

# Selective Admission Criteria and Engineering Excellence: A Comparative Study of ASEAN Public Universities

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## Research Question

- How do admission criteria correlate with engineering program excellence across ASEAN's leading public universities?

## Methodology

### Key Metrics:

Public Universities Analyzed: 22

ASEAN Countries: 6

Ranking Systems: 2

### Data Sources:

QS World University Rankings by Subject: Engineering & Technology 2025

THE World University Rankings by Subject: Engineering 2025

### Key Variables:

English proficiency requirements

GPA thresholds

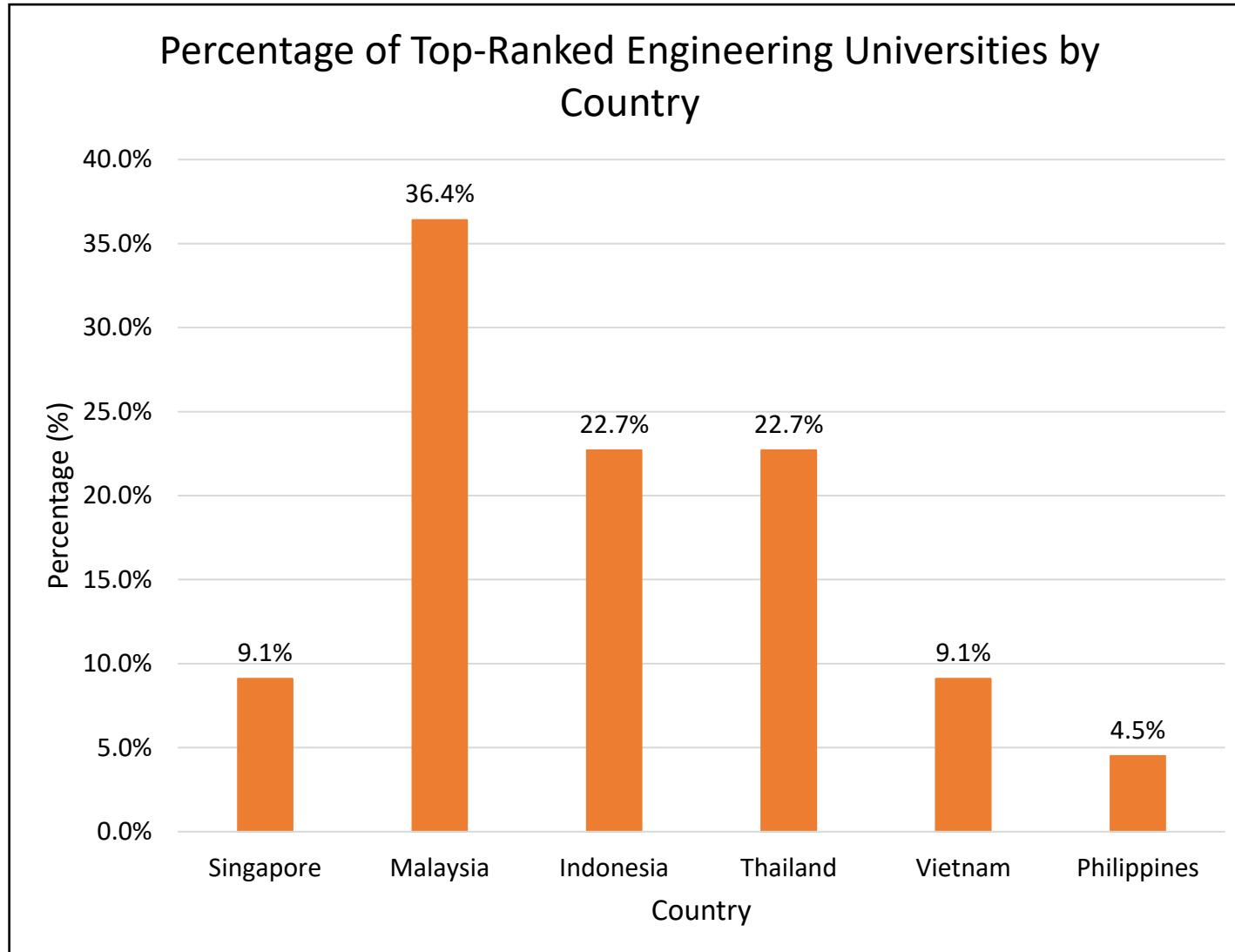
Standardized tests

Subject prerequisites

# University List with Rankings

Rank	University	Country	QS Score	THE Score
1	Nanyang Technological University (NTU)	Singapore	11	14
2	National University of Singapore (NUS)	Singapore	12	9
3	Universiti Malaya (UM)	Malaysia	79	151-175
4	Universiti Teknologi Malaysia (UTM)	Malaysia	102	251-300
5	Universiti Sains Malaysia (USM)	Malaysia	177	301-400
6	Universiti Putra Malaysia (UPM)	Malaysia	177	301-400
7	Universiti Teknologi Petronas (UTP)	Malaysia	184	176-200
8	Universiti Kebangsaan Malaysia (UKM)	Malaysia	197	201-250
8	Chulalongkorn University	Thailand	197	301-400
10	Institut Teknologi Bandung (ITB)	Indonesia	282	1001-1250
11	Universitas Gadjah Mada (UGM)	Indonesia	345	801-1000
12	University of Indonesia (UI)	Indonesia	368	801-1000
13	Institut Teknologi Sepuluh Nopember (ITS)	Indonesia	394	1001-1250
14	Vietnam National University, Ho Chi Minh City	Vietnam	401-450	1001-1250
15	Chiang Mai University	Thailand	451-500	601-800
16	Mahidol University	Thailand	451-500	801-1000
17	Universiti Teknologi MARA (UiTM)  (only for Bumiputera Malaysia)	Malaysia	451-500	1001-1250
18	Universitas Airlangga	Indonesia	451-500	1001-1250
19	Vietnam National University, Hanoi	Vietnam	451-500	801-1000
20	King Mongkut's University of Technology Thonburi	Thailand	501-550	601-800
21	Kasetsart University	Thailand	501-550	1001-1250
22	University of the Philippines	Philippines	501-550	1001-1250

# Regional Distribution & Rankings



## Singapore

- Top 2 positions (QS ranks 11-12) Asean Public Universities in QS and THE Engineering subject rankings
- Demonstrates leadership in engineering education

## Malaysia

- 8 universities in top 22 Asean Public Universities in QS and THE Engineering subject rankings
- 36% representation shows strong sectoral development

## Indonesia

- 5 universities across all ranking tiers
- Diverse institutional approaches

## Thailand

- 5 universities with diverse assessment approaches
- Mix of international and national standards

# Three-Tier Classification System

## **Tier 1: Elite Institutions (QS Rank 1-100)**

- 2 Singaporean universities (NTU, NUS)
- 2 Malaysian universities (UM, UTM)

## **Tier 2: Strong Regional Players (QS Rank 101-400)**

- 5 Malaysian universities (USM, UPM, UTP, UKM, UiTM)
- 2 Thailand universities (Chulalongkorn, Chiang Mai)
- 4 Indonesian universities (ITB, UGM, UI, ITS)

## **Tier 3: Emerging Programs (QS Rank 401-550)**

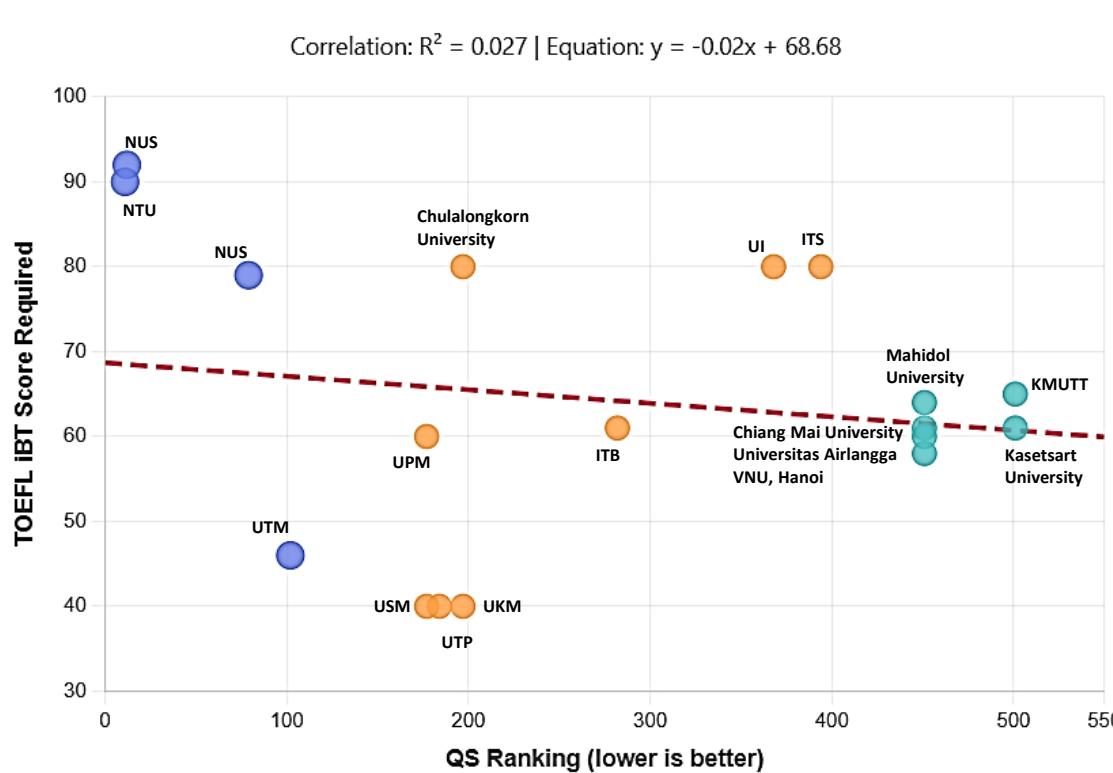
- 3 Thailand universities (Mahidol, King Mongkut's, Kasetsart)
- 1 Indonesian universities (Universitas Airlangga)
- 2 Vietnamese universities (VNU Ho Chi Minh, VNU Hanoi)
- 1 Philippines university (University of the Philippines)

# English Proficiency vs University Rankings

## ➤ Analysis of TOEFL Requirements Across ASEAN Engineering Universities

### QS Ranking vs TOEFL Requirement

Elite (QS 1-100)      Regional (QS 101-400)      Emerging (QS 401-550)

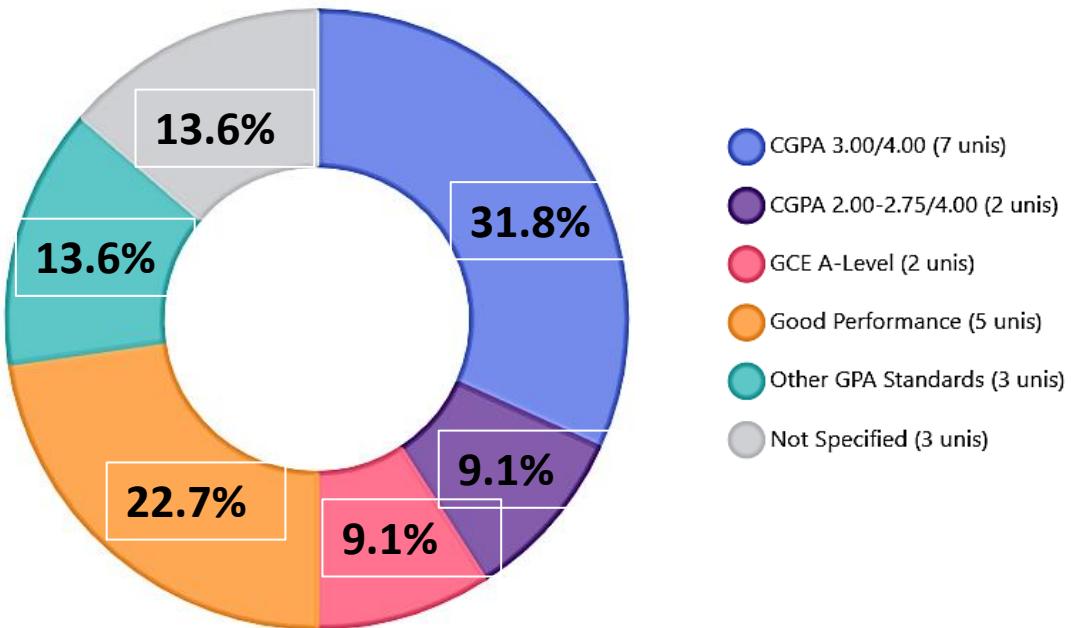


- ❑ Highest TOEFL score: 92 (NUS Singapore)
- ❑ Average TOEFL score: 63 (across 18 universities)
- ❑ Lowest TOEFL score: 40 (Most accessible in several Malaysian universities)
- ❑ **Moderate correlation exists:** Higher-ranked universities generally require higher TOEFL scores ( $R^2 \approx 0.40$ ). However, several Malaysian universities achieve strong rankings (QS 177-197) with accessible English requirements (TOEFL 40), proving that quality education is possible with moderate selectivity when paired with strong institutional support.

# Academic Performance Standards (GPA)

## ➤ GPA Requirements Across ASEAN Engineering Universities

### Distribution of GPA Requirement Types



- CGPA 3.00/4.00 (7 unis)
- CGPA 2.00-2.75/4.00 (2 unis)
- GCE A-Level (2 unis)
- Good Performance (5 unis)
- Other GPA Standards (3 unis)
- Not Specified (3 unis)

- **Highly Selective (3.00-3.50)**
  - Top 12.5-25% of students
  - Most Malaysian universities, Mahidol University (Thailand)
  - Demonstrates commitment to academic excellence
- **Moderate Selectivity (2.50-3.00)**
  - Top 25-50% of students
  - Kasetsart (Thailand), VNU Hanoi (Vietnam), UTM (Malaysia)
  - Balances access with standards
- **Alternative Frameworks (Varies)**
  - Institution-specific
  - Singapore: GCE A-Level; Indonesia: "Good performance"
  - Allows flexibility while maintaining quality

### ✓ Key Finding: Malaysian Consistency

Malaysian universities demonstrate remarkable consistency with 7 out of 8 requiring CGPA 3.00/4.00, suggesting sector-wide quality benchmarks and coordinated national standards. This standardization ensures predictability for students while maintaining quality across institutions. In contrast, other ASEAN nations show greater variability in GPA requirements, reflecting different educational philosophies, accessibility priorities, and local contexts.

# Standardized Testing Requirements

## ➤ Five (5) Distinct Assessment Models Across ASEAN

Model	Countries	Tests Required	Key Philosophy	Student Impact
International	Singapore	<ul style="list-style-type: none"><li>• SAT 1250+</li><li>• ACT 30</li><li>• GCE A-Level</li></ul>	Global competitiveness	High bar, global recognition
Flexible	Malaysia	<ul style="list-style-type: none"><li>• English Language Only</li></ul>	Reduce barriers	Accessible, cost-effective
Institutional	Indonesia	<ul style="list-style-type: none"><li>• ITB Test</li><li>• TIBA</li></ul>	Local context	Institution-specific fit
Hybrid	Thailand	<ul style="list-style-type: none"><li>• SAT</li><li>• GAT</li><li>• PAT3</li></ul>	Multi-dimensional	Comprehensive evaluation
Competency	Vietnam, Philippines	<ul style="list-style-type: none"><li>• VNU Exam</li><li>• SAT Alternative</li></ul>	National standards	Building competitiveness

Note: SAT = Scholastic Assessment Test; ACT = American College Testing; ITB test = Institut Teknologi Bandung Academic Qualification Test and English Language Qualification Test; TIBA = Test Bahasa Inggeris sebagai Bahasa Asing; GAT = General Aptitude Test; PAT = Professional and Academic Aptitude Test; VNU = Vietnam National University competency assessment test

## ➤ Singapore's Strategy

International testing requirements position Singapore universities as globally competitive from admission. SAT 1250+ requirement ensures students can compete with top universities worldwide.

## ➤ Cost Considerations

Malaysia's flexible model reduces financial barriers—no SAT (\$60+), no additional tests. Thailand's hybrid model requires multiple test fees, potentially limiting accessibility.

## ➤ Cultural Integration

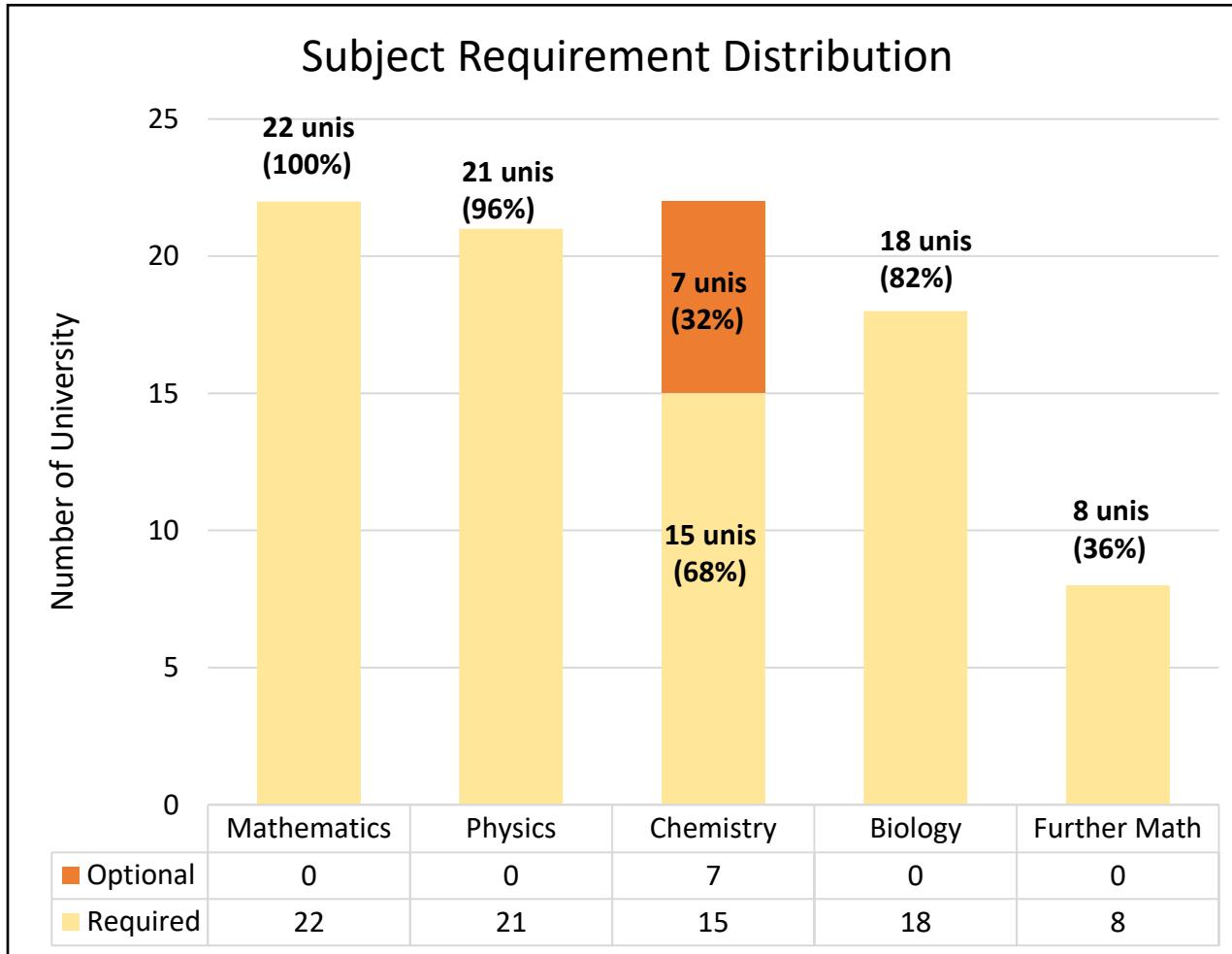
Indonesia's language requirement (TIBA) demonstrates commitment to student success through cultural and linguistic integration, not just academic qualification.

### 💡 Notable Insight: NTU's Selective Standard

NTU's SAT requirement of 1250 represents approximately the 83rd percentile globally, demonstrating highly selective standards that ensure only top-tier students are admitted. For context, this score places students well above the average admitted student at most U.S. universities and signals Singapore's commitment to academic excellence from the admission stage.

# Subject Prerequisites Analysis

## ➤ Universal Requirements & Flexible Options Across ASEAN Engineering Universities



- ✓ **Key Finding: Foundation + Flexibility**  
Mathematics and Physics form the **non-negotiable foundation** of engineering education across ASEAN, with 100% and 96% requirement rates respectively. However, universities demonstrate considerable **flexibility in third-subject requirements**, allowing students from diverse educational backgrounds—including general science tracks rather than specialized engineering streams—to access quality engineering programs.
- ❑ **Chemistry : Most common third subject choice.** Required by 68% of universities, accepted as alternative by 32%. Essential for materials, chemical, and environmental engineering.
- ❑ **Biology : Most popular alternative option.** Never mandatory but accepted by 82% of universities. Opens doors for biomedical, environmental, and agricultural engineering.
- ❑ **Further Math : Advanced mathematics option.** Accepted by 36% of universities as alternatives to science subjects. Valued for theoretical and computational engineering fields

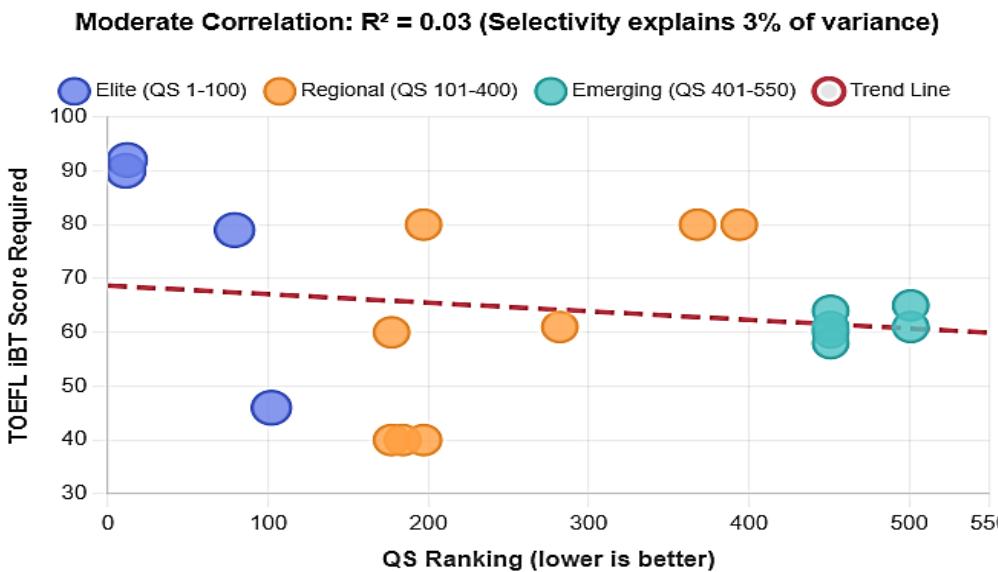
# Selectivity vs Excellence

- Does Higher Selectivity Mean Better Rankings?

## The Answer:

**Yes... BUT**

Selectivity correlates with excellence ( $R^2 \approx 0.40$ ) but explains only **40% of ranking variance**. The other 60%? Faculty quality, infrastructure, research funding, pedagogy, and student support systems.



## Pattern Observed

**Top 15 universities:** Higher TOEFL (80+), multiple tests, strict requirements

**Singapore leads:** Maximum selectivity + maximum investment

**Clear trend:** Better rankings generally have stricter standards

## Notable Exception

**Malaysian Universities:** QS 177-197 with TOEFL 40

**UTM at QS 102:** TOEFL 46, CGPA 2.00 (most accessible in top 100)

**Key lesson:** Quality achievable with moderate selectivity + strong support

# Quality Factors Beyond Admission Selectivity

- Between admission selectivity and university rankings, selectivity is **NOT the sole determinant of quality**. Faculty research productivity, infrastructure investment, pedagogical innovation, and post-admission student support play equally critical roles in determining educational outcomes and institutional excellence.

## 6 Factors Beyond Selectivity



### Faculty Research

Publication impact & expertise



### Infrastructure

Labs, equipment & facilities



### Pedagogy

Teaching quality & methods



### Industry Links

Partnerships & internships



### Student Support

Advising & career services



### Funding

Investment & resources

## Real-World Examples

### High Selectivity Model

NTU Singapore QS 11 | TOEFL 90

NUS Singapore QS 12 | TOEFL 92

UM Malaysia QS 79 | TOEFL 79

**Success Formula:** Elite selection + massive funding + top faculty

### Moderate Selectivity Model

UTM Malaysia QS 102 | TOEFL 46

USM Malaysia QS 177 | TOEFL 40

UKM Malaysia QS 197 | TOEFL 40

**Success Formula:** Accessible entry + strong GPA (3.00) + quality support

# Conclusion

- ❖ **Selectivity explains only 40% of ranking variance.**

While higher-ranked universities generally have stricter requirements, other factors—faculty research, infrastructure, pedagogy, and student support—matter just as much.

- ❖ **No single "best" model exists.**

Singapore's elite selection works. Malaysia's balanced approach works. Indonesia's institutional autonomy works. Success depends on aligning admission standards with institutional resources and mission.

- ❖ **Singapore proves: Selectivity + Resources = World-class.**

NTU and NUS combine high selectivity with massive funding, top faculty, and cutting-edge facilities. This synergy creates excellence that selectivity alone cannot achieve.

- ❖ **Quality is achievable with moderate selectivity.**

8 Malaysian universities in top 22, many with TOEFL 40-60. Strong GPA standards, quality faculty, and comprehensive support systems produce excellent outcomes while maintaining accessibility.

# Strategic Recommendation



## For Universities

- **Top 100:** Maintain rigor with holistic evaluation
- **Mid-tier:** Strategic selectivity + enhanced support
- **Emerging:** Build distinctive strengths in niche fields
- Invest in faculty development and research capacity
- Strengthen industry partnerships



## For Policymakers

- **Strengthen secondary STEM education** - Build strong foundations
- **Invest in English programs** - Essential for global competitiveness
- **Sustain research funding** - Critical for rankings
- Establish regional quality frameworks
- Balance access with excellence goals



## For Students

- **Match capabilities to institutions** - Target 50th-75th percentile
- **Consider total package** - Beyond just rankings
- **Invest in English early** - Start prep 12-18 months ahead
- Explore alternative pathways and foundation programs
- Look at specializations and industry connections

*Thank You!*