	Enables solutions to be 'crowd sourced' and ensures opinions are sought from multiple stakeholders
40 min	Presentation of solutions	Allows for discussion and debate of solutions
30 min	Prioritisation of solutions	Enables university management to select solutions that require their immediate action
35 min	Filling out charter template for highest scoring solutions	Gets the ball rolling by assigning owners for solutions that are deemed as high priority for the university
<b>Total duration:</b>	<b>180 min</b>	

# THERE ARE SIX STEPS IN ROOT CAUSE PROBLEM SOLVING



■ Guidance/materials provided in the following pages

## 1 Define the problem

- What is driving the current performance trends?
- What do we want to improve, by how much, and by when?

## 2 Analyse the problem

- Where should you start looking?
- What are the true root causes?

## 3 Generate potential solutions

- What are some potential solutions?
- What further analysis is required?

## 4 Prioritise & plan implementation

- What should you do first?
- Who will do what and by when?
- What other priorities are there?

## 5 Implement solutions

- Just do it!
- Is progress to completion on track?

## 6 Evaluate & standardise solution

- Did the solution work?
- Is the solution applicable to other areas?
- Is it now standard practice?

# 1 DEFINE THE PROBLEM: ROOT CAUSE ANALYSIS

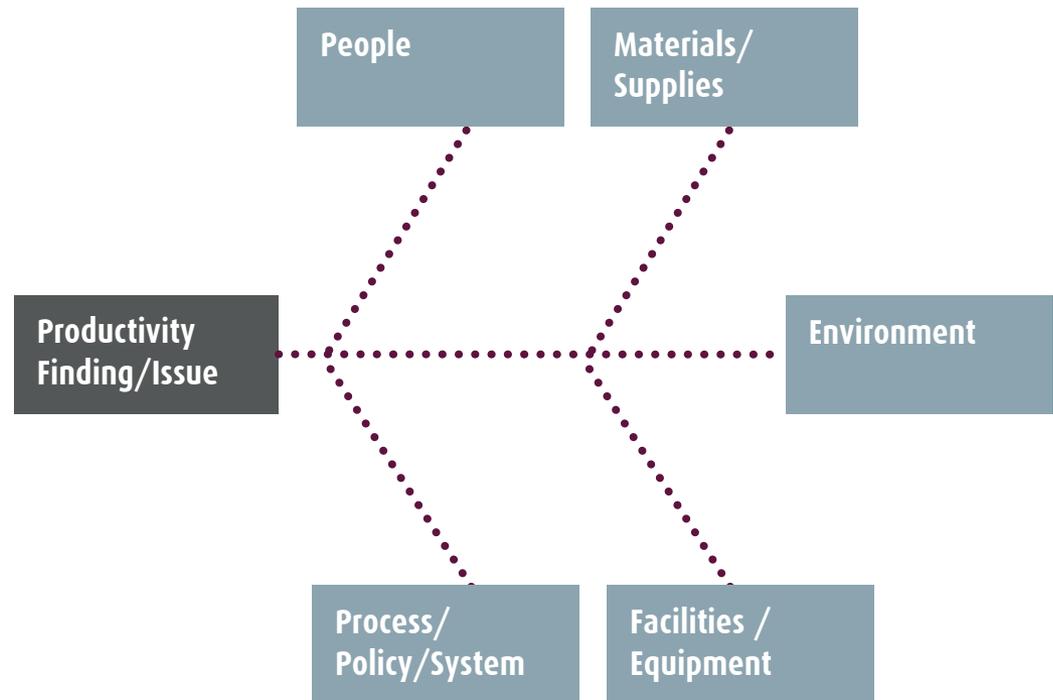


## What is it?

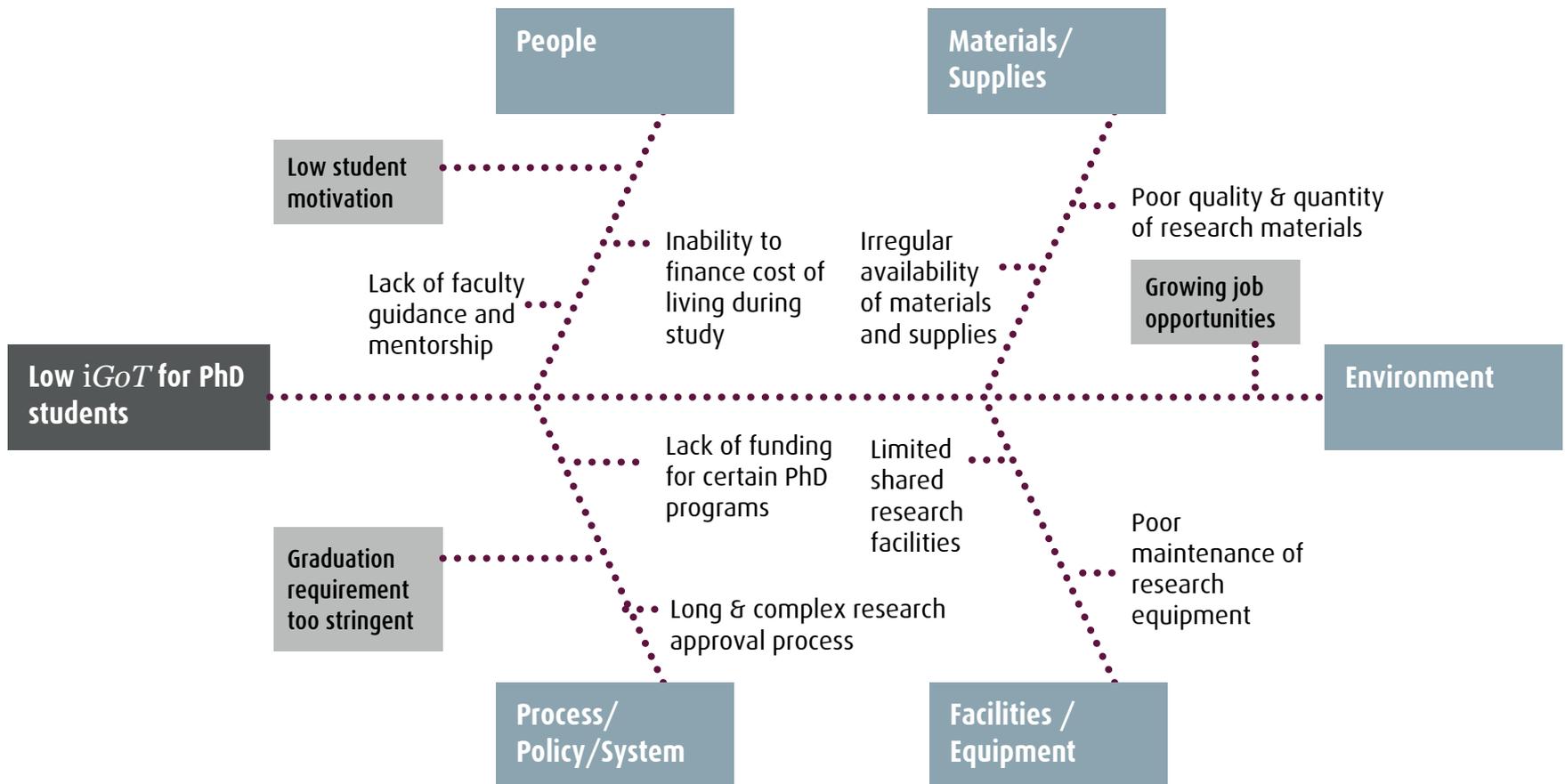
- A group brainstorming method to discover the root causes of a given situation
- The “head” of the fishbone is the problem or issue
- The probable causes make up the “skeleton” pointing to the “head”

## Steps to identify root causes

- (i) Select an academic productivity finding or issue
- (ii) Select one category of probable causes as shown in diagram
- (iii) For the selected category, identify potential causes for the finding / issue
- (iv) Repeat for other categories
- (v) Prioritise the top 2-3 causes



## Worked Example: Root cause analysis



Once root causes are identified, the template below can be used to illustrate key productivity challenges



Instruction	List root causes driving academic productivity challenges (as identified in the root cause analysis)	Explain how each root cause affects academic productivity	If available, provide data or indicator to show the effect of the identified root cause on academic productivity
-------------	--	---	--

No.	Root cause to key challenges in academic productivity <span style="float: right;">A</span>	Justification <span style="float: right;">B</span>	Indicator / Data <span style="float: right;">C</span>
-----	--	--	---

### Challenges related to *iGoT*

1	Low student motivation	Low motivation causes students to not focus on their studies and fail their classes, resulting in a downward spiral that leads to dropping out, thus lowering the <i>iGoT</i>	Number of students dropped from university, academic result of students
---	------------------------	---	---

### Challenges related to annual cost per full time student equivalent (annual cost per FTSE)

1	...	...	...
---	-----	-----	-----

## 2 ANALYSE THE PROBLEM: CREATE GROUPINGS FOR ROOT CAUSES (*iGoT*-RELATED)



Groupings	Description	Examples
Curriculum policy and design	<ul style="list-style-type: none"> <li>Inefficiencies in the university's curriculum structure and design</li> </ul> <hr/> <ul style="list-style-type: none"> <li>Credit policies that cause students to take on "non-productive" credits (credits that do not contribute to a student's degree)</li> </ul>	<ul style="list-style-type: none"> <li>Programmes offered to undergraduate students too specialised, limiting flexibility for change later on</li> <li>Students who have yet to pass institutional pre-requisites (e.g. language tests) are already recognized by institution as enrolled students</li> <li>Core courses not offered every semester</li> </ul> <hr/> <ul style="list-style-type: none"> <li>Credit transfer issues (e.g. diploma credits/credits from other institutions not recognised)</li> <li>Students not awarded commensurate credit hours for internship/industrial attachments</li> </ul>
Support policies, programmes and infrastructure	<ul style="list-style-type: none"> <li>Challenges that impact the academic and non-academic support for students to help them persist through to graduation</li> <li>Can be caused by issues with the university's policies, programmes or physical infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>Effectiveness of student tutors/advisors</li> <li>Lack of formal systems in place to identify "high risk" students</li> <li>Lack of transparency about programme expectations provided to students during application process</li> </ul>
Others	<ul style="list-style-type: none"> <li>Any miscellaneous issues that are specific to the university but are not covered under above classifications</li> </ul>	<ul style="list-style-type: none"> <li>Hostels are too far from campus resulting in poor class attendance</li> </ul>

## 2 ANALYSE THE PROBLEM: CREATE GROUPINGS FOR ROOT CAUSES (COST PER FTSE-RELATED)



Groupings	Description	Examples
Instructional	<ul style="list-style-type: none"> <li>Issues relating to costs that are incurred for activities that are part of an institution's instruction programme</li> </ul>	<ul style="list-style-type: none"> <li>Undersubscribed programmes are not consolidated and/or cancelled</li> <li>Cost-control KPIs for costs incurred in instruction (e.g. use of electricity, chemicals used in labs, etc.) may not be monitored</li> </ul>
Non-instructional	<ul style="list-style-type: none"> <li>Issues relating to costs incurred in providing non-instructional support that are essential to university operations</li> <li>Issues relating to services that are not integral to the university's mission</li> </ul>	<ul style="list-style-type: none"> <li>Duplicated functions and poor efficiency of centralised support services such as IT, finance, human resources, procurement</li> <li>Decentralised procurement of resources used in multiple faculties</li> <li>Tender processes for vendors may not be efficient or competitive</li> </ul>
Others	<ul style="list-style-type: none"> <li>Any miscellaneous issues that are specific to the university but are not covered under above classifications</li> </ul>	<ul style="list-style-type: none"> <li>Lack of large lecture halls causes large introductory courses to be duplicated into multiple smaller courses instead of one large course</li> </ul>

## 3

# GENERATE POTENTIAL SOLUTIONS: CRITERIA AND EXAMPLES OF EFFECTIVE SOLUTION INITIATIVES



## Criteria

- Directly **supports a strategic goal** to improve *iGoT* or reduce annual cost per FTSE
- Aims to bring about a tangible improvement that can be **measured**
- Does **not have strong dependencies** with any other initiative
- Can be delivered within a **time frame that aligns to the needs** of the university

## Examples

### Too broad

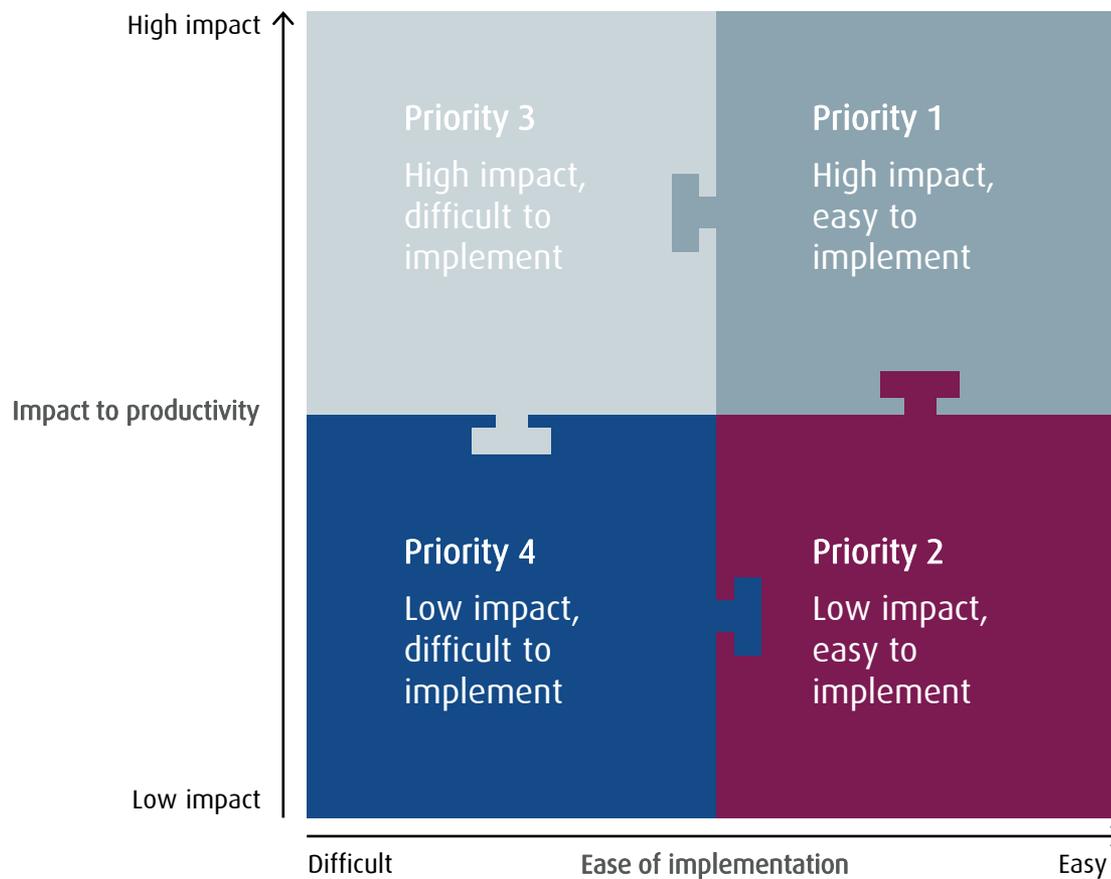
- Reduce instructional cost
- Increase student well-being
- Redesign programme mix

### Just right

- Expand capacity of common required courses to accommodate more students by efficiently utilising existing facilities and reorganising course and student schedules. The goal is to reduce the number of fragmented courses offered per semester, and to maximise student subscription of expanded common courses.
- Roll out new advising SOPs with mental health component to enable regularly scheduled check-ins between advisors and students. Based on student feedback and academic performance, advisors can refer students to additional support programs.
- All specialised programmes to track number of students enrolled over the next four semesters. Programmes consistently undersubscribed to be reviewed for redesign or elimination.

## 4

# PRIORITISE AND PLAN IMPLEMENTATION: SOLUTIONS CAN BE PRIORITISED BASED ON IMPACT AND EASE OF IMPLEMENTATION



# Definitions of impact and ease of implementation



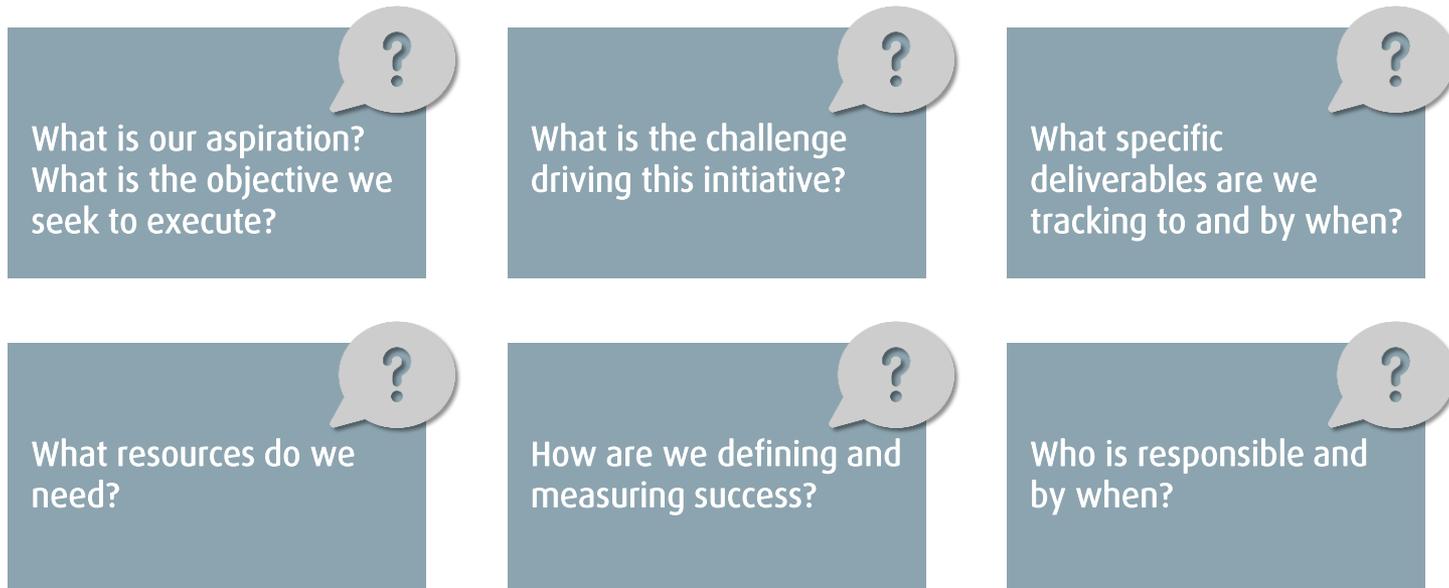
Prioritisation Axes	Definition	Key variables to consider
Defining size of impact	<ul style="list-style-type: none"> <li>▪ For cost/graduate, size of impact can be measured in two dimensions:               <ul style="list-style-type: none"> <li>– Size of cost savings</li> <li>– # of students impacted</li> </ul> </li> <li>▪ For other measures of productivity, the framework can be adapted to relevant metrics</li> </ul>	<ul style="list-style-type: none"> <li>▪ # of current and projected students in programmes impacted by proposed solution initiatives</li> <li>▪ Total cost savings from initiatives, including:               <ul style="list-style-type: none"> <li>– Synergies from solutions implemented together</li> <li>– Long term and short term savings</li> </ul> </li> </ul>
Defining ease of implementation	<ul style="list-style-type: none"> <li>▪ Ease of implementation can be measured across multiple dimensions including:               <ul style="list-style-type: none"> <li>– Cost of implementation</li> <li>– Labour required to implement</li> <li>– Time required for implementation</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ How expensive will a solution be to implement?</li> <li>▪ Will you have the human resources required to execute?</li> <li>▪ How long will it take to realise savings?</li> </ul>

**Each solution should be reviewed and evaluated against each axis relative to the full set of solutions available – not in isolation**

## Definition of well-structured initiative charters



Well-structured initiative charters enable transparency, accountability, and impact by answering these 6 questions



All high priority initiatives should utilise a detailed initiative charter, with context on each of these topics

# Template: Initiative charter



Initiative title

Initiative owner

Target completion date

**Objectives** (I.e., what are we trying to accomplish and how? This should be phrased as "Do X in order to achieve Y")

**Justification for initiative?** (What facts have led us to do this initiative? What additional facts do we need?)

What are key activities to complete initiative?

What are the key deliverables?

Deliverable	Due date	Owner of deliverable
Key deliverables (i.e., milestones showing whether an initiative was achieved)		
1		
2		
3		
4		
5		
6		
7		
8		

How are we measuring success for this initiative?

Key measure(s)	Current	Target

What are the key risks to this initiative?

What resources do we need to achieve this initiative?

# Tips for filling out initiative charter template (1/2)



- Completion date should reflect when the initiative should be completed by

Initiative title

Initiative owner

Target completion date

**Objectives** (I.e., what are we trying to accomplish and how? This should be phrased as "Do X in order to achieve Y")

**Justification for initiative?** (What facts have led us to do this initiative? What additional facts do we need?)

**What are key activities to complete initiative?**

- Describes the key activities that need to take place in order to move towards completion of initiative
- Activities should be described in order of execution
- Should not be confused with 'deliverables' - these are actions that need to be taken, while deliverables are specific outcomes that must be achieved

- Initiative owner should be a single person with direct day-to-day ownership of the initiative - not a team

- Describes what is the overall goal to be accomplished
- Should be phrased as "do X in order to achieve Y"
- Example: "Optimise IT investments to reduce costs and align with long-term goals"

- Defines the presently known quantitatively
- The facts included should inform readers of:
  - The root cause of the problem we are solving*
  - The current performance baseline*
  - The magnitude of the task ahead*

# Tips for filling out initiative charter template (2/2)



- Describes key deliverables needed to succeed
- Key deliverables are major outcomes along the way toward the ultimate goal
- Deliverables should provide frequent enough check-in points for senior leaders to understand how initiatives are progressing

What are the key deliverables?

Deliverable	Due date	Owner of deliverable
Key deliverables (i.e., milestones showing whether an initiative was achieved)		
1		
2		
3		
4		
5		
6		
7		
8		

- Owner of milestone should be the specific individual directly accountable for the deliverable – not a group of individuals

How are we measuring success for this initiative?

Key measure(s)	Current	Target

- Describes measures that enable tracking of progress
- Measures should be quantitative data points
- Current and Target boxes should have quantitative achievement metrics, not dates

What are the key risks to this initiative?

- Includes issues that are technical, external, political, organisational, and executional in nature that could increase cost, prolong timeline, or limit overall success

- Defines resources required (both financial and human) needed to deliver initiative

What resources do we need to achieve this initiative?



## ACKNOWLEDGEMENTS

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