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We Explore



# TVET Research as an Enabler of Human Capital Development: Sharing of Experience from Malaysia

Prof. Dr. Maizam Alias

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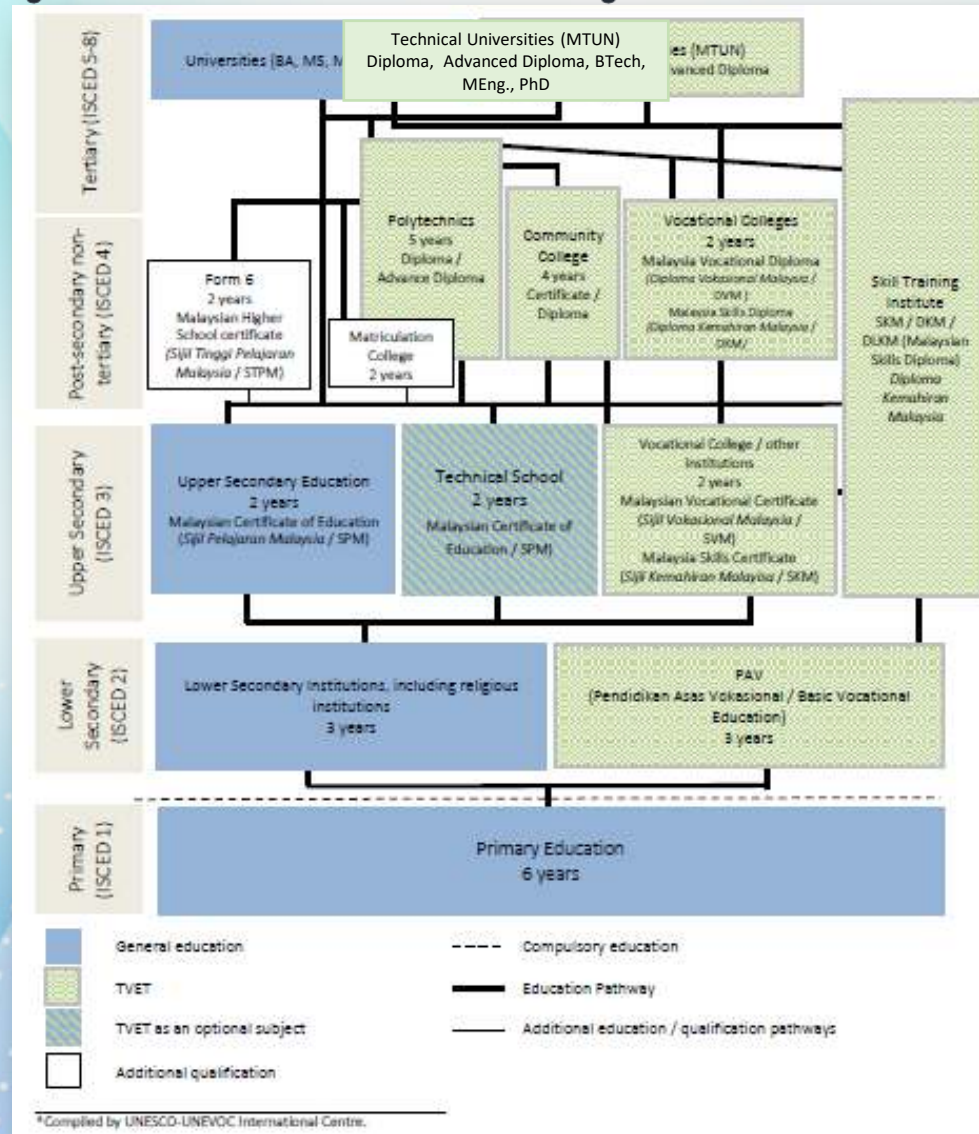
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# Overview



- Introduction to UTHM
- TVET system in Malaysia
- Understanding research in TVET
- Key success factors
- Summary

# TVET system in Malaysia



# What is TVET?

- Education and training process that has **occupational direction** with major emphasis on **industry practices**.
- It aims to produce competent work force in related fields for socio and economic objectives of the country.
  - (Malaysian Qualification Framework)

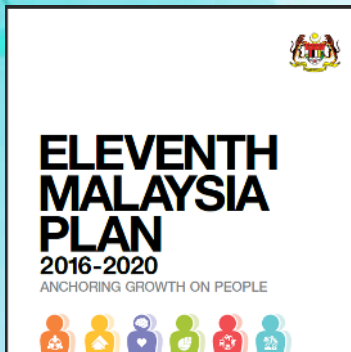
# What is TVET *continues...*

- TVET programmes
  - based on recognised occupational/industry standards;
  - contain 60%-70% practical component;
  - emphasis on psychomotor skills;
  - include industrial exposure
  - include industrial training component
  - Include TVET project(s) – technical, socio-technical, social project
    - Malaysian Qualification Framework

# What is TVET *continues...*

- Cluster of learning outcomes
  - i. Knowledge and Understanding;
  - ii. Cognitive Skills;
  - iii. Functional Work Skills with a focus on:
    - Practical Skills, Interpersonal Skills, Communication Skills, Digital Skills, Numeracy Skills, Leadership, Autonomy and Responsibility
  - iv. Personal and Entrepreneurial Skills;
  - v. Ethics and Professionalism

# TVET in the 11<sup>th</sup> Malaysia Plan (2016-2020)



- ❑ 60% of the 1.5 million jobs created require TVET-related skills
- ❑ Gradual increase in annual TVET intake 164,000 (2013) to 225,000 (in 2020), total enrolment of 655,000.
- ❑ TVET to be transformed; shift towards industry-led programmes



# Issues and challenges in TVET

- uncoordinated governance
- fragmented delivery
- lack of recognition for technologists
- competency gaps among instructors



# Propelling TVET forward

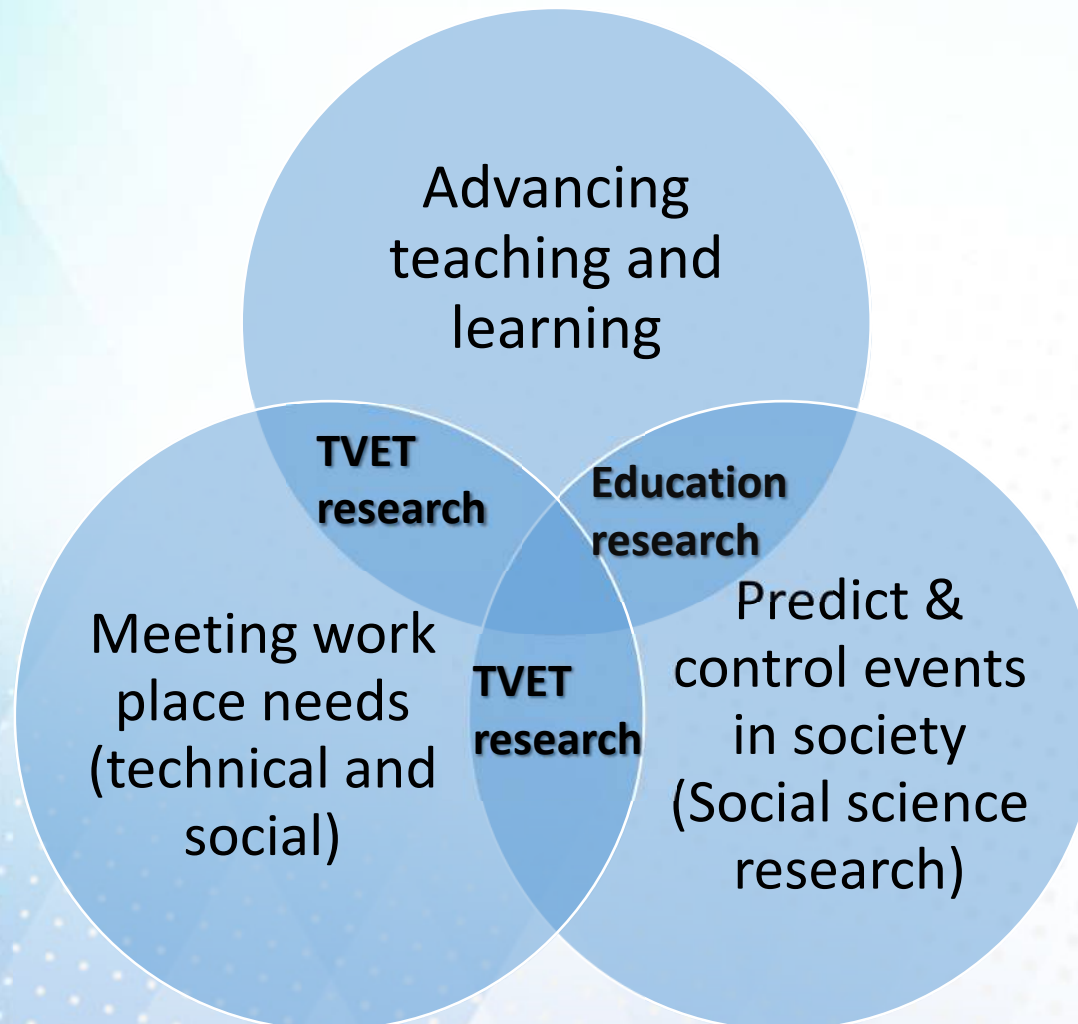
- **Special committee**-Technical and Vocational Education and Training Empowerment Cabinet Committee (JKKPTVET)
- **Five pillars**
  - Governance
  - Financing
  - Industry
  - Quality
  - Branding

- Technical and Vocational Education and Training (TVET) Empowerment Committee (Sunday Sep. 19 2019, Star Online at

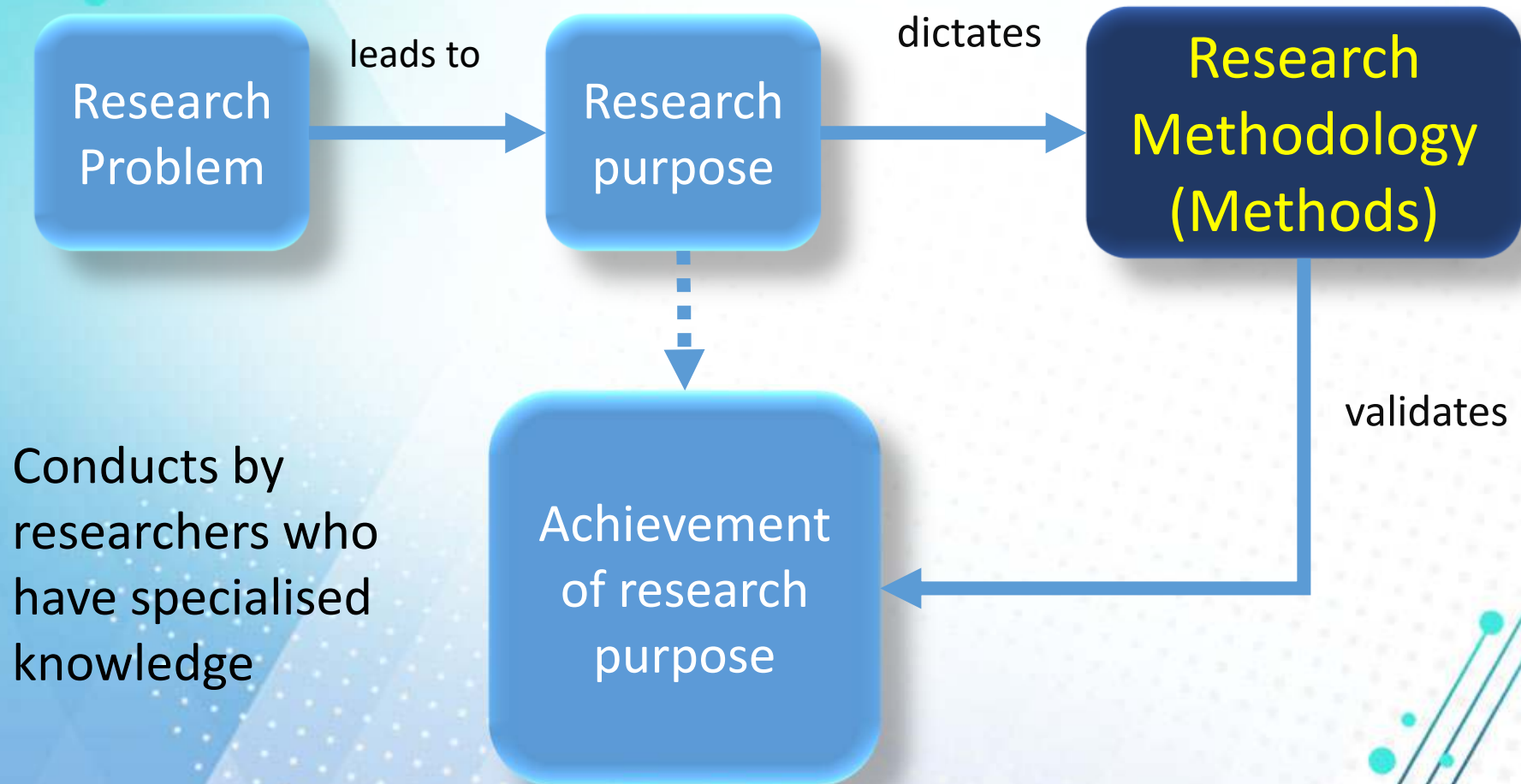
# What is the role of research in TVET?

- Helps in decision makings
  - Reducing the range of uncertainty in policy formulation
  - Adjusting the course of policy implementation –
    - evaluating implementation
    - assessing the impact of new policy
  - Addressing gaps between actual and TVET goals

# Domains of TVET research



# Research process



# What are the challenges in TVET research?

- naturalistic settings - threats to the validity of the study (loss of subjects, selection bias, historical events or maturation' (Black, 1999)).
- less control over samples (people)
- Need to draw on different research and theoretical paradigms (e.g. learning theory, motivation theory)
- Requires social science research skills

# Examples of TVET research



- A small study of an educational / training intervention at institutions or workplace – new tools; new method
- Evaluate existing educational / training activities or curriculum change
- Evaluate a large-scale national initiatives
  - impact of recognition of prior experience
  - implementation of the National Dual Training System.
- Systemic literature reviews

# Key success factors for TVET research

1. Knowledgeable and skilled researchers
2. Clear research focus
  - Alignment between TVET research and country goals
3. Financial support

# Key success factor 1: Quality Researchers

- TVET Teachers
- PhD students
- Industry





# Teacher researchers

New demands  
on workers,  
teaching  
demands

New challenges  
to teachers -  
*prepare workers*

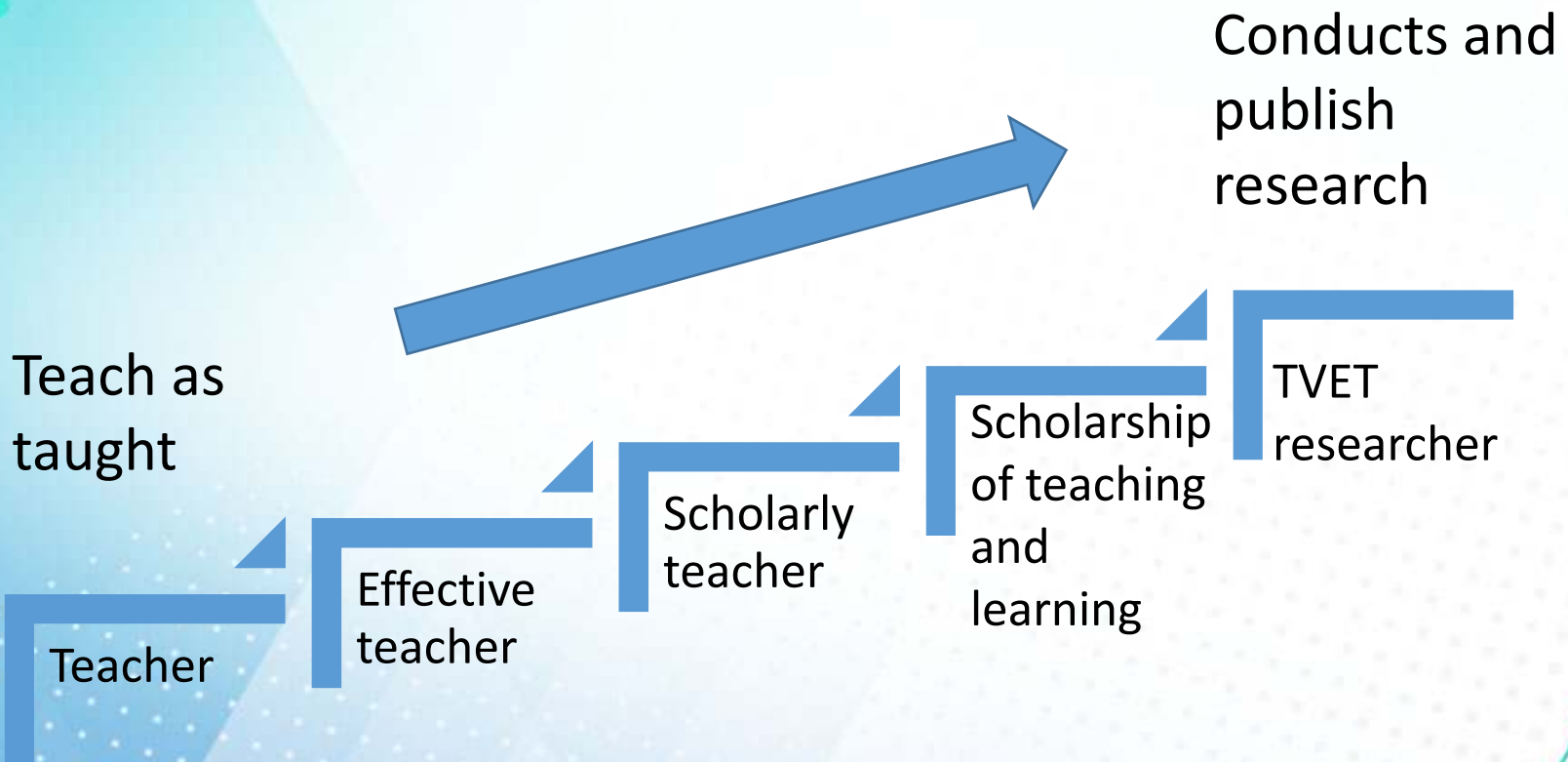
TVET research -  
*decision making*

Motivated by:

Experienced problem - knowledge from classroom and industry  
experience

Top down – contract research

# Teacher progression to TVET researcher



# TVET teacher researchers (in progress)

## Ideal

- Possess occupational (job task) competence (experienced)
- Pedagogical content knowledge
- Posses knowledge on research methods in education /technical research

## Reality

- Have limited work experience
- Limited knowledge of Pedagogical content knowledge
- Need to upgrade knowledge on research methods in education /technical research

Need developmental support

# PhD students researchers

Opportunities  
(Scholarships),  
Personal factors

Respond to  
opportunities

TVET researcher  
(with  
supervisors)

# PhD researchers (in progress)

## Ideal

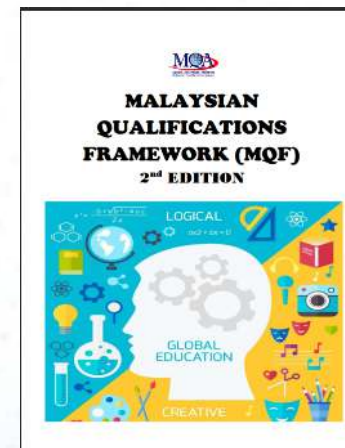
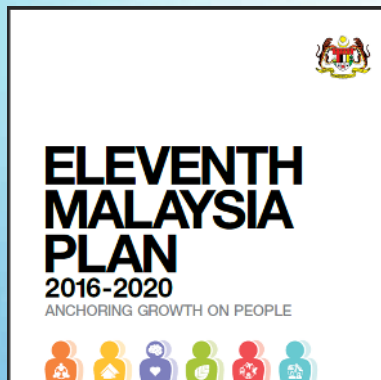
- Motivated to conduct research
- Occupational (job task) competence – knowledge, skills and attitudes
- Have teaching experience
- Have research knowledge and skills

## Reality

- Other motivations
- Many have no work experience (e.g. engineering degree without work experience)
- Some have no teaching experience
- Limited (no) research knowledge and skills

# Key success factor 2: Clear research focus

- Ensuring alignment between TVET research country goals



Mapping of multiple goals

# Example of research in TVET

- Competency gaps among instructors
- Generate quantitative and qualitative data on competency gaps
- Identify possible reasons for gaps
  - Policy on TVET
  - Instructor preparations curriculum
  - etc
- Propose, implement and evaluate solutions

Potential  
research  
focus

# Sources of potential research focus: An example

- From Call for proposals by government agency
- Call for knowledge sharing by government agency
  - Example: Indonesia development forum (2019) Call for Submissions  
<https://indonesiadevelopmentforum.com/2019/call-for-submissions/theme/2-reforming-the-vocational-education-and-training-tvet-system-for-future-jobs>



# Potentials Topics to focus research on



1. Designing TVET curricula that will prepare the next generation for the nature of the future workforce;
2. Strategies to incentivize workers to undertake training;
3. Innovations in teaching and learning tools, including using technology to support better teaching and learning;
4. Strategies for improving apprenticeships and certification;
5. Successful TVET systems from other countries that can be adapted to the National context.

# Potentials Research questions



- Pressing issues and challenges in engineering and TVET
  1. Matching demand and supply between training institutions and industry
  2. gender inequity – why are there very small percentages of women in engineering and TVET and how can it addressed?
  3. Green construction/manufacturing – what are the opportunities available and how can they be addressed?

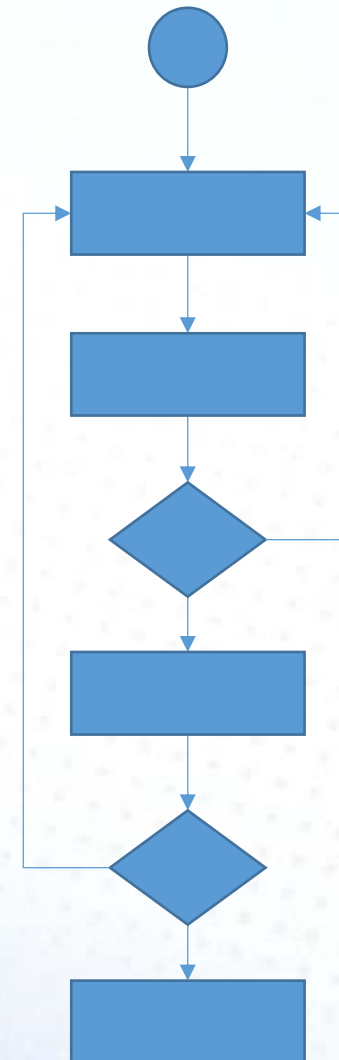
# Key success factor 3: Financial support



- Malaysian Ministry of Education
- Malaysian Ministry of Science, Technology and Innovation
- L'Oréal-UNESCO for Women in Science National Fellowship
- Malaysian Communications and Multimedia Commission (MCMC)
- Newton-Ungku Omar Fund (NUOF)
- University grants for post graduate studies ect

# Current practice in academic research (involving grants)

- External grants (university practice)
  - prepare proposal
  - Submit for evaluation (internal)
  - Accept/reject
- Submit for evaluation (external)
- Accept/reject
- Conduct research, report progress



# Summary



- TVET research is essential in ensuring TVET goals and nation goals for human capital development are achieved
- Development of competent TVET researchers who can integrate knowledge from diverse disciplines is essential
- Financial support is one of the key elements in the successful conduct of TVET research

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# Thank You