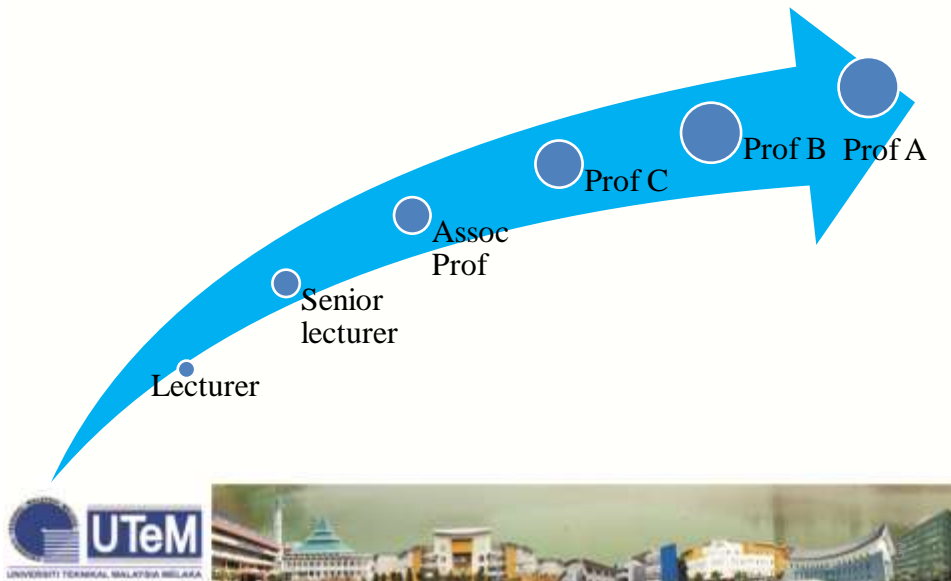




INTRODUCTION



Academic Ladder



Academic Ladder: Components for Promotion

No.	KATEGORI	GRED		
		52	54	VK7
1	Pengajaran dan <u>Penyelidikan</u>	50	40	30
2	<u>Penyelidikan</u> dan Penerbitan	20	25	30
3	<u>Sanjungan</u> dan Kepimpinan Akademik	10	15	20
4	Khidmat Kepada Universiti dan Masyarakat	10	10	10
5	<u>Perundingan</u> dan <u>Jaringan Industri</u>	10	10	10
6	Bonus (Maksimum 10 Markah)	5	5	5
Jumlah Keseluruhan		105	105	105

R & D is a main component for Promotion

It covers:

- Research grants
- Students supervision
- Publications
- Recognition & Awards
- Consultation
- etc



Role of Lecturer in R & D domain

Research “Manager”!



What is Research?



What is Research?

- re.search
- A careful investigation or inquiry specially through search for new facts in any branch of knowledge (The Advanced Learner's Dictionary).

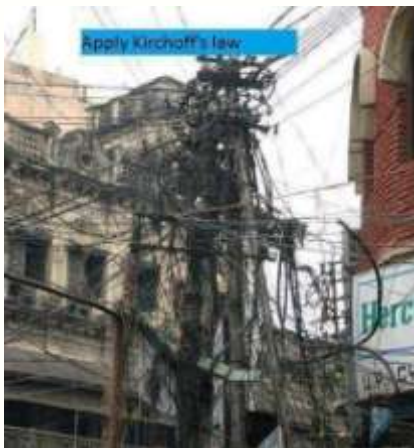


What is Research?

- 5 key characteristics:
 - Systematic – research process
 - Logical – induction/deduction
 - Empirical – evidence based
 - Reductive – generalisation
 - Replicable – methodology.



Why Research?



Why Research?



Objectives of Research



Why people do Research?






- To get a research degree ((Ph.D /MSc.)
- To get a research degree and then to get a teaching position in a college or university
- To solve the unsolved and challenging problems
- To get joy of doing some creative work
- To acquire respectability
- Curiosity to find new things

Who does Research?







- Graduate Students
 - Masters Degree (lower standard)
 - Ph.D. Degree (higher standard)
- Researchers at universities
 - Post-Doctoral students
 - Faculty members
- Researchers in industry
 - Research scientists
 - Many other technical workers
- Undergraduate students, Secondary School (like you)

Mentor



With Professor Hunter
PhD Supervisor
2006 - 2010
University of Leeds, U.K



Teamwork



Teamwork occurs when diverse abilities and insights join together to work toward a common goal.



Research Methodology



- *Research methodology* is a systematic way to solve a problem.
- It is also defined as the study of methods by which knowledge is gained. Its aim is to give the work plan of research.

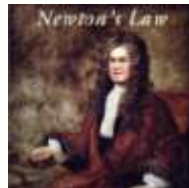


Types of Research



Fundamental/ basic
research

Applied research



Basic / Fundamental Research

- Basic research is an investigation on basic principles and reasons for occurrence of a particular event or process or phenomenon.
- It is also called *theoretical research*.
- Attempts to find answers to the following questions actually form basic research.

Why are materials like that?

What are they?

How does a crystal melt?

Why do we feel difficult when walking on seashore?

Why is sound produced when water is heated?

Why are birds arrange them in '>' shape when flying in a group?

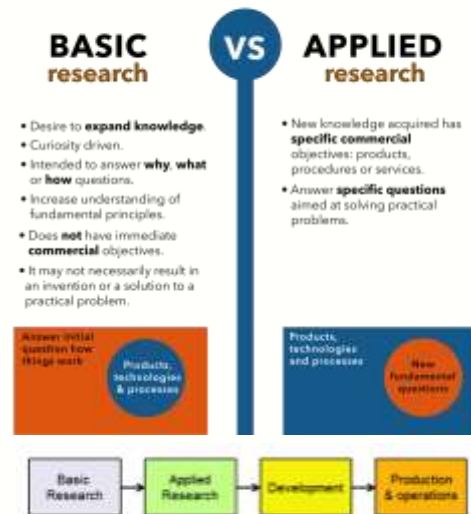


Applied Research

- In an applied research one solves certain problems employing well known and accepted theories and principles.
- Applied research is helpful for basic research.
- Such a research is of practical use to current activity.
- For example, research on social problems have immediate use. Applied research is concerned with actual life research such as research on **increasing efficiency of a machine**, **increasing gain factor of production of a material**, **pollution control**, **preparing vaccination for a disease**, etc.



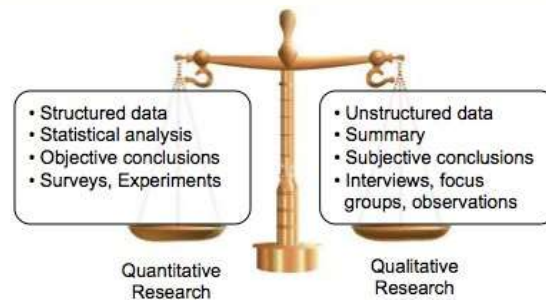
WHAT IS YOUR RESEARCH GOOD FOR?



Source:
<https://www.google.com/search?q=applied+research&source>



Quantitative and Qualitative Research



Source:
<https://www.google.com/search?q=Quantitative+and+Qualitative>



Quantitative and Qualitative Research

Types of Empirical Research		
Qualitative (Categorical) vs. Quantitative		
	Qualitative Research	Quantitative Research
Objective:	<ul style="list-style-type: none"> Gain and understanding of underlying reasons or motivations. Uncover trends or provide insights into the setting of a problem. 	<ul style="list-style-type: none"> Quantify data and generalize results from a sample from the population of interest. Measure the incidence of a particular occurrence, view or opinion in a chosen sample.
Sample	Usually a small number of non-representative cases. Subjects can be chosen deliberately to test a particular theoretical premise.	Usually a large number who are randomly selected and representing the population of interest.
Data Analysis	Non-statistical; data cannot be expressed as a number.	Statistical; data can be expressed as a number.
Example	Temperature = "cold" Height = "Tall"	Temperature = 9° Fahrenheit Height = 6' 8"

Source:
<https://www.google.com/search?q=Quantitative+and+Qualitative>



Quantitative and Qualitative Research



Qualitative		Quantitative	
Like	Easy	23,406	4.3
Awkward	Squirrel	2m32s	100mm
	Efficient		76.8%
Slow	How	RM55.40	1,524
Ambiguous		\$356,22	
Confusing			



Criteria of Good Research

Good research is systematic

- It means that research is structured with specified steps to be taken in a specified sequence in accordance with the well defined set of rules.

Good research is logical

- logical reasoning makes research more meaningful in the context of decision making.

Good research is empirical

- It implies that research is related basically to one or more aspects of a real situation and deals with concrete data that provides a basis for external validity to research results.

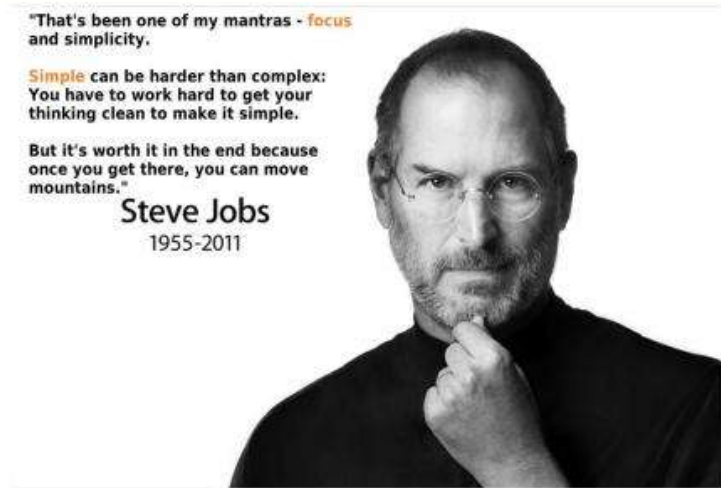
Good research is replicable

- This characteristic allows research results to be verified by replicating the study and thereby building a sound basis for decisions.

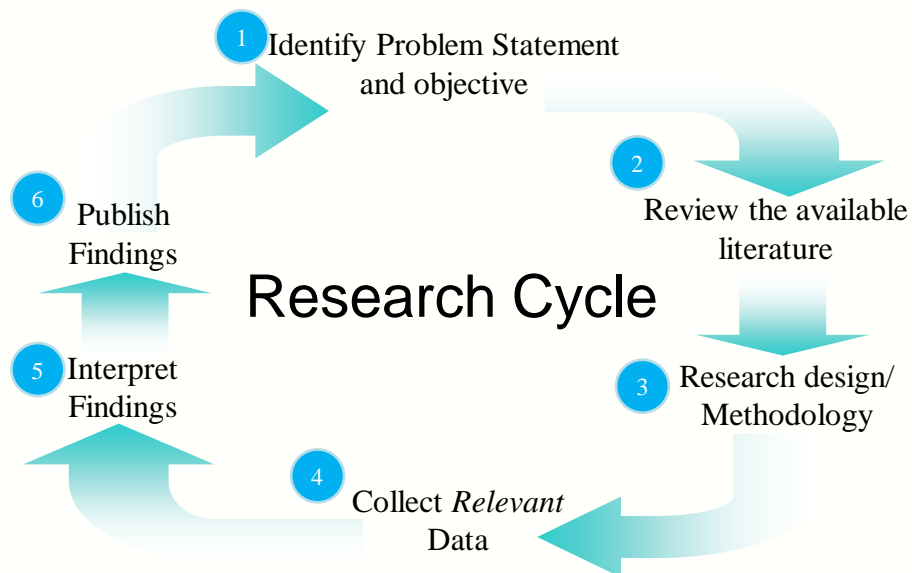


Source: <https://www.google.com/search?q=Good+Research>





Source: <https://www.google.com/search?q=Good+Research>



RESEARCH GRANTS



FUNDAMENTAL RESEARCH

❑ Fundamental- Based Grant – MoE

- **FRGS** - Output: theory, concept, new idea. RM 250k
- **TRGS** - **within University** - 3 groups. RM 500k/year.
- **LRGS** – **inter University** - 3 groups min.
 Advisable to include social science in the group. RM 3M/year.
- **MyLab** – **inter University Lab** – 2 labs min + industry.



❑ Applied- Based Grant – MOSTI

- e- science , e-techno, e-innovative



DEFINITION: Basic Vs Applied Research

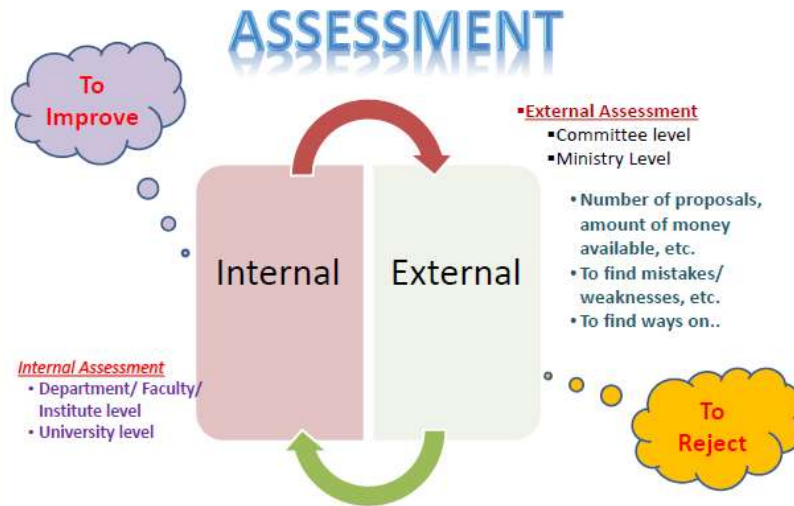
• BASIC RESEARCH

- about **INVENTION**; gaining a fundamental understanding of things without trying to create a product.
- the pursuit of new knowledge

• APPLIED RESEARCH

- about **INNOVATION**; occupies the space between basic research and development, where innovations are readied for manufacturing.
- focuses on the solution of real problems rather than the pursuit of new knowledge



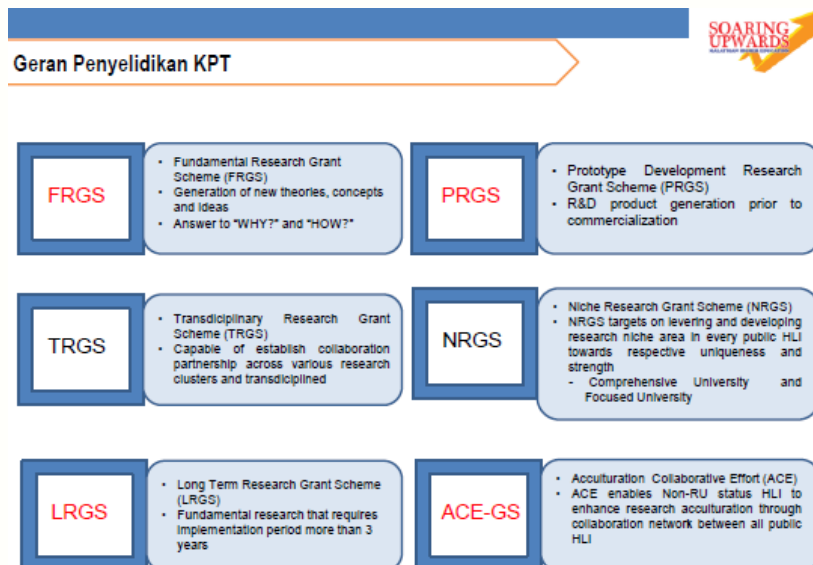
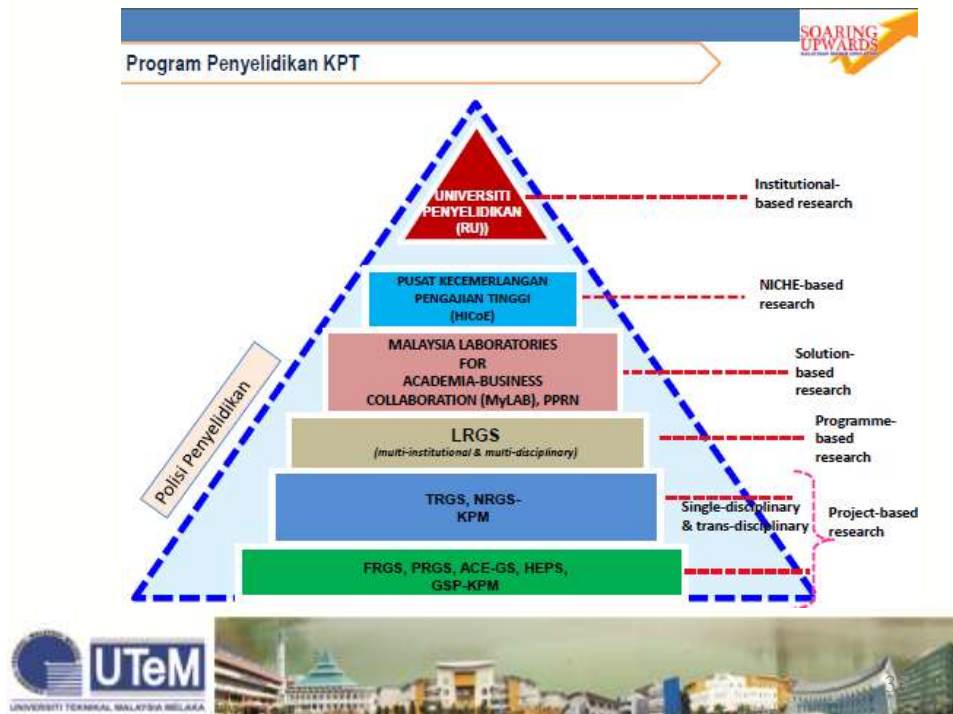


Internal assessors improve the quality of grant submissions



MOHE (KPT) GRANTS





Research Clusters



Penjajaran Bidang Penyelidikan KPT - NPA



Bidang Keutamaan Penyelidikan Tambahan RMK -11

- Nationhood, B40 and Societal Wellbeing (Values-based)
 - Tropical Disease
 - Islamic Finance

National Priority Area (NPA)	Research Clusters					
Transportation & Urbanization	Pure and Applied Science	Technology & Engineering	Social Science	Information & Communication	Clinical & Health Science	Arts & Applied Arts
Environment & Climate Change						
Healthcare & Medicine						
Bio Diversity						
Water Security						
Food Security						
Energy Security						
Plantation Crops						
Cyber Security						
	Natural and Cultural Heritage					

* Applicable for LRGS, FRGS, TRGS, PRGS, ACE-GS

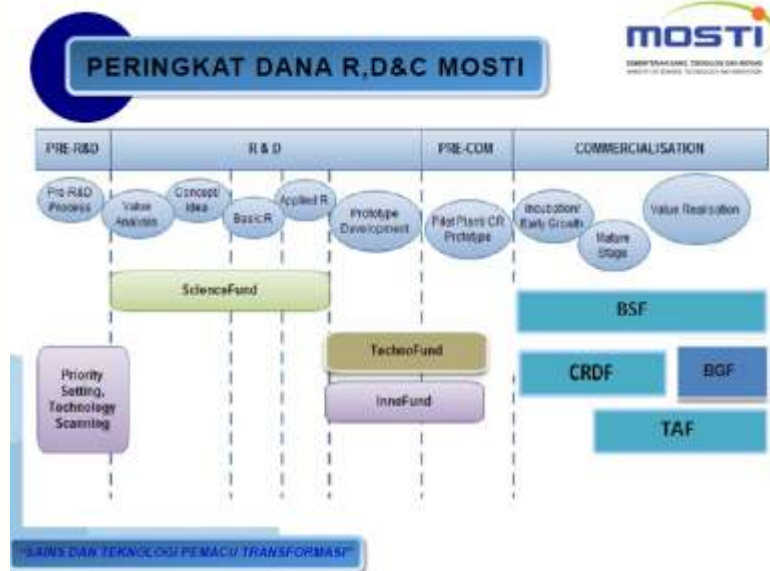


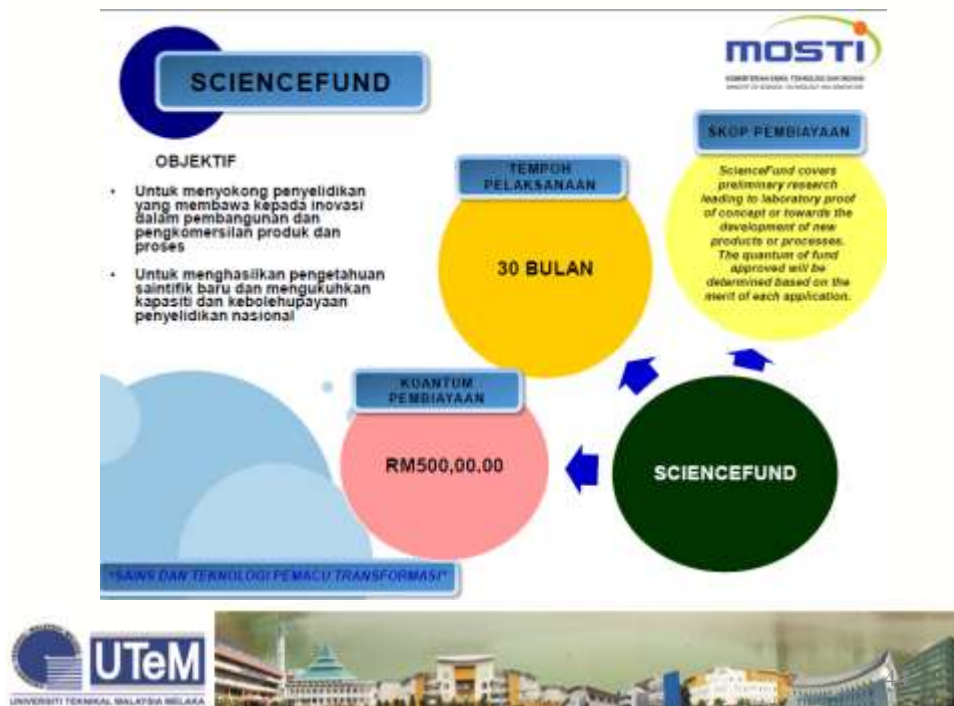
FRGS	<ul style="list-style-type: none"> •Skim Geran Penyelidikan Asas (<i>FRGS</i>) •Penyelidikan yang menghasilkan teori, konsep dan idea baru •Menjawab persoalan "WHY?" dan "HOW?".
ERGS	<ul style="list-style-type: none"> •Skim Geran Penyelidikan Eksploratori/Eksperimen (<i>ERGS</i>) •Hasil penemuan boleh dikembangkan kepada projek bersifat gunaan) •Menjawab persoalan "WHAT?" dan "WHERE?".
LRGS	<ul style="list-style-type: none"> •Skim Geran Penyelidikan Jangka Panjang (<i>LRGS</i>) •Penyelidikan fundamental yang memerlukan tempoh pelaksanaan melebihi 3 tahun
PRGS	<ul style="list-style-type: none"> •Skim Geran Penyelidikan Pembangunan Prototaip (<i>PRGS</i>) •Penghasilan produk penyelidikan, tetapi belum sampai ke peringkat pengkomersilan

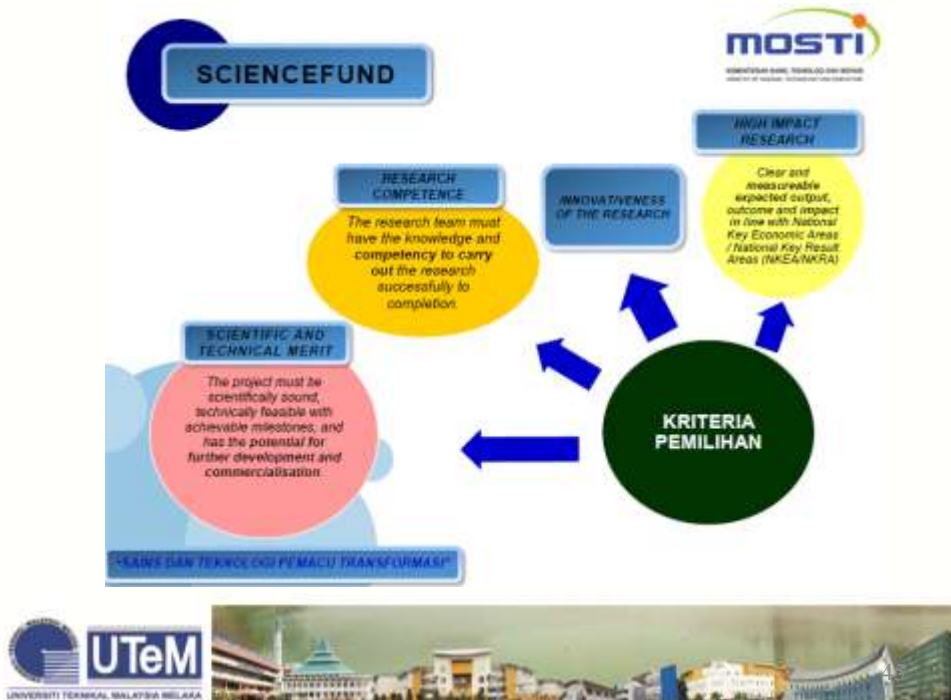


MOSTI GRANTS









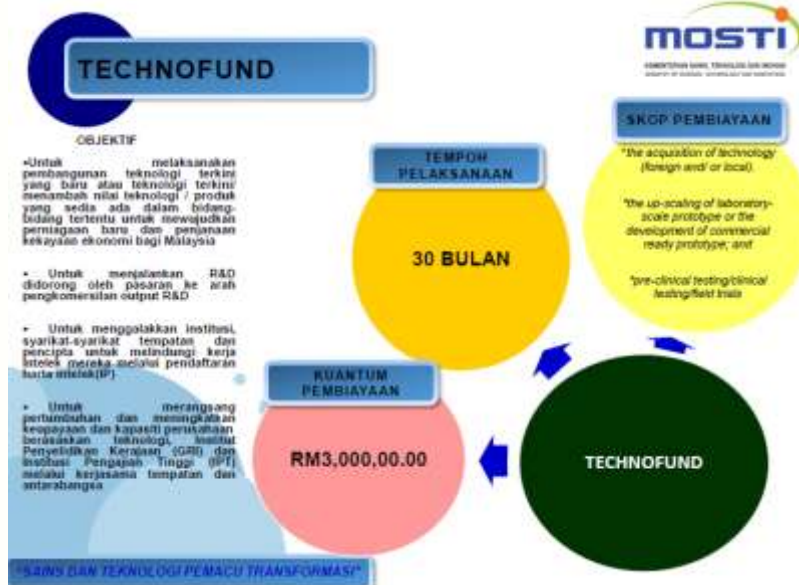
SCIENCEFUND

mosti
MOSTI
MINISTERI TEKNOLOGI, INOVASI DAN KEHIMPUNAN
MINISTRY OF SCIENCE, TECHNOLOGY AND INNOVATION

INSTITUSI	TAJUK	OBJEKTIF	PENCAPAIAN
Universiti Teknologi Malaysia (UTM)	Real time crying and sweating simulation based on human emotion through brain computer interface and haptic heat to perform realistic virtual human (01-01-06-570940)	<ol style="list-style-type: none"> 1. To model avatar with realistic crying and sweating features 2. To apply natural interaction with avatar using brain computer interface and haptic 3. To develop real-time crying and sweating simulation 	<ul style="list-style-type: none"> • Penerbitan: 6 • This project is used by Ainmera Sdn. Bhd. in their animation project

"SAHABAT DAN TEKNOLOGI PEMACU TRANSFORMASI"







TECHNOFUND

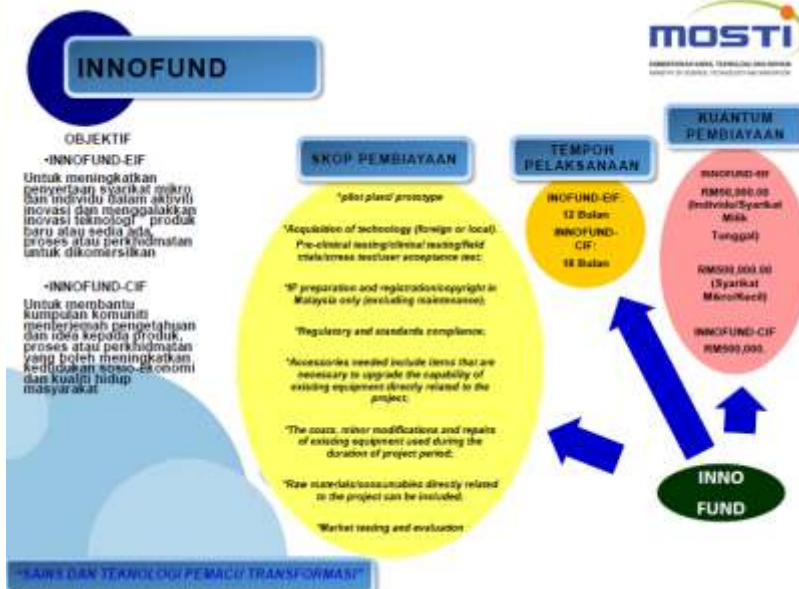
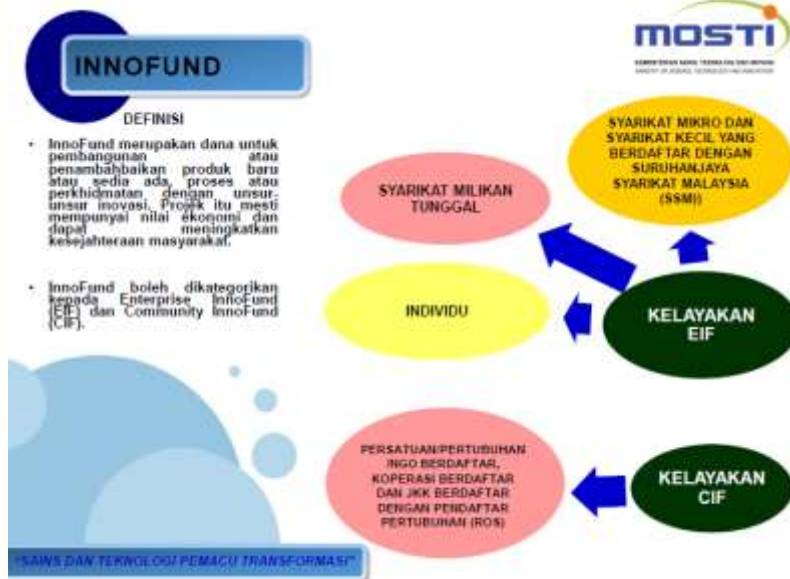
mosti
MOSTI
MAMPU MELAKSANAKAN TRANSFORMASI
BERSAMA SAMA MELAKSANAKAN TRANSFORMASI

ENTITI	TAJUK	OBJEKTIF
MR ENERGY SOLUTIONS SDN BHD	Grid-Tie Solar Micro-Inverter (GTM) Pre-Commercial Prototype (TF0410D046)	To develop a Grid-Tie Solar Micro-Inverter (GTM) Pre-Commercial Prototype that shifts the DC to AC conversion from a central inverter to compact units (attached directly to each solar PV(photovoltaic) panel allowing each PV panel's maximum output to be fed directly into the utility grid.




"SAINS DAN TEKNOLOGI PEMACU TRANSFORMASI"





SUMMARY

SELECTION OF FUNDING

LRGS
PRGS
INDUSTRIAL GRANT
SCIENCEFUND
KTP
FRGS
RACE
RAGS
EU GRANTS
PJP



SUMMARY

Formal Proposal - Outline

1. *Research Title*
2. *Abstract/Summary and keywords*
3. *Introduction/Background*
4. *Research Problem and Rational*
5. *Research Objective*
6. *Research Scope*
7. *Research Methodology*
8. *Research Schedule*
9. *Research Milestone*
10. *Expected Research Finding/Outcome*
11. *Summary*
12. *References*
13. *Appendix*



SUMMARY

(PRACTICAL TIPS FOR EXCELLENT PROPOSAL)

- Articulates problem accurately
- Provides appropriate background
- Manageable within the time
- Cost-effective
- Linked to defined outcomes
- Clear methodology
- Seen to make a contribution to the field
- Concise writing
- Demonstrates right team approach
- Has credible academic supervision
- **Last but not least.....**

READ THE GUIDELINES A-Z AND STICK TO THEM



SUMMARY

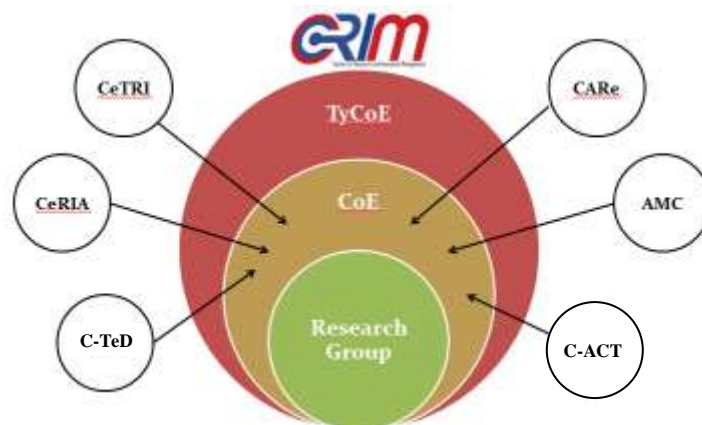
Common Reason

Why the proposal is being rejected?

- **Technical knock-out: doesn't follow guideline**
- **Doesn't match with the theme**
- **Feasibility issues – team, facility, methodology**
- **Viability – not worst-in**
- **Less novelty/Problem statement unclear**
- **Language issues**
- **Proposal writing/presentation**
- **LUCK**

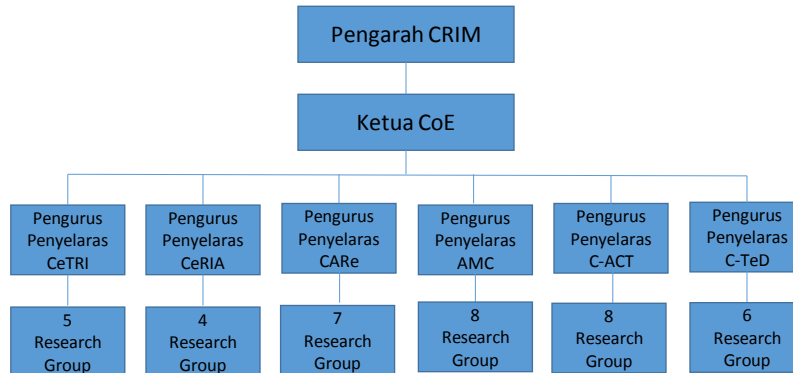


RESEARCH AT UTeM





- Carta Organisasi



Always A Pioneer, Always Ahead

Excellence Through Competency



CoE STRATEGIC PLAN 2016-2020

Always A Pioneer, Always Ahead

Excellence Through Competency



UTeM (Internal) Grants

PJP-Hi Impact, PJP, Seed Money



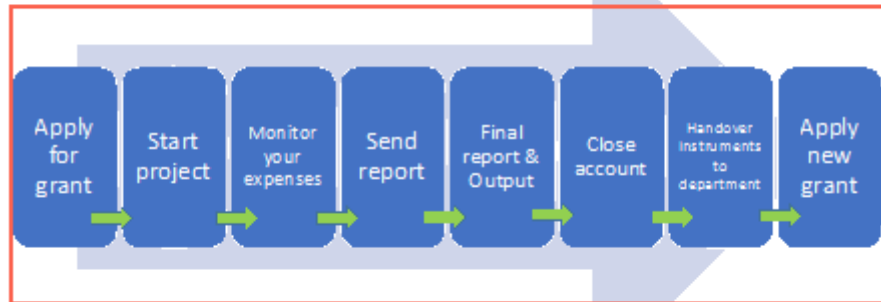
RESEARCH MANAGMENT



CYCLE OF RESEARCH



GOOD GOVERNANCE OF RESEARCH GRANT



FINANCIAL MANAGEMENT



- Spend money in accordance with the rules & guidelines.
- PI needs up-to-date accounting information.
- Expenditures are within the given budget.
- For MOSTI grants, virement can only be done once.
- Compare expenditures with projected expenses at fixed times during the budget year. (**Gantt Chart**)
- Plan future budgets.
- Usage of proper & updated application forms (application for attending conference/fieldwork)

Virement of fund: only those allowed



RESEARCH OUTPUT



RESEARCH OUTPUT

**Human
Capital**

Publication

IP

**Exhibition/
Poster**



Human Capital

MSc, PhD, DEng



Publication



World
Indexing



Journal Submission Target

ISI-WoS (Thomson Reuters)

<http://ip-science.thomsonreuters.com/mjl/>



THOMSON REUTERS

Scopus

<http://www.scopus.com/>



REFEREED & PEER REVIEW

ICFAI/e-LEARNING/IN-HOUSE
UTeM Journals/Professional
Associations

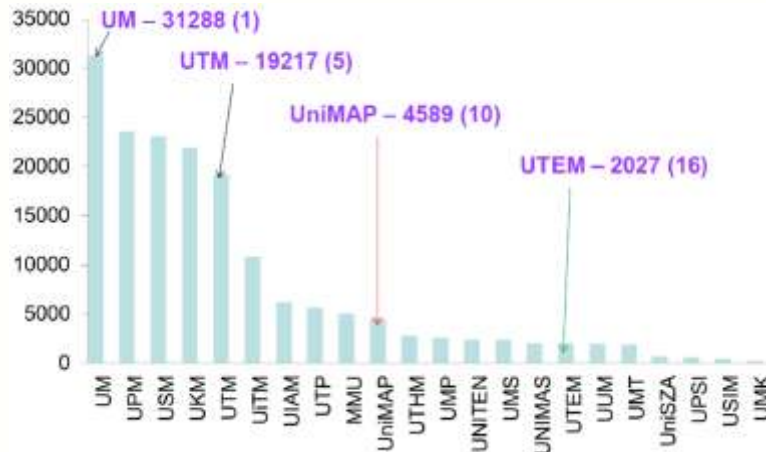
OTHER CITATION NON-SCOPUS/ISI
THOMSON INDEX/ISI WoK



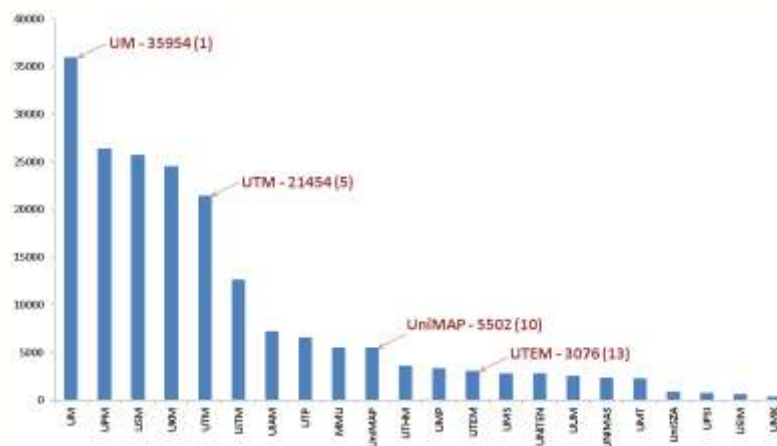
Why do we publish?



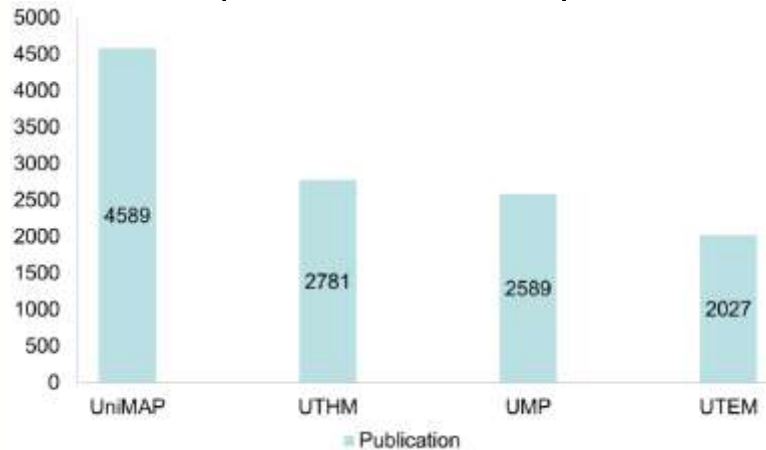
Malaysia University Publication – Scopus (until Oct 2015)



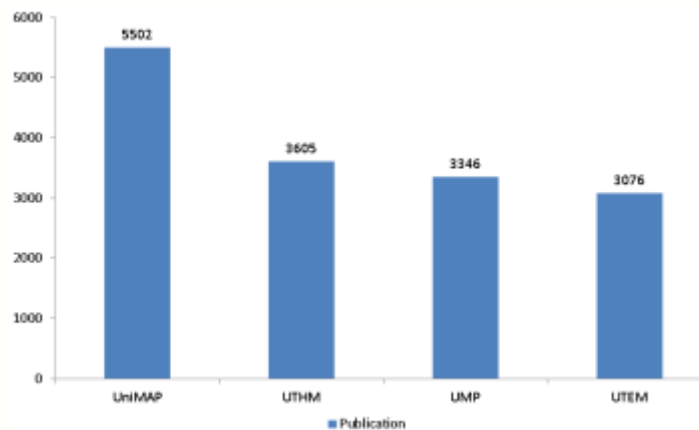
Malaysia University Publication – Scopus (until Jul 2016)

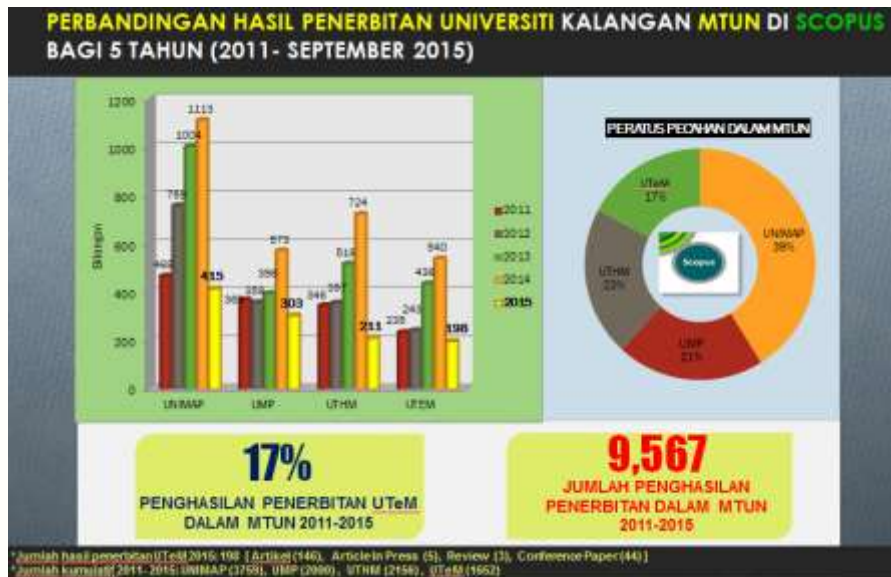


MTUN Scopus Publication (until Oct 2015)



MTUN Scopus Publication (until Jul 2016)

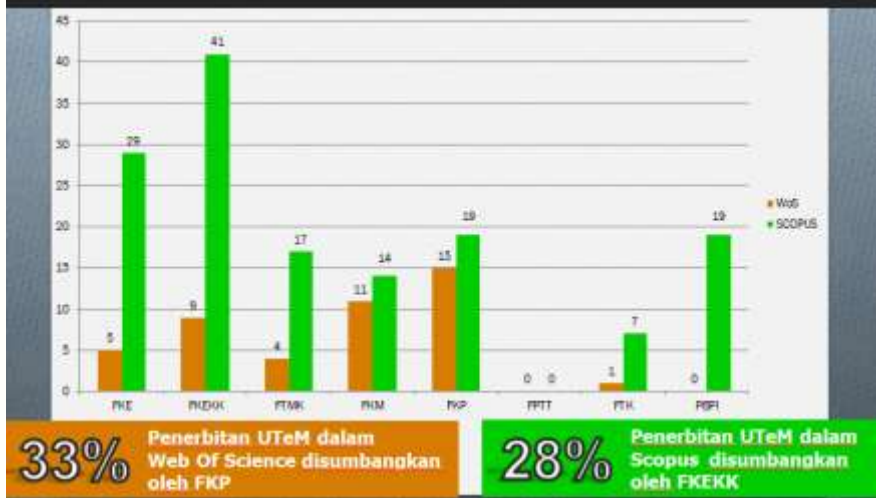




Source: Library, UTeM



PENERBITAN ARTIKEL JURNAL MENGIKUT FAKULTI DI WEB OF SCIENCE DAN SCOPUS (JANUARI HINGGA SEPTEMBER 2015)

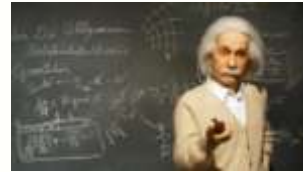


Source: Library, UTeM

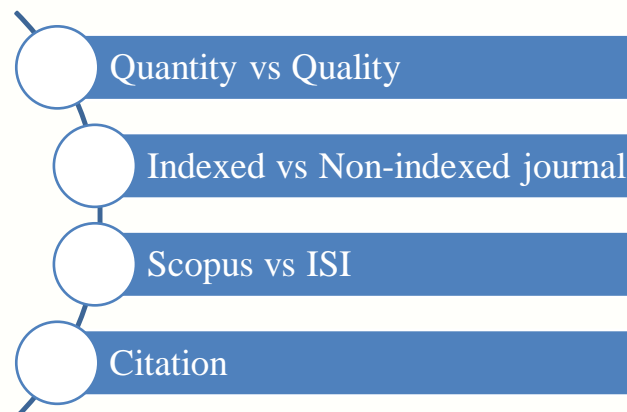


Why do we publish?

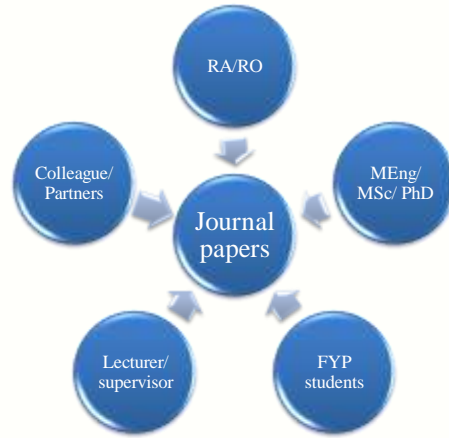
- ☐ To disseminate knowledge
- ☐ World University Rankings
- ☐ KPI
- ☐ **Job PROMOTION and Satisfaction!**



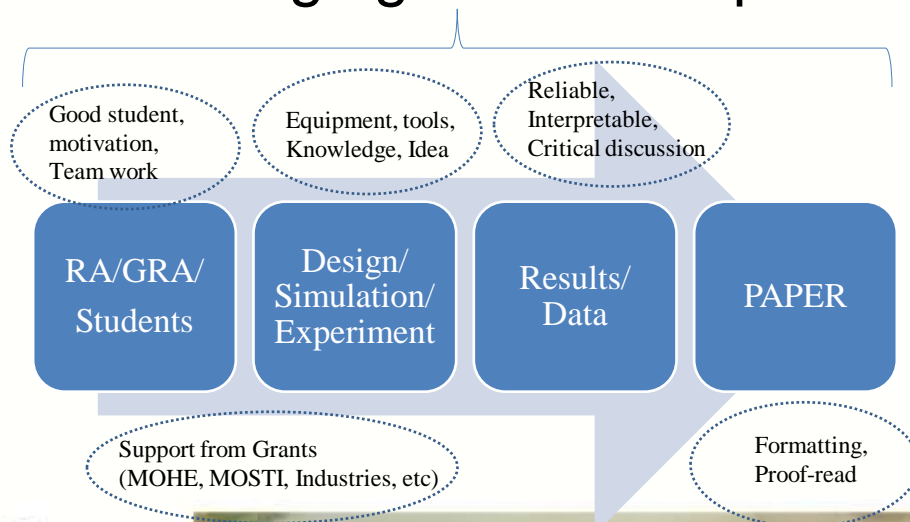
Strategy in Journal Publication



Strategy in Journal Publication



Managing Journal Paper



Source of Data for Journal Paper

- Your own research data
- Research collaborative/outsourcing work
- Postgraduate & undergraduate research work
- Post graduate & under graduate critical literature review
- Case studies or survey
- Book review/personal review/discussion forum.
- Power point slides
- Critical analysis of popular concept
- Conference papers/papers presentation



Type of Journal Paper

- A. "Original" article
 - Research/ empirical
 - Technical note
 - Experiments
- B. "Review" article
 - Review/ concept
 - Theoretical

RESEARCH

- Title
- Abstract
- Keywords
- 1. Introduction
- 2. * Materials and Methods
- 3. Results/Findings and Discussion
- 4. * Conclusion/s
- Acknowledgements
- References

REVIEW

- Title
- Abstract
- Keywords
- 1. *Intro
- 2. Any Titles/subs/Case Report/Writing
- 3. *Conclusion
- Acknowledgements
- References



Journal Paper Template



Preparing for Exhibition / Poster



iENA 2012, Nuremberg, Germany
– 1 Gold



Tinjauan Ilmiah Carcass (Penelitian dan naseb) UTeM, Prof. Dr. Mohd Jabari Mohd. Nor-jangaji bersama kumpulan periyidd UTeM yang bergaji menang pengkiran pada RMA 2012 di Nuremberg, Jerman. foto-foto ini



SIIF 2013, Seoul, Korea
– 1 Gold, 1 Silver



Preparing for Exhibition / Poster

- Poster Presentation
- Criteria for evaluation / assessment.
 - **Novelty and inventiveness**
 - Contribution to New Knowledge/Technology
 - **Usefulness**
 - Relevance of the invention in solving the problem(s) concerned
 - Contribution of the invention to health, safety, education(s), etc (Sociality's impact)
 - **Commercial Potentialities**
 - Market potential on the invention
 - Evidence of market need
 - Product comparable or superior to similar products in the market



What Makes a Good Poster?



- Important information should be readable clearly
- Title is short and draws interest
- Word count of about 300 to 800 words



- Text is clear and to the point
- Use of bullets, numbering, and headlines make it easy to read
- Effective use of graphics, color and fonts



- Consistent and clean layout
- Includes acknowledgments, your name and institutional affiliation



Poster Contents

Project Description	Summary of the project
Objectives	List down the project objectives
Novelties / Innovative Features	What makes the project special? Highlight any new methods / technology / outcomes
Benefits / Contribution to Society	List the positive impacts from the project
Potential Applications	List the various applications from the project



UTeMEX, OCT 2015

- 1 Special Award, 2 Gold, 1 Silver



ITEX 2016, APRIL 2016

1 Gold, 1 Silver



Technical Report

Closing the research project as
per required by grant provider



Strategy in Research



A goal without a
plan is just a wish.

- Larry Elder

Source: <https://www.google.com/search?q=begin+with+the+end+in+mind+quotes>



**"The best
way to
predict the
future is to
create it."**

- PETER DRUCKER

**DO IT NOW.

SOMETIMES
'LATER'
BECOMES
'NEVER'**

Source: <https://www.google.com/search?q=motivational+quotes>



Lastly

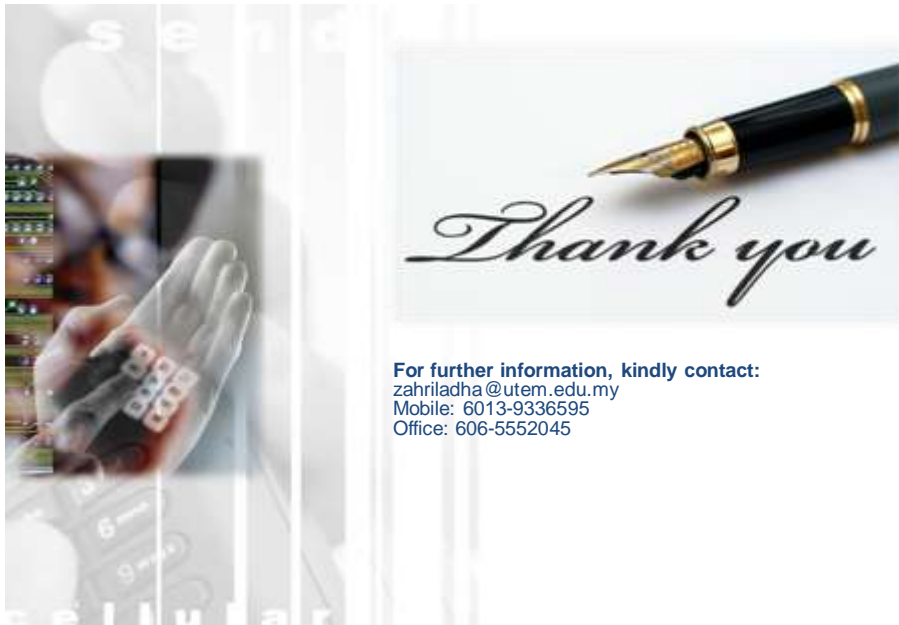
- Work smart and hard
- Be good in what we do. Be nice to others
- Avoid confrontational move unless necessary
- Do not radiate negativity
- Be an inspiring person
- “The more I learn, the more I realize how much I don't know.”

— Albert Einstein



Source: <https://plus.google.com/+SylviaDuckworth/posts/fjVw5ZFs1Cb>





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Mobile: 6013-9336595

Office: 606-5552045

