

New Academia
Learning Innovation in Malaysia
The Case of UTM

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Presentation outlines

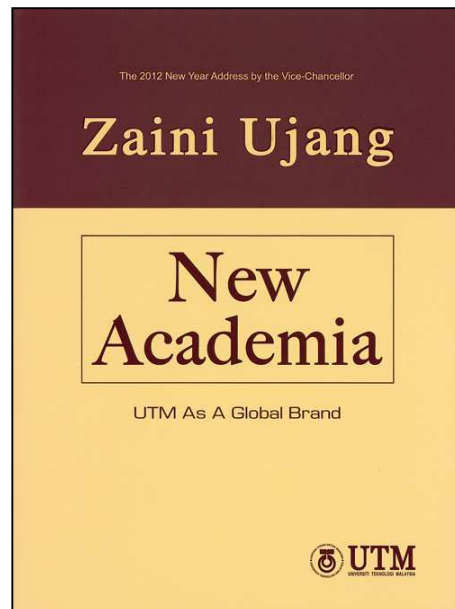
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2



3



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Welcome to Malaysia!



27 Nov 2012

The world's 10 best shopping cities — according to CNN Travel

INFOGRAPHIC: **NST**

| Cities | Getting around | Value | Variety | Experience | Total |
|-----------------------------|----------------|-------|---------|------------|-------|
| New York | 8 | 7 | 10 | 10 | 35 |
| Tokyo | 8 | 8 | 9 | 9 | 34 |
| London | 6 | 6 | 10 | 9 | 31 |
| Kuala Lumpur | 6 | 10 | 8 | 6 | 30 |
| Paris | 6 | 6 | 8 | 9 | 29 |
| Hong Kong | 10 | 5 | 6 | 7 | 28 |
| Buenos Aires | 6 | 8 | 6 | 7 | 27 |
| Vienna | 6 | 8 | 3 | 8 | 25 |
| Dubai, United Arab Emirates | 6 | 6 | 8 | 4 | 24 |
| Madrid | 6 | 6 | 4 | 7 | 23 |

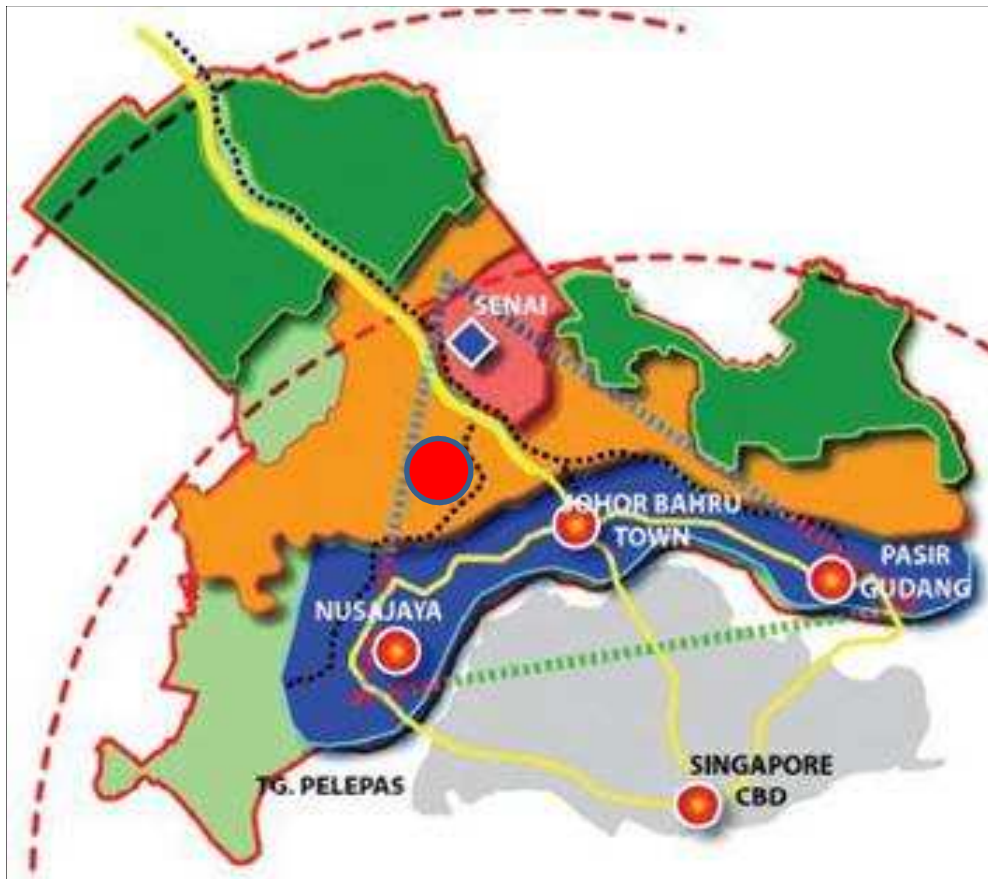


Malaysia in perspective

- 29 million pop
- Truly Asians (Malays, Chinese, Indians, aborigines etc)
- GDP growth 5.4% in 2012
- Top 15 competitive nation (IMD, 2013)
- Women leadership
- Hub for Islamic finance
- 65 universities
- 92% literacy rate
- 70% green cover
- From resource to industrial-based economy (2000)
- From undergraduate to graduate universities (since 2007)
- From tangible to intangible asset development

World
competitive
nation by
IMD

| Country | Rank | | |
|----------------|------|------|------|
| | 2013 | 2012 | 1997 |
| USA | 1 | 2 | 1 |
| Switzerland | 2 | 3 | 12 |
| Hong Kong | 3 | 1 | 3 |
| Sweden | 4 | 5 | 19 |
| Singapore | 5 | 4 | 2 |
| Norway | 6 | 8 | 5 |
| Canada | 7 | 6 | 6 |
| UAE | 8 | 16 | |
| Germany | 9 | 9 | 16 |
| Qatar | 10 | 10 | |
| Taiwan | 11 | 7 | 18 |
| Denmark | 12 | 13 | 13 |
| Luxembourg | 13 | 12 | 8 |
| Netherlands | 14 | 11 | 4 |
| Malaysia | 15 | 14 | 14 |
| Australia | 16 | 15 | 15 |
| Ireland | 17 | 20 | 10 |
| United Kingdom | 18 | 18 | 9 |
| Israel | 19 | 19 | 25 |
| Finland | 20 | 17 | 7 |
| China Mainland | 21 | 23 | 27 |
| Korea | 22 | 22 | 30 |
| Austria | 23 | 21 | 20 |
| Japan | 24 | 27 | 17 |



Malaysian annual budget

16% of total
government expenditure is on basic education,
amongst the highest in the world

Achieving our aspirations requires that we make 11 shifts

| | | |
|-------|----|--|
| SHIFT | 1 | PROVIDE EQUAL ACCESS TO QUALITY EDUCATION OF AN INTER-NATIONAL STANDARD |
| SHIFT | 2 | ENSURE EVERY CHILD IS PROFICIENT IN BAHASA MALAYSIA AND ENGLISH LANGUAGE |
| SHIFT | 3 | DEVELOP VALUES-DRIVEN MALAYSIANS |
| SHIFT | 4 | TRANSFORM TEACHING INTO THE PROFESSION OF CHOICE |
| SHIFT | 5 | ENSURE HIGH-PERFORMING SCHOOL LEADERS IN EVERY SCHOOL |
| SHIFT | 6 | EMPOWER JPN, PPD, AND SCHOOLS TO CUSTOMISE SOLUTIONS BASED ON NEED |
| SHIFT | 7 | LEVERAGE ICT TO SCALE UP QUALITY LEARNING ACROSS MALAYSIA |
| SHIFT | 8 | TRANSFORM MINISTRY DELIVERY CAPABILITIES AND CAPACITY |
| SHIFT | 9 | PARTNER WITH PARENTS, COMMUNITY, AND PRIVATE SECTOR AT SCALE |
| SHIFT | 10 | MAXIMISE STUDENT OUTCOMES FOR EVERY RINGGIT |
| SHIFT | 11 | INCREASE TRANSPARENCY FOR DIRECT PUBLIC ACCOUNTABILITY |

Historical perspective

- University and College University Act 1971
- Private Higher Learning Institution Act 1996
- Ministry of Higher Education 2004
- **Higher Education Strategic Plan 2007**
- University and College University Act (Amend.) 2012

Establishment of Public and Private Universities & University Colleges (65 in 2012)

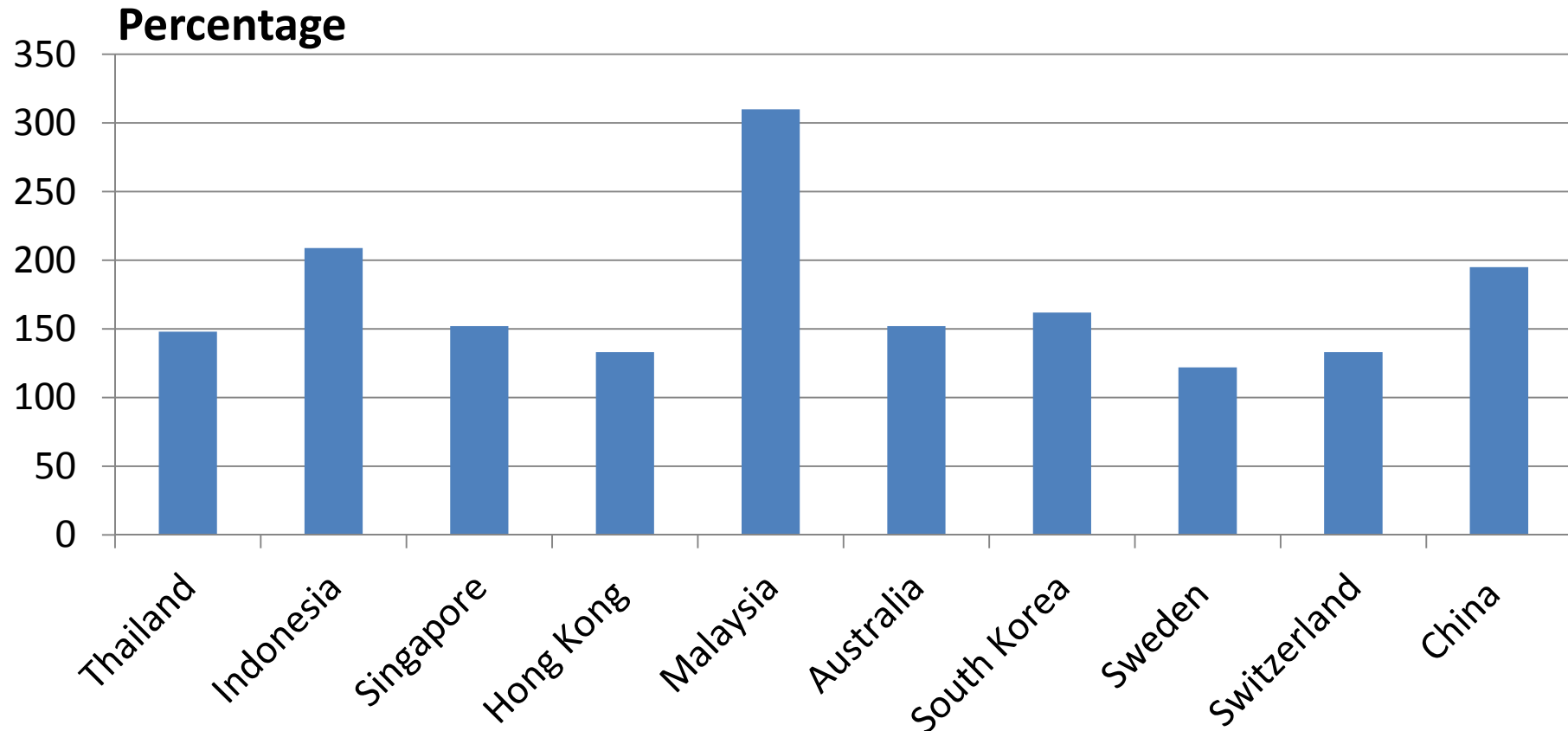
Public funding for operation and development of public universities

Human resources and **development**

Scholarship for students and academic staff

In accordance with the **New Economic Policy (1971) & New Economic Model (2009)**

ISI journal publication, % increase (2007-2012)



Thailand 5,416 → 8019 Indonesia 974 → 2,036 Singapore 6,675 → 10,154

Malaysia 3,711 → 11,507

PhD students in Malaysia

| Year | Total |
|------|--------|
| 2002 | 4,079 |
| 2004 | 6,330 |
| 2005 | 8,237 |
| 2007 | 11,333 |
| 2009 | 16,947 |
| 2010 | 21,522 |
| 2011 | 31,544 |

International students in Malaysia

| Year | International students in Higher Education |
|------|--|
| 2000 | 26,569 |
| 2005 | 55,469 |
| 2007 | 47,928 |
| 2008 | 69,174 |
| 2009 | 80,750 |
| 2010 | 86,923 |
| 2011 | 91,670 |

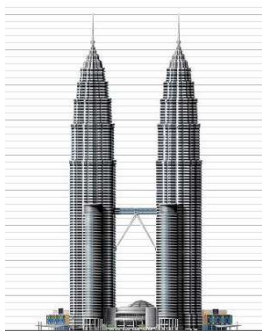


UTM IN BRIEF

- Public **autonomous** university
- **18** faculties/schools
- **10** research alliances
- **33** Centre of Excellence
- **1600** tenured academics, average **age 42**
- **280+** international staff
- **400** junior academic staff undergoing doctoral programs
- **70** percent academic staff in technology & engineering
- **FT 23,000+** students
- The oldest technical university in South East Asia, 1904
- New Academia 2012
- BLOSSOMS signed with MIT, 2013



Kuala Lumpur International Campus
(35 + 50 hectares)



← Less than 2 km radius →

Trecher Technical School 1904
Technical College 1946
National Institute of Technology 1972
Universiti Teknologi Malaysia 1975



← Less than 1 hour by car →



Johor Bahru Campus (1,148 hectares)

53%

Post-graduate students

33%

Malaysian PG eng. & tech.

5,043

International students

12,883

Post-graduate students

4,455

PhD students

3,400

Global Outreach Program
for undergraduates

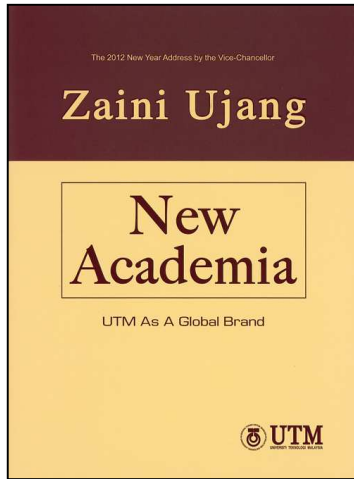
New Academia

New approaches, philosophy to higher
education

400+

Intellectual property rights filling annually

3



4



Area of concerns



Do it! Do it!



Benefits



Empowerment

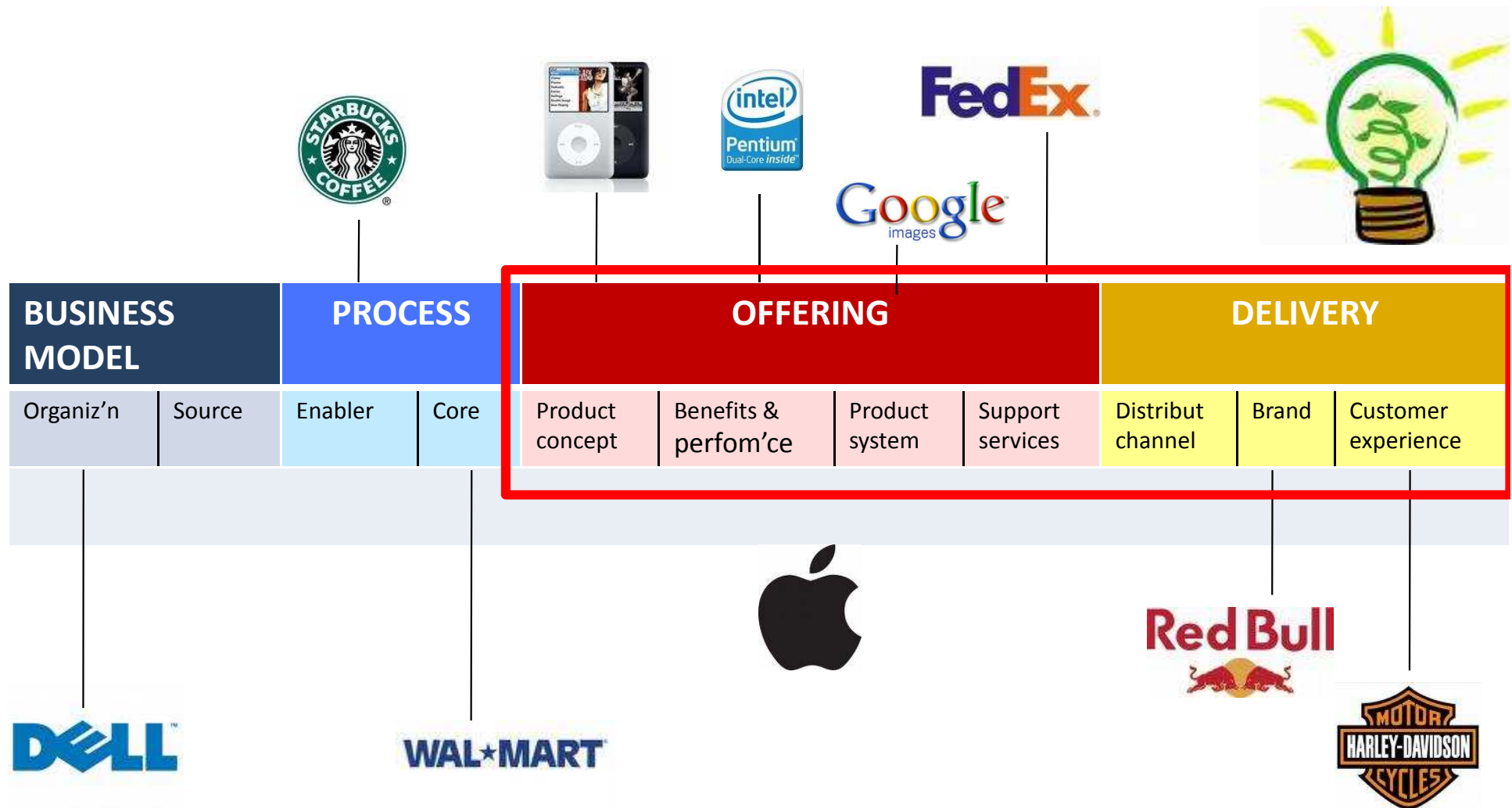


Champions

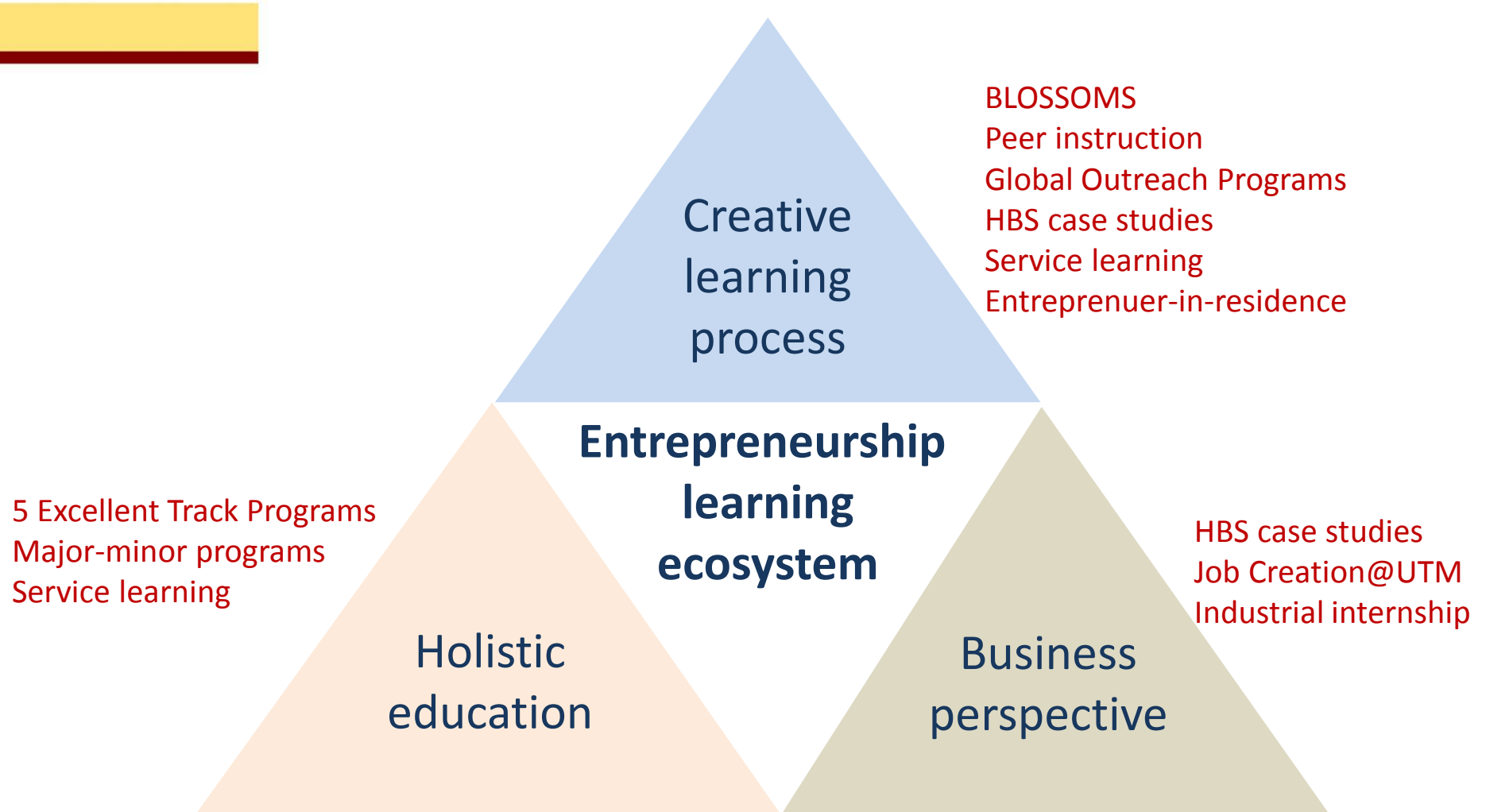


Feedback

Innovation

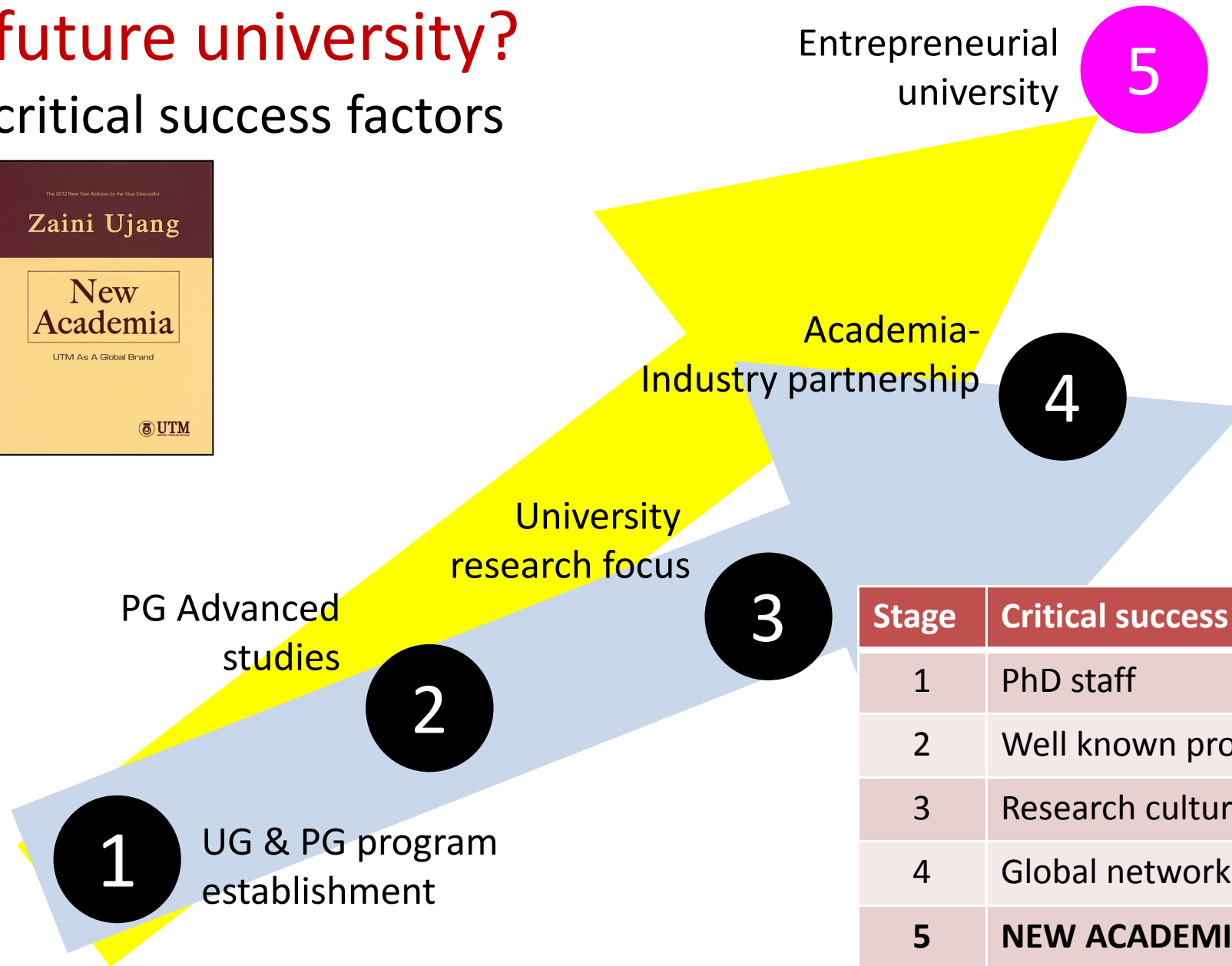
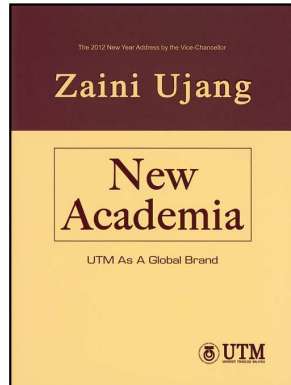


Adapted from Prof. Deschamps (2009)



future university?

critical success factors



| Stage | Critical success factors |
|-------|--------------------------|
| 1 | PhD staff |
| 2 | Well known professors |
| 3 | Research culture |
| 4 | Global networks |
| 5 | NEW ACADEMIA |

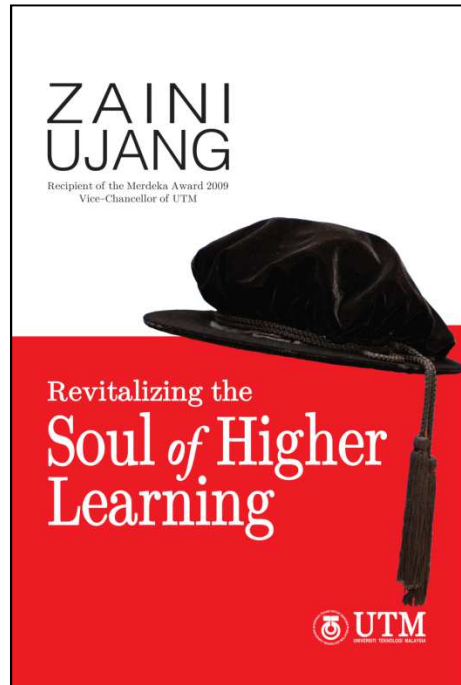
| | New academia | Programs |
|--------------------|---|---|
| Faculty members | Professors, inventors, entrepreneurs | Adjunct staff, fellows, co-supervisors |
| Learning materials | Books, journals, experiences, Internet, internship, tacit knowledge | Internship, students' business venture, Job Creation projects |
| Philosophy | Specialization, Integration, meaning | New pedagogy, Research Alliances |
| Funding | Grants, fees, VC, endowment, REITs | Creative fund raising, alumni |
| Students | School leavers, mid-career, businessmen, early-career, life-long | Top undergraduates; Industrial PhD, research-based programs |
| Venue | Campus, Internet, incubators, brands | Wifi, 4G internet, MTDC, Proton |
| Learning modes | Lectures, tutorials, lab, studios, peer instruction, internship, incubators, experiential learning, HBS* case studies, MIT Blossoms | NEW PEDAGOGY: learner-centric, Silicon Valley-culture, GOP, ethics, experiential learning framework, blended learning experience |
| Outcomes | Degrees, expertise, business models, capital, networks, Degree++, culture | JOB CREATION; micro-credit, spin-off, real projects for students |

* Note: HBS = Harvard Business School

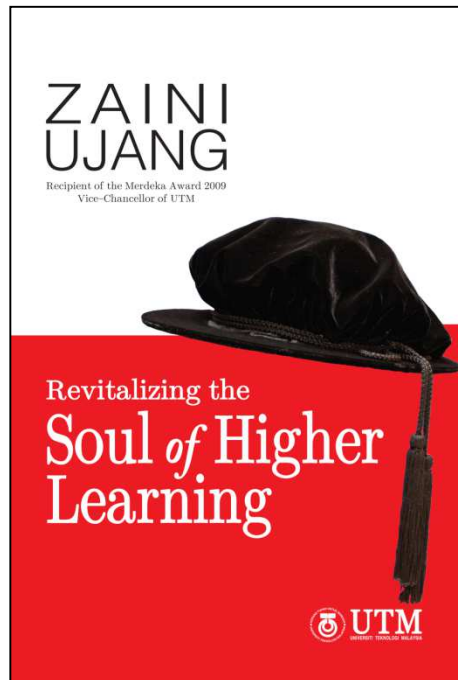
UTM New Academia

Learning Innovation Model

New Academia Learning Innovation Model is a framework comprising student-centred and blended learning philosophy, multiple learning modes and materials towards achieving entrepreneurial academia



“The soul is the thrust of higher learning ... university is not to be equated with merely buildings, piles of books, physical infrastructure and the existence of a virtual system. Rather it is closely related to the support of its community which forms the knowledge culture of the university – professors, lecturers, students, support staff of various levels”
(pp 146)



Institutional DNA

Priority

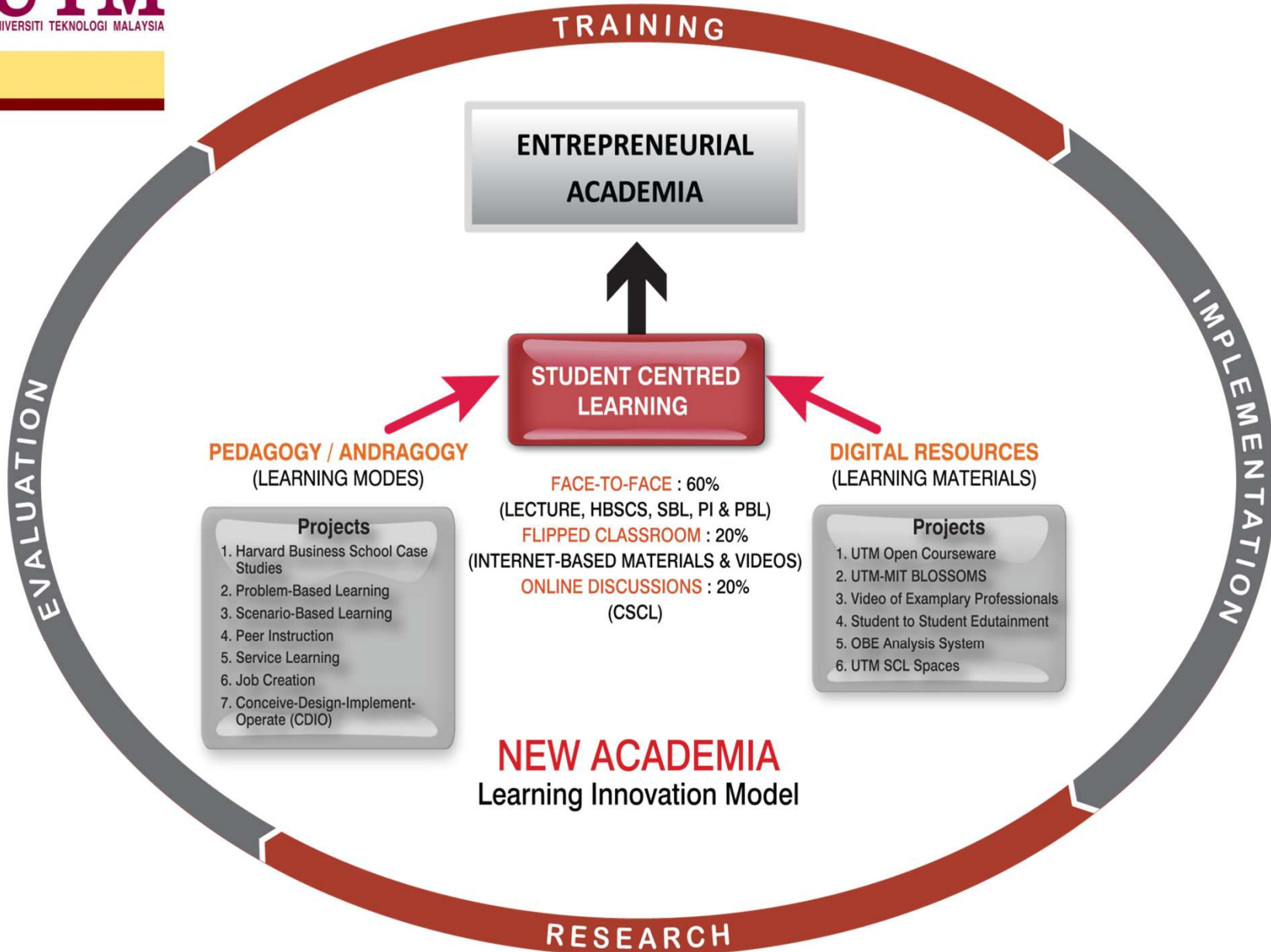
- 1 Clear Goals
- 2 Strategic-Minded
- 3 High Performance Work Culture

Process

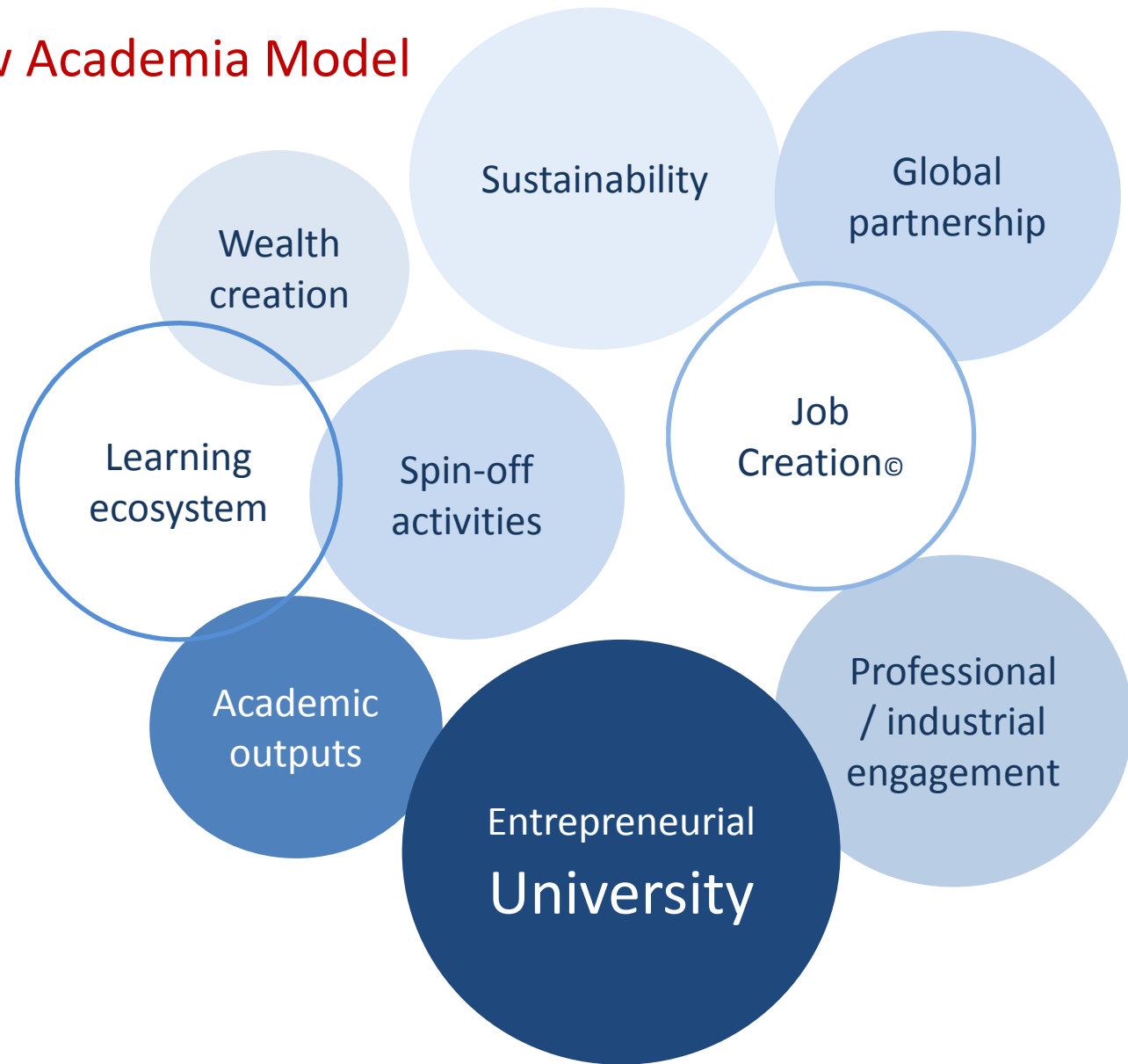
- 4 New Academia
- 5 Global Players
- 6 Distinct

Resources

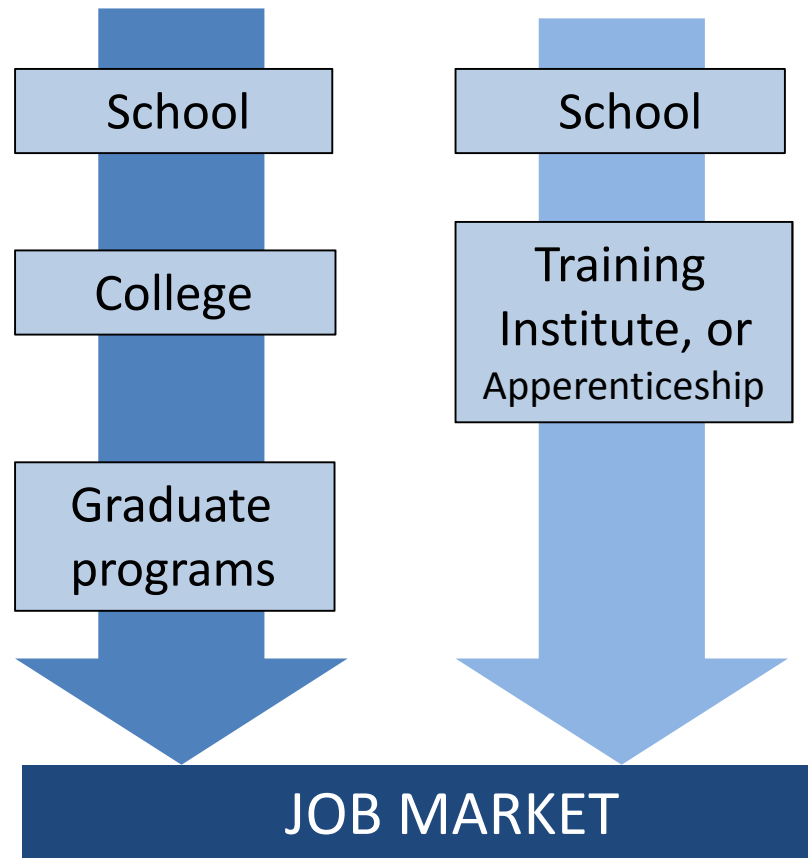
- 7 Lean, Efficient, and with Integrity
- 8 Consultative, and Inclusive
- 9 Healthy, Happy and Sustainable Lifestyle



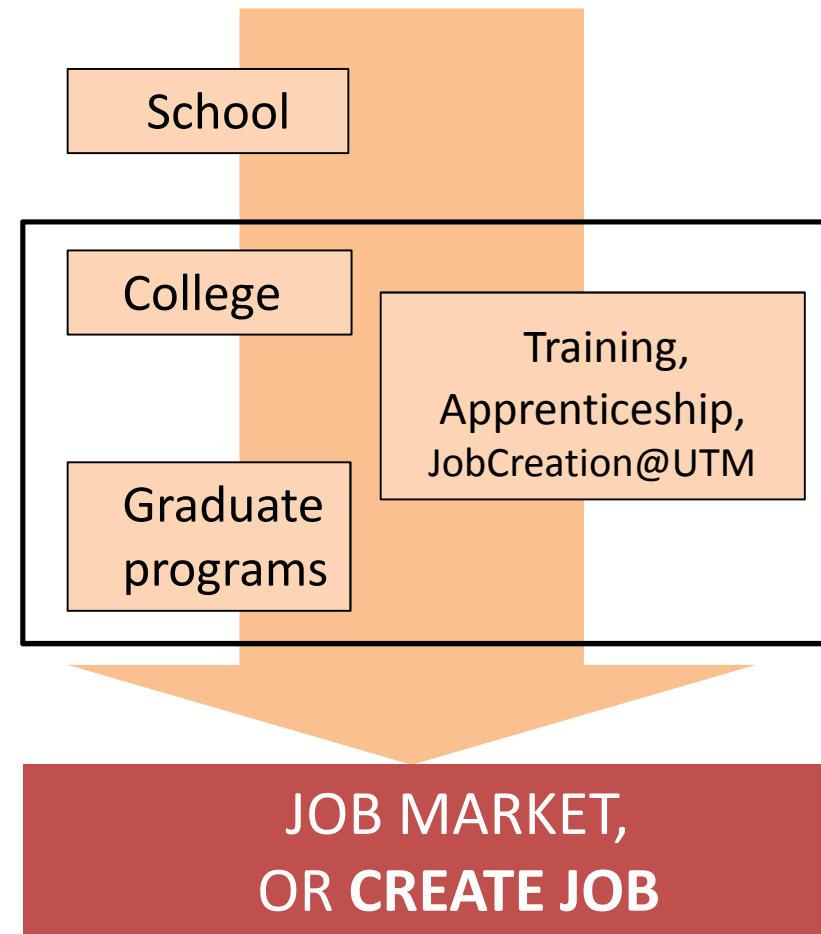
New Academia Model



Conventional route



New Academia route



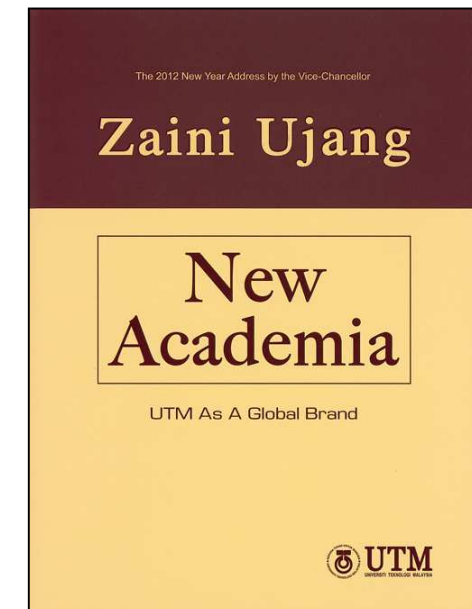
Main challenges

- Qualified and experience instructors
- Sharing of tacit knowledge
- “jobs” to be created in campus
- Evaluation vs. apprenticeship

Task 2008-2013

Transforming UTM from undergraduate-local-centric to graduate-and-global centric (a global brand)

| | Indicators | 2008 | 2020 |
|---|-------------------------|-------|--------|
| 1 | Staff with PhD | 737 | 2100 |
| 2 | ISI impact factors | 153 | 7000 |
| 3 | Postgraduate (%) | 25% | 70% |
| | Postgraduate no. | 4,850 | 14,000 |
| 4 | Mean Intake CGPA | 3.11 | 4.00 |
| 5 | Research grant (RM m) | 124 | 400 |
| 6 | Intellectual property | 1075 | 10,000 |
| 7 | Spin-off companies | 1 | 1000 |
| 8 | Internal revenues (RMm) | 47.86 | 900 |



UTM key performance (amal) indicators

| | Indicators | 2008 | 2011 | 2012 | 2013 | 2015 | 2020 |
|---|------------------------------|---------------|---------------|---------------|--------|------------|-------------|
| 1 | Staff with PhD | 737 | 1018 | 1143 | 1500 | 1800 | 2100 |
| 2 | SCOPUS journals | 678 | 1078 | 2500 | 3500 | 6000 | 15,000 |
| | ISI impact factors | 153 | 802 | 2000 | 3000 | 4000 | 7000 |
| | SCOPUS citation | 1372 | 3791 | 5000 | 7000 | 10,000 | 50,000 |
| 3 | Postgraduate (%) | 25% | 46% | 53% | 55% | 60% | 70% |
| | Postgraduate no. | 4,850 | 10,888 | 12,883 | 13,000 | 13,500 | 14,000 |
| | PhD students no. | 1269 | 3439 | 4445 | 5000 | 6000 | 7000 |
| | PhD Graduate on time | - | - | - | 50% | 60% | 90% |
| | Post-doctoral fellows | <10 | <20 | <20 | 300 | 500 | 1000 |
| 4 | Mean Intake CGPA (UG) | 3.11 | 3.47 | 3.71 | 3.75 | 3.80 | 4.00 |
| 5 | Research grant (RM m) | 124 | 103 | 78 | 150 | 200 | 400 |
| 6 | Intellectual property | 1075 | 2185 | 2770 | 3300 | 6000 | 10,000 |
| 7 | Spin-off companies | 57* | 14 | 18 | 200 | 400 | 1000 |
| 8 | Staff research load | 30% | 50% | 55% | 60% | 60% | 70% |
| 9 | Endowment (RM m) | 0 | 31.9 | 50 | 70 | 100 | 500 |



Benefits



Postgraduate league table (pp 99)

| Universities | PG students | PG% | PhD students |
|------------------|---------------|------------|--------------|
| Harvard | 13,867 | 66% | 4,573 |
| MIT | 6,510 | 70% | 3,782 |
| Cambridge | 8,978 | 45% | 5,543 |
| Imperial College | 4,149 | 30% | 2,904 |
| NUS | 9,663 | 27% | 4,361 |
| NTU | 9,468 | 30% | 3,488 |
| Tsinghua | 21,697 | 60% | 7,252 |
| Tokyo | 13,732 | 48% | 6,022 |
| Kyoto | 9,308 | 41% | 3,707 |
| Hong Kong | 11,548 | 45% | 2,870 |
| UTM | 12,883 | 53% | 4,455 |



Benefits

Postgraduate league table (pp 99)



| Universities | PG students | PG% | PhD students |
|--------------|---------------|------------|--------------|
| UM | 10,860 | 45% | 3,246 |
| USM | 9,276 | 34% | 3,487 |
| UPM | 12,350 | 41% | 3,762 |
| UKM | 9,866 | 45% | 3,465 |
| UTM | 12,883 | 53% | 4,455 |

* All data valid dated 15 Oct 2012, except UTM 30 Dec 2012

| Year | Bachelor | Postgraduate |
|-------------|---------------|---------------|
| 1984 | 3,886 | 2 |
| 1985 | 3,857 | 3 |
| 1990 | 5,348 | 175 |
| 2004 | 17,897 | 3,291 |
| 2005 | 15,895 | 3,004 |
| 2006 | 15,109 | 2,823 |
| 2007 | 14,792 | 3,942 |
| 2008 | 14,456 | 4,850 |
| 2009 | 14,245 | 6,432 |
| 2010 | 13,841 | 9,107 |
| 2011 | 12,955 | 10,888 |
| 2012 | 11,800 | 12,883 |
| 2020 | 8,000 | 14,000 |

| Year | Masters | PhD |
|-------------|--------------|--------------|
| 2000 | 1,165 | 251 |
| 2005 | 2,445 | 559 |
| 2010 | 6,902 | 2,048 |
| 2011 | 7,449 | 3,439 |
| 2012 | 8,428 | 4,455 |
| 2013 | 8,000 | 5,000 |
| 2015 | 7,500 | 6,500 |
| 2020 | 7,000 | 7,000 |





MIT-UTM Partnership on Sustainable Cities

September 2012



Cluade R. Canizares

MIT Vice-President for Research

- 50 professors from developing nations
- 6 months attachment @ UTM
- 6 months attachment @ MIT
- 5 years project
- 50 research projects
- On-line MIT-UTM network on sustainable cities



Strategic Flagship
Engagement



Sustainable cities
Industrial Biotechnology
BLOSSOMS on Science and
Mathematics Education

Industrial & Applied Mathematics
Islamic studies

Cardiovascular engineering

Low Carbon Technology
Automotive Engineering

Combustion Engine

Innovation in Education
Competitiveness

Innovation culture

Proton Tech Advisory Council

8-9 December 2011, Norwich
Lotus Headquarters



JUST DO IT.



Do it! Do it!



Simone Hochgreb (Cambridge)



Champions



Talk by Mark Chang, CEO of

JobStreet.com

Title: "Starting a company: Jobstreet Story"
Date: 13 March 2012
Time: 10:00 a.m.
Place: Senate Hall, UTM



Faculty members

PROCESS FLOW

Students from industry
Co-supervision by UTM professors & professionals
70% courses / 30% thesis
EngD and DBA
Matching funds are required



Learners

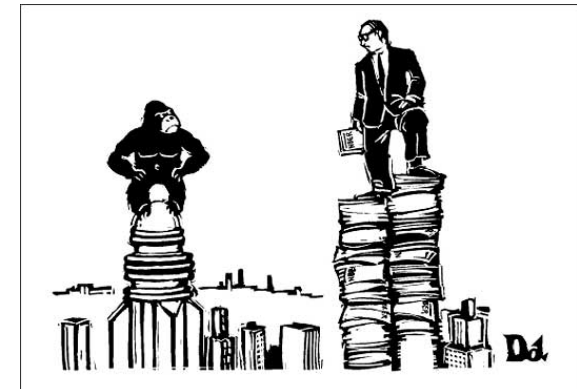
New Academia INDUSTRIAL PhD



Real environment

LEARNING

Experiential learning
Actual scientific and technical issues
Entrepreneur-in-residence
Global exposure
Wealth creation



Campus ecosystem



Faculty members

PROCESS FLOW

100 actual projects per year
 Bidding process by students' companies
 Actual implementation: max 6 months
 Assessment 1: 1 plus 2 credits system
 Assessment 2: As assignment in a course



Learners

New Academia

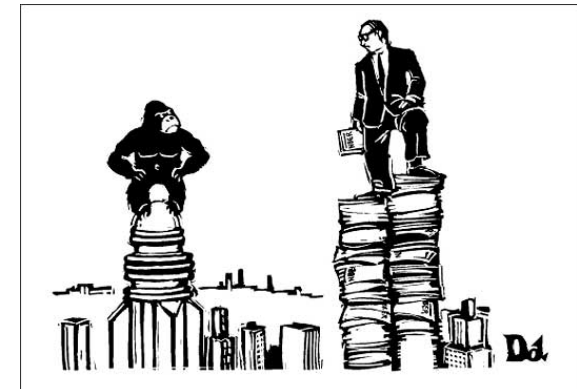
JOB CREATION



Real environment

LEARNING

Experiential learning
 Peer instruction
 Entrepreneur-in-residence
 Harvard Business School case studies
 Microcredit facilities
 Entrepreneurship programs (5ETP)



Campus ecosystem



Faculty members

PROCESS FLOW

3000 students annually
 Bidding process by students' groups
 From 2 weeks to an academic year
 Funding by UTM: Max RM1000 per students
 Matching funds are required
 TOP STUDENT: Harvard Summer Program



Learners

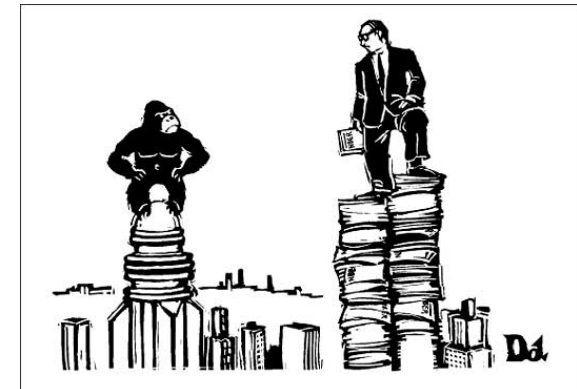
New Academia GLOBAL OUTREACH PROGRAM



Real environment

LEARNING

Experiential learning
 Peer instruction
 Entrepreneur-in-residence
 Global exposure
 Planning



Campus ecosystem