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Transforming Education: Comparative Analysis of Socio-Economic Policies from Malaysia to Thailand

Chitralada Chaiya[1]

Abstract

This study critically examines how strategic socio-economic policies act as catalysts for educational transformation, focusing on Malaysia and Thailand within the ASEAN region. By analyzing GDP allocations to education and their influence on QS World University Rankings from 2012 to 2022, the research reveals a positive correlation between increased educational investment and improvements in university rankings. However, it also identifies significant inefficiencies in fund utilization, highlighting that merely increasing funding does not guarantee improved educational outcomes. The findings expose gaps in policy implementation and emphasize the need for more strategic, outcome-oriented deployment of educational resources. Integrating management theories with empirical evidence, this study contributes to the discourse on effective resource management in education. It offers valuable insights for policymakers and educational administrators on aligning socio-economic strategies with educational practices. The research advocates for a comprehensive understanding of the relationship between financial investments and educational quality, emphasizing the necessity for reforms that enhance the efficiency and impact of educational funding. These reforms are crucial for improving the international standing of higher education institutions and fostering broader socio-economic development.

Keywords: *Higher Education Quality, Government Expenditure, Policy Implementation, Public Administration, Comparative Education Analysis.*

Introduction

The transformative power of higher education significantly impacts societal prosperity and economic stability. Globally, economic returns for college graduates surpass those at the primary education level, with an average increase of 17 percent in earnings per year of schooling compared to 10 percent for primary school (World Bank 2023). A highly skilled workforce, fostered through rigorous post-secondary education, is essential for sustained innovation and economic growth. As global demographics shift and the youth population expands, the demand for higher education increases, alongside heightened expectations of its economic and social contributions.

Financial strategies implemented by nations play a pivotal role in elevating academic institutions to international prominence. The Quacquarelli Symonds (QS) University World Rankings serve as a crucial benchmark, evaluating the impact of educational investments (Ebzeeva et al. 2022). In Southeast Asia, Malaysia and Thailand have committed substantial GDP allocations to enhance higher education quality and competitiveness (Sombatsompop, Markpin, and Premkamolnetr 2010; Rattanakhamfu 2023). This study explores how strategic economic policies and educational investments serve as catalysts for educational sustainability and influence university rankings.

Malaysia and Thailand demonstrate ambitious dedication of GDP towards cultivating human capital [6]. The comparative analysis between these countries reveals that increased GDP expenditure for education correlates with improved university performance in QS World Rankings. Malaysia's strategic investment in education, reflective of its British-influenced system, contrasts with Thailand's evolving approach, influenced by its unique historical context and sovereignty. Malaysia's alignment with increased academic ranking and Thailand's less consistent results highlight the complexity of the investment-rankings relationship, inviting deeper investigation (Lu 2013; Chaiya and Ahmad 2021).

This study provides crucial insights for policymakers and educational administrators aiming to elevate the international prominence of universities and foster broader socio-economic development. Understanding

[1] College of Politics and Governance, Mahasarakham University,44150 Kantarawichai, Thailand, Email: Chitralada.c@msu.ac.th.

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fiscal strategies that improve educational outcomes allows for more efficient resource allocation and addresses systemic issues like educational inequality and funding disparities. The study offers a benchmark for universities seeking to enhance their international standing and enriches academic discourse by elucidating how fiscal policies impact education (Sirat, Azman, and Wan 2016; Gadd 2021; Panigrahi et al. 2019; Lau et al. 2022).

Malaysia Higher Education System

Over the last decade, Malaysia's higher education sector has grown significantly, averaging 280,000 graduates annually from 2010 to 2019 with employability rates over 80%. The COVID-19 pandemic, however, posed challenges, particularly for Private Higher Education Institutions (PHEIs) relying on international students. It also highlighted disparities like unequal access to technology and financial sustainability issues. In response, the Ministry of Higher Education (MOHE) launched initiatives such as the Higher Education Digitalisation Plan (HEDP) and the National TVET Council (MTVET), enhancing PHEIs' resilience [12]. Malaysia's diverse higher education landscape underscores its commitment to international competitiveness and sustainable educational practices (Becker 1964)

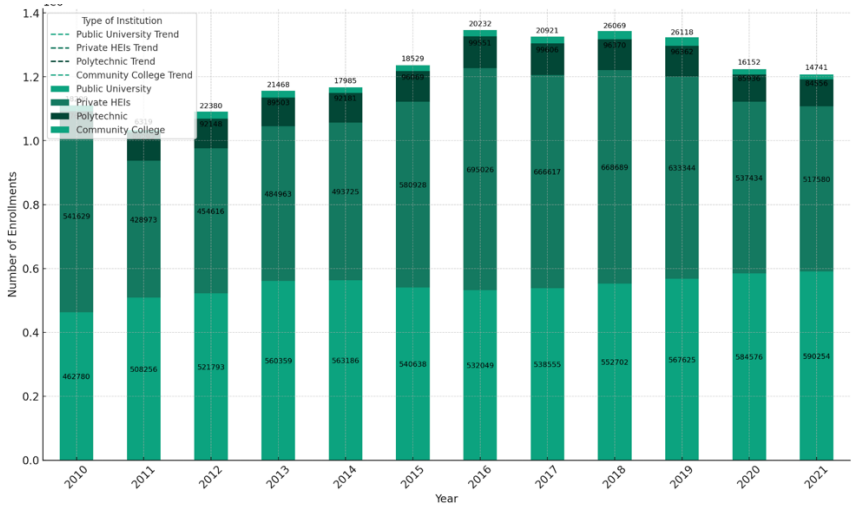

Figure 1: Trends in Student Enrollment at Malaysian Higher Education Institutions (HEIs)

Source: World Bank (2023)

Malaysia has historically boasted robust enrollment numbers in its Higher Education Institutions (HEIs), with over 400,000 new students annually. However, recent trends indicate a significant shift. Research by the Malaysian Institute of Economic Research (MIER) in 2021 revealed a marked decline in student intakes from 2016 to 2020, particularly in Private Higher Education Institutions (PHEIs), with enrollments dropping from 251,487 in 2016 to 165,158 in 2020, a 40% reduction. This decline underscores the need for socio-economic policies that address immediate enrollment challenges and foster long-term educational sustainability. The COVID-19 pandemic further impacted polytechnics and community colleges, which rely on face-to-face interactions and practical training. In response, the Department of Polytechnic and Community College Education (DPCCE) strategically reduced student intakes for the 2020 academic year to 75% for polytechnics and 50% for community colleges, adhering to Government SOPs (Becker 1964) Malaysia's higher education landscape includes 20 public universities, 36 polytechnics, 105 community colleges, and 434 PHEIs, highlighting its commitment to educational diversity and international competitiveness, reinforcing its role in fostering sustainable educational practices (Becker 1964)

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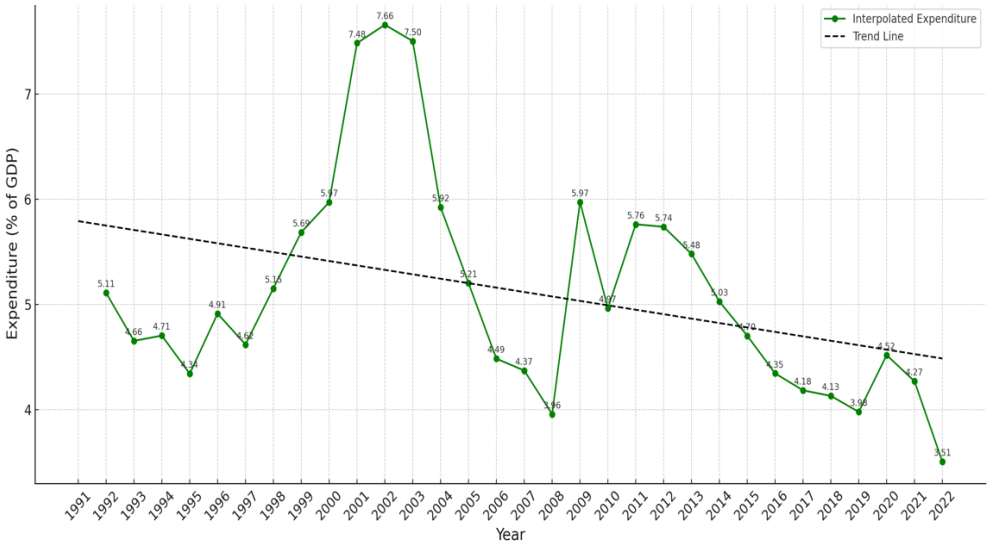

Figure 2. Malaysia's government expenditure on education as a percentage of GDP spanning from 1991 to 2022.

Source: World Bank (2023)

Figure 2 presents a longitudinal analysis of Malaysia's government expenditure on education as a percentage of GDP from 1992 to 2022. The data shows fluctuations, with stable expenditure around 5% in the early 1990s and a peak above 7.5% in 2010-2011 due to post-crisis educational reforms. Post-2011, spending declined to around 4% by 2022, suggesting economic constraints and a shift in priorities. A linear regression shows a downward trend, raising concerns about educational sustainability.

Thailand Higher Education System

Thailand's higher education institutions and regulatory bodies have established robust quality assurance systems to enhance accountability and foster continuous improvement. The National Education Act of 1999, revised in 2002, emphasizes stringent quality and standards, introducing frameworks for internal and external quality assurance. The Second 15-Year Long Range Plan on Higher Education (2008-2022) highlights the importance of assessment mechanisms in upholding educational quality (Romer 1986).

The Commission on Higher Education formulates standards focusing on graduate quality and administration. The 2010 Ministerial Regulation mandates a comprehensive quality assurance system, promoting transparency and accountability. These frameworks equip Thai institutions to enhance academic rigor and align with educational standards, contributing to socio-economic stability by producing well-educated individuals (Romer 1986).

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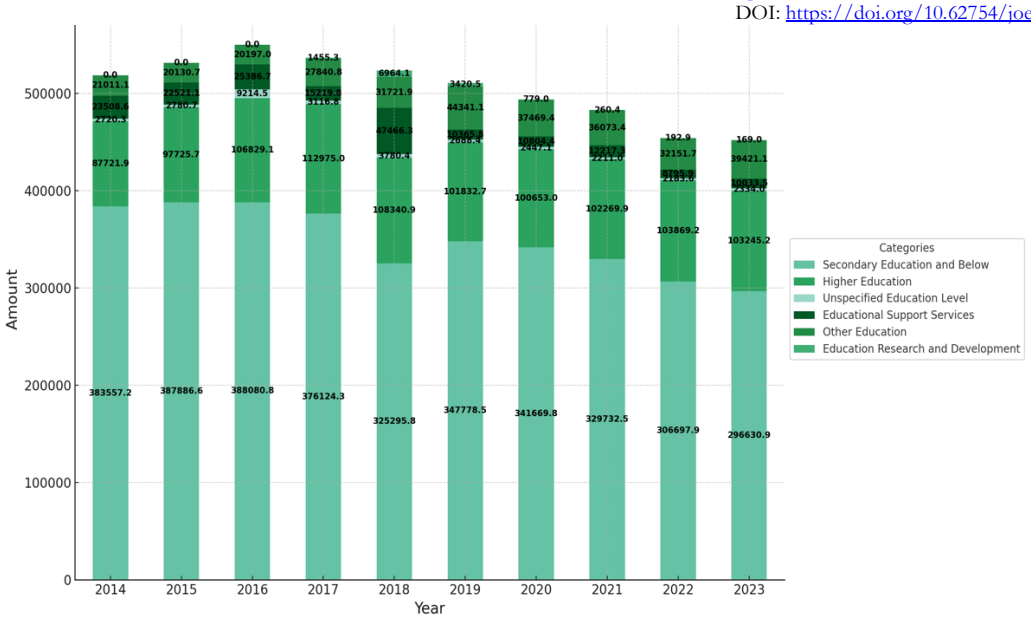

Figure 3: Trends in Thailand's Education Expenditure by Category (2014 - 2023)

Source: World Bank (2023)

During this period, Thailand's funding for secondary and lower education levels decreased by 3.28%, possibly reflecting demographic shifts or resource reallocation. In contrast, higher education and R&D spending remained stable, with only a minor 0.60% decrease in higher education, highlighting Thailand's commitment to enhancing its universities and research capabilities. Substantial increases in expenditures for unspecified educational levels (6.89%) and educational support (14.07%) suggest a focus on developing infrastructure and support systems. 'Other education' spending rose by 22.61%, reflecting a strategic shift towards educational flexibility. However, a 12.39% decline in R&D funding poses a risk to Thailand's academic research and global innovation competitiveness (Romer 1986).

Meterial And Methods

This comparative study employs correlation analysis to investigate the relationship between government educational investment and university performance in Malaysia and Thailand from 2012 to 2022, using secondary data from the World Bank, UNESCO Institute for Statistics, and Global Education Financial Database for reliability and comparability. The study analyzes various data sets, including enrollment figures, GDP per capita growth, Gini Index, Human Development Index (HDI), employment rates, government expenditure on education, R&D expenditure, and QS World University Rankings, to examine the impact of economic investment on educational outcomes. Pearson correlation analysis is used to determine the strength and direction of relationships between these variables and university rankings. The research adheres to high ethical standards, using publicly available data with proper attribution, and maintains data privacy and integrity throughout the process.

The study is guided by a conceptual framework that posits multiple hypotheses regarding the impact of socio-economic indicators on university rankings in Thailand. These hypotheses are visually represented in Figure 4 and are stated as follows:

H1: Increased Thailand GDP Growth is associated with improved University Rankings.

H2: Increased Income Share of the Lower 20% of the population is associated with improved University Rankings.

H3: Increased Employment-to-Population Ratio is associated with improved University Rankings.

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H4: Increased GDP per Capita is associated with improved University Rankings.

H5: Increased Employment Rate (ages 15-24) is associated with improved University Rankings.

H6: Increased Population Growth is associated with improved University Rankings.

H7: Increased GINI Index (which indicates higher income inequality) is associated with decreased University Rankings.

H8: Increased Government Expenditure on Education is associated with improved University Rankings.

H9: Increased R&D Expenditure is associated with improved University Rankings.

The analysis utilizes a linear regression model to test these hypotheses, examining the relationship between each socio-economic indicator and the university rankings in Thailand. By employing this model, the study aims to quantify the impact of these variables on the educational outcomes and assess the overall effectiveness of Thailand's socio-economic policies in enhancing the quality of its higher education institutions.

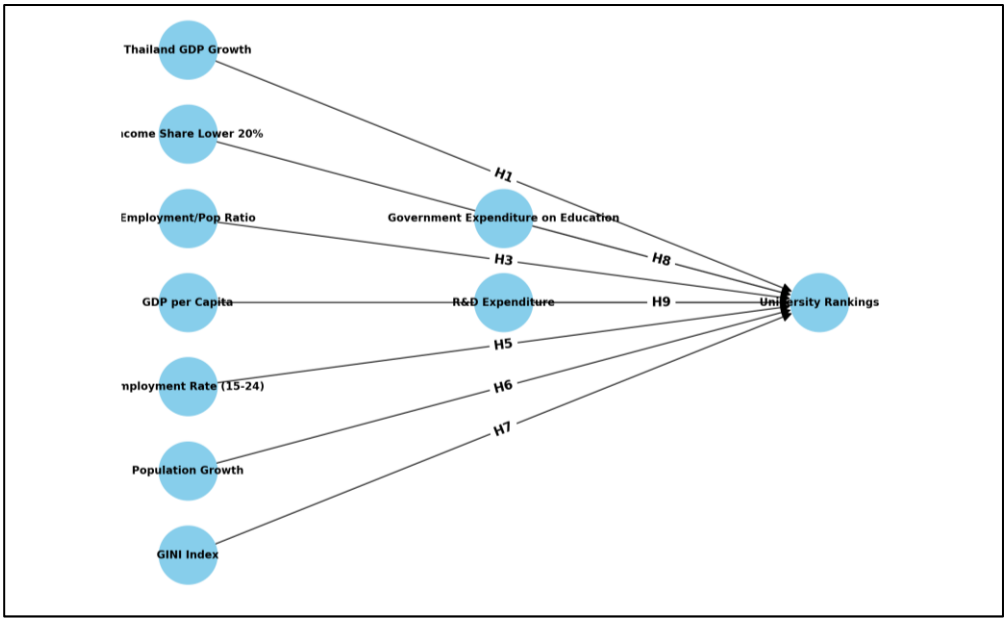

Fig. 4. Conceptual Framework

Data Collection

Data for this study were collected from a variety of reputable sources, including national statistical agencies, international organizations, and academic databases. The socio-economic indicators used in the analysis—such as Thailand GDP Growth, Income Share of the Lower 20%, Employment/Population Ratio, GDP per Capita, Employment Rate (ages 15-24), Population Growth, GINI Index, Government Expenditure on Education, and R&D Expenditure—were gathered from official records and reports spanning the relevant period. University rankings were obtained from the QS World University Rankings database, ensuring that the data used in this study were accurate, consistent, and up-to-date.

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Analytical Approach

To ensure analytical rigor, IBM-SPSS software (version 29) was employed for data analysis, renowned for its robustness and accuracy in statistical computations. The analysis framework revolved around the general linear model equation, a well-established method for elucidating the dynamics among multiple variables. This approach allowed for the examination of both the individual and collective impact of socio-economic indicators on university rankings, facilitating a deeper understanding of the complex relationships at play.

Data Analysis, Validation, and Diagnostic Tests

The data analysis process included multiple steps to ensure the validity and reliability of the results. After running the general linear model, various diagnostic tests were conducted to validate the model assumptions:

Normality Test: Ensured that the residuals of the regression model were normally distributed.

Multicollinearity Test: Checked for the presence of multicollinearity among the independent variables using the Variance Inflation Factor (VIF). Variables with a VIF above 10 were scrutinized, and necessary adjustments were made to the model.

Homoscedasticity Test: Assessed the homogeneity of variance of the residuals, ensuring that the variance of errors was constant across all levels of the independent variables.

Autocorrelation Test: Employed the Durbin-Watson statistic to check for the presence of autocorrelation in the residuals, which could indicate potential issues with the model's assumptions.

Critique

While the general linear model is a powerful tool for examining the relationships between multiple variables, it is not without limitations. The model assumes a linear relationship between the independent variables and the dependent variable, which may not fully capture the complexities of the interactions between socio-economic indicators and university rankings. Additionally, the model is sensitive to outliers, which can disproportionately influence the results. Despite these limitations, the model provides a strong foundation for understanding the key factors influencing university rankings and offers valuable insights for policymakers.

Commitment to Open Science

In alignment with the principles of open science, this study is committed to transparency, reproducibility, and the sharing of knowledge. All data sources, statistical methods, and analysis scripts used in this research are available upon request. The study's findings, along with the datasets and SPSS code, will be made accessible in a public repository following publication, allowing other researchers to replicate the analysis, explore the data, and build upon the work. This commitment to open science ensures that the research contributes to the broader scientific community and supports ongoing efforts to advance understanding in this critical area.

Results

Economic Growth Trends in Malaysia and Thailand

To understand Malaysia and Thailand's higher education performance, it's essential to examine their GDP per capita growth rates from 1961 to 2022, highlighting how economic changes affect education funding and university rankings.

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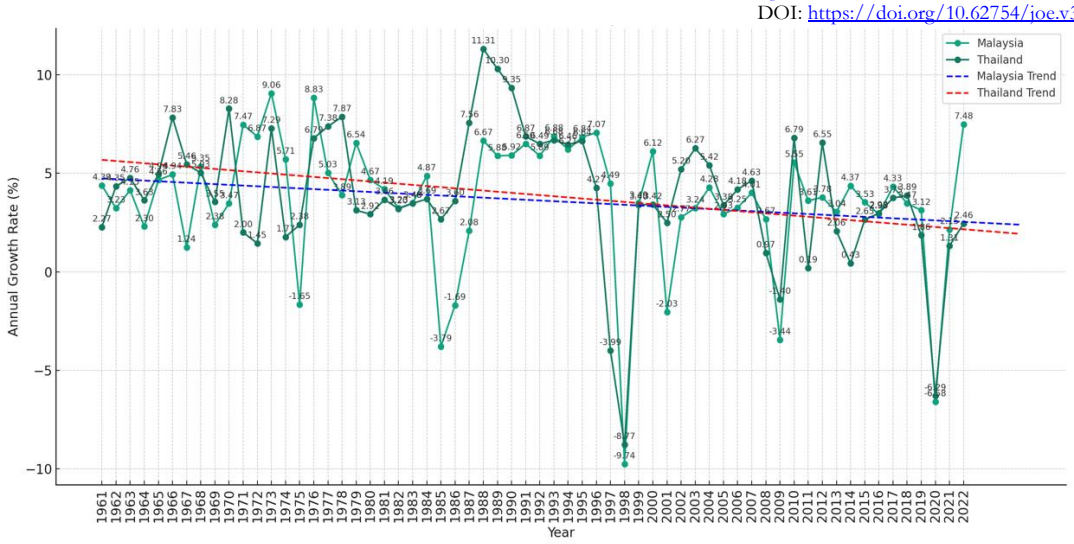

Figure 4: Economic Growth Trends in Malaysia and Thailand

Source: World Bank (2023)

Malaysia's economic journey is marked by rapid expansions and recoveries, such as peak growth in 1973 and a swift rebound post-1998 Asian financial crisis. Despite global shocks like the 2008 financial crisis and COVID-19, Malaysia's resilient economy has sustained higher education investments, boosting universities like Universiti Malaya in global rankings. Thailand also saw significant growth in the late 1980s and early 1990s but faced setbacks during the Asian financial crisis and recent downturns, affecting its educational funding stability. These economic trends show that robust economic management is crucial for consistent educational investment, enhancing the quality and competitiveness of higher education institutions

Government Expenditure on Education in Malaysia and Thailand

This section compares Malaysia's and Thailand's government expenditure on education as a percentage of GDP from 1991 to 2022.

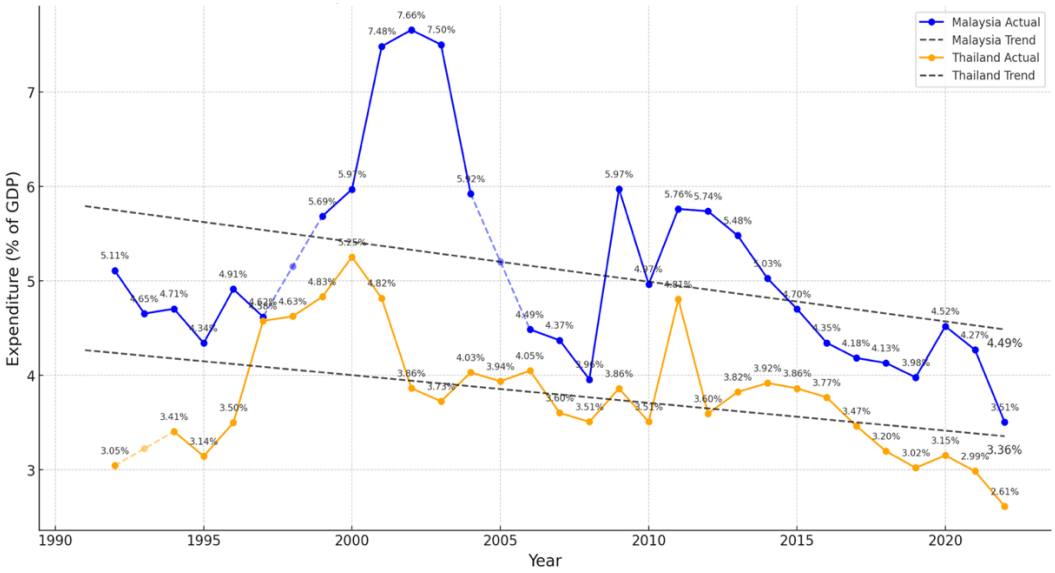

Figure 5: Trends in Government Expenditure on Education as a Percentage of GDP for Malaysia and Thailand (1991-2022)

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Source: World Bank (2023)

The graph displays data points, with Malaysia represented by blue circles and Thailand by orange crosses, showing the annual percentage of GDP devoted to education from 1991 to 2022. Malaysia's highest investment was 7.66% in 2002, reflecting significant educational investment, while Thailand peaked at 5.25% in 2000. Linear regression trend lines illustrate a gradual decline in education spending relative to GDP, with Malaysia ending at 3.51% and Thailand at 2.61% in 2022. This trend indicates a shift in fiscal focus.

Government Expenditure per Tertiary Education Student as a Percentage of GDP per Capita in Malaysia and Thailand

This section examines government expenditure on tertiary education per student as a percentage of GDP per capita in Malaysia and Thailand from 2000 to 2018.

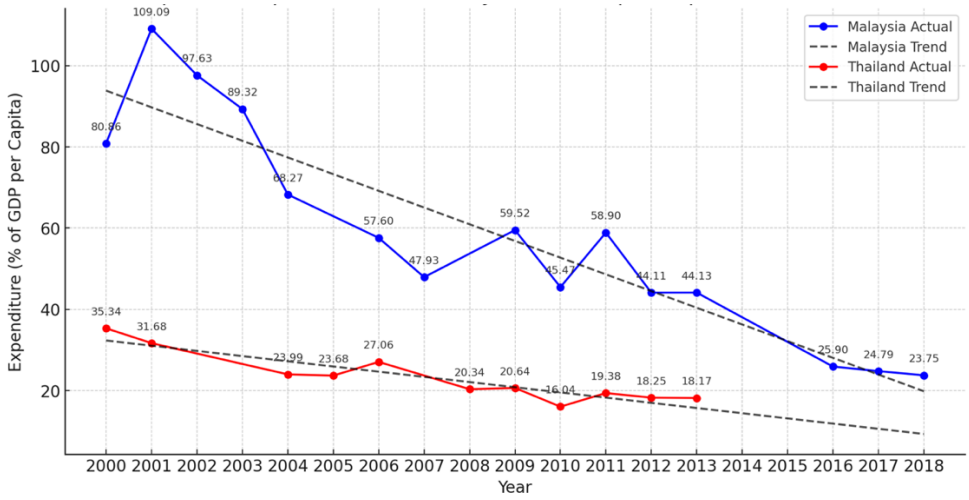

Figure 6: Government Expenditure per Tertiary Education Student as a Percentage of GDP per Capita in Malaysia and Thailand (2000-2018)

Source: World Bank (2023)

The graph shows a decline in the ratio of government expenditure per tertiary education student to GDP per capita from 2000 to 2018 in Malaysia and Thailand. This trend suggests either GDP per capita is increasing faster than educational spending, or there is a deliberate reduction in higher education funding. In Malaysia, this may indicate a policy shift away from higher education, potentially impacting university quality and global rankings. In Thailand, the consistent decrease might reflect budget constraints or prioritization of other sectors, affecting education quality and accessibility.

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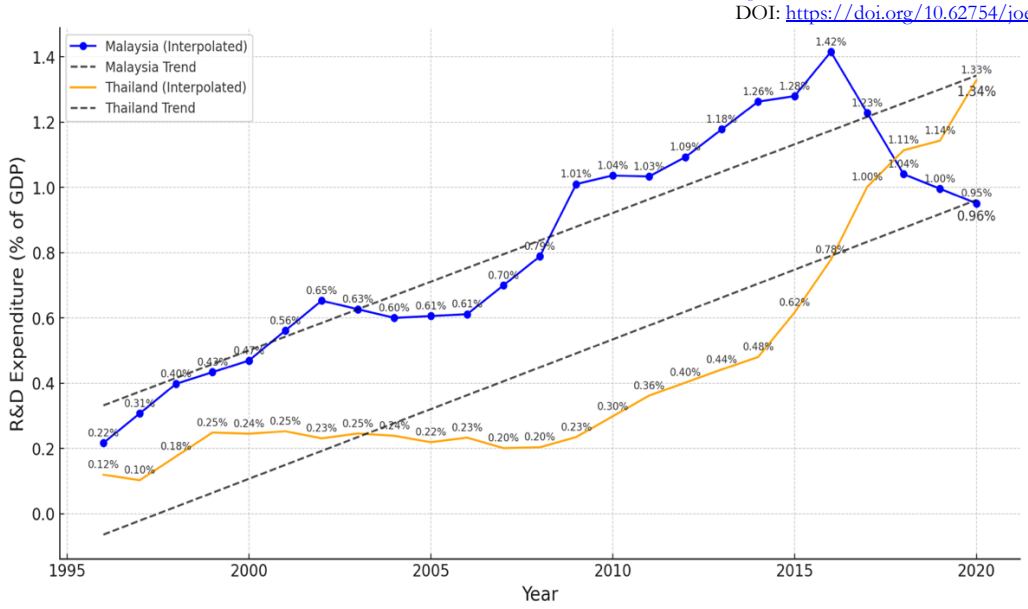

Figure 7: Research and Development (R&D) Expenditure Trends in Malaysia and Thailand (1996-2020)

Source: World Bank (2023)

The graph analyzes R&D expenditure as a percentage of GDP in Malaysia and Thailand from 1996 to 2020, highlighting how R&D investments correlate with technological advancements and higher education quality, influencing global university rankings like QS. Malaysia consistently invested more in R&D, peaking at 1.42% in 2016, reflecting its focus on innovation and competitiveness in high-tech sectors. Thailand's R&D spending steadily increased, reaching 1.33% in 2020, indicating a strategic enhancement of research capabilities. These differing strategies highlight Malaysia's aggressive approach to improving higher education outcomes and Thailand's foundational strengthening of research, both crucial for economic growth and educational excellence

Higher Education Ranking in Malaysia and Thailand

The QS World University and QS Asia Rankings provide a snapshot of the evolving educational standards and international competitiveness of universities in Malaysia and Thailand. This section offers a comparative analysis of top public and private universities in both countries on global platforms.

QS World University Rankings and QS Asia Rankings Analysis for Malaysia's Top Universities

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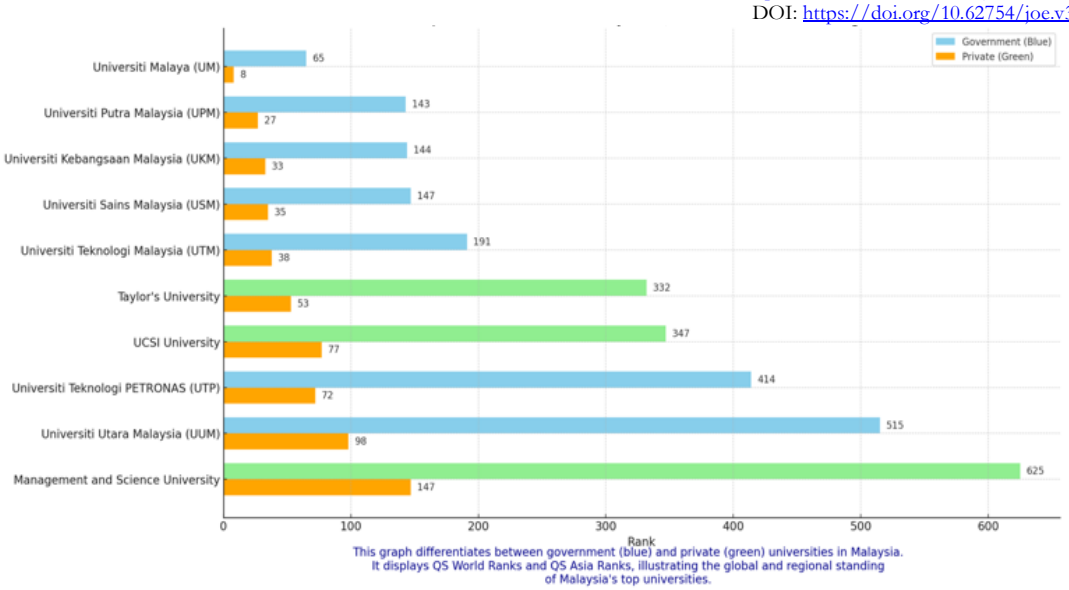

Figure 8: Comparative Analysis of Top Universities in Malaysia and Thailand

Source: QS University Ranking (2022)

Figure 8 highlights the structure and performance of leading universities in Malaysia and Thailand. In Malaysia, seven of the top ten universities are government-funded. Universiti Malaya (UM) is ranked among the top 100 globally and top 10 in Asia, demonstrating its academic excellence. The QS rankings reveal a vibrant higher education sector in Malaysia, with a blend of public and private institutions. UM leads with impressive global and Asian rankings (65th and 8th, respectively). Universiti Putra Malaysia (UPM) and Universiti Kebangsaan Malaysia (UKM) follow, ranked globally at 143 and 144, and in Asia at 27 and 33, respectively. Universiti Sains Malaysia (USM) and Universiti Teknologi Malaysia (UTM) also perform well, ranked 147 and 191 globally.

QS World University Rankings and QS Asia Rankings Analysis for Thailand's Top Universities

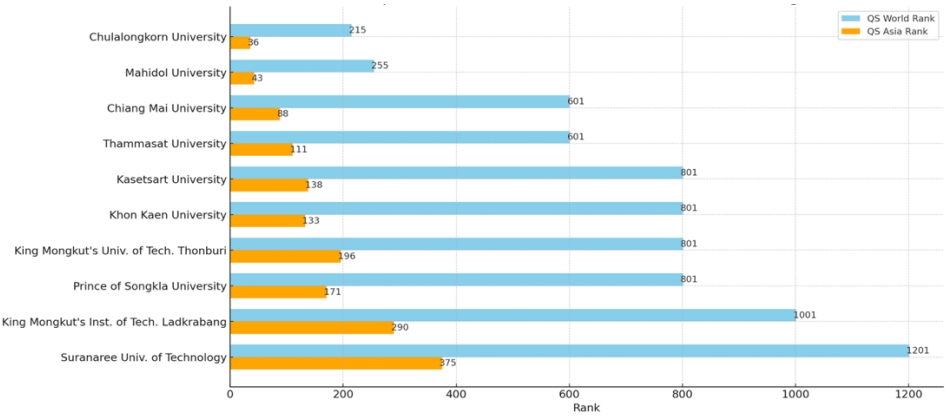

Figure 9: QS World University Rankings and QS Asia Rankings Analysis for Thailand's Top Universities

Source: QS University Ranking. (2022)

The graph shows Thailand's top universities in the QS World University and QS Asia Rankings, highlighting the role of public funding in their international profiles. Chulalongkorn University ranks 215th globally and 36th in Asia, leading in academic excellence. Mahidol University follows, ranking 255th globally and 43rd in Asia. Mid-tier institutions like Chiang Mai University and Thammasat University are in the 601-650 global range, while Kasetsart University, Khon Kaen University, and King Mongkut's University of Technology

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Thonburi fall within the 801-1000 bracket. Lower-tier universities, including Prince of Songkla University and King Mongkut's Institute of Technology Ladkrabang, face challenges in improving their global standings.

QS World University Rankings and QS Asia Rankings Analysis: Comparative study of Malaysia and Thailand

The QS World University Rankings offer an invaluable framework for assessing the higher education sectors of Malaysia and Thailand, shedding light on the influence of government policies, funding, and institutional strategies on their international and regional academic competitiveness.

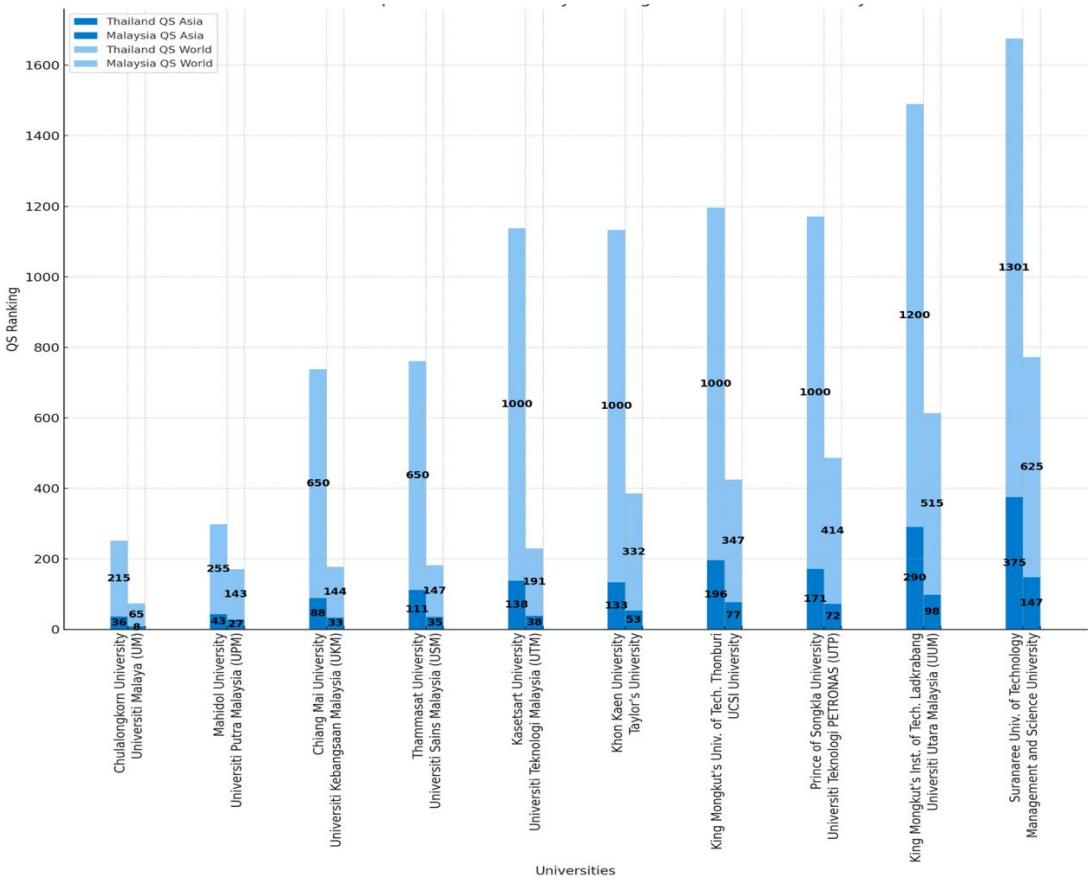

Figure 10: Comparative Analysis of QS World University Rankings for Malaysia and Thailand

Source: QS University Ranking. (2022)

Malaysia's higher education landscape features a vibrant mix of public and private institutions excelling on global and Asian academic stages. Universiti Malaya (UM) leads with impressive rankings—65th globally and 8th in Asia—demonstrating strong academic prowess and research capabilities. Other notable public universities like Universiti Putra Malaysia (UPM), Universiti Kebangsaan Malaysia (UKM), Universiti Sains Malaysia (USM), and Universiti Teknologi Malaysia (UTM) also showcase commendable global standings, particularly in research and technology. Private institutions like Taylor's University and UCSI University, ranked 332nd and 347th globally, emphasize the impact of private sector participation.

Thailand's higher education system is predominantly government-funded. Chulalongkorn University leads, ranked 215th globally and 36th in Asia, illustrating substantial government support. Other universities like Mahidol University and Chiang Mai University face challenges in achieving comparable international acclaim. Lower-ranked institutions like Kasetsart University and King Mongkut's University of Technology Thonburi highlight Thailand's efforts to improve educational quality and expand international influence.

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The QS rankings reveal Malaysia's integration of public and private institutions fosters a diverse educational environment, contributing to high rankings. This approach offers insights for Thailand to enhance its competitive educational landscape. Both countries' commitment to advancing their educational frameworks is crucial for improving global academic reputation and competitiveness.

The Country's Performance in Malaysia and Thailand

Scientific and Technical Journal Publications in Malaysia and Thailand

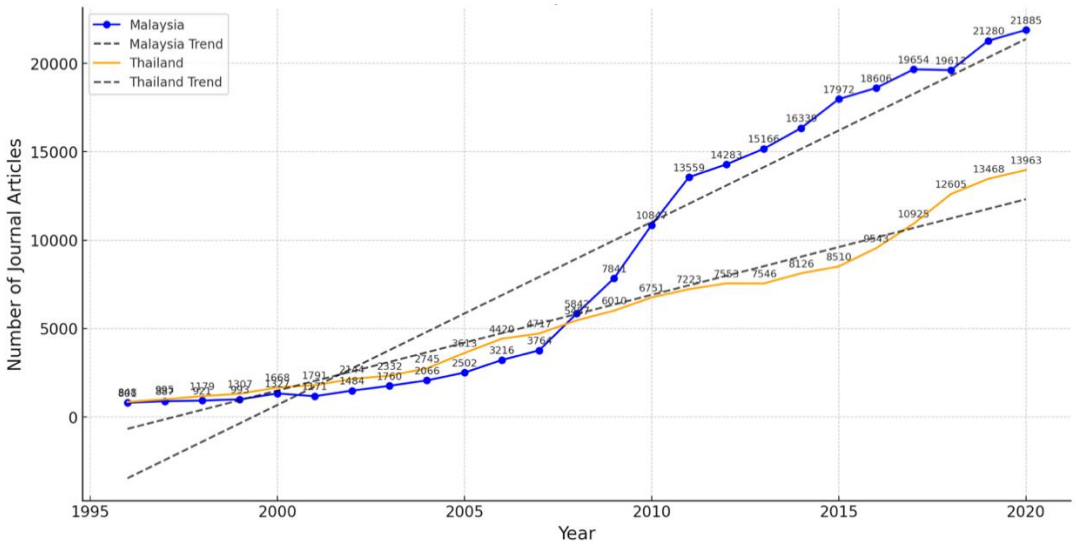

Figure11: Trends in Scientific and Technical Journal Publications in Malaysia and Thailand (1996-2020)

Source: World Bank (2023)

This graph shows trends in scientific and technical journal publications in Malaysia and Thailand from 1996 to 2020. Malaysia's publications increased significantly, from 801 in 1996 to 21,885 in 2020, reflecting strategic investments in research funding and efforts to enhance international academic visibility. Thailand started with 848 publications in 1996, growing to 13,963 by 2020, indicating steady growth supported by governmental efforts to improve education and research. Malaysia's sharper increase suggests a more aggressive expansion of research activities, while Thailand's consistent growth aligns with long-term, sustainable development strategies in research and education

Gini Index Trends in Malaysia and Thailand

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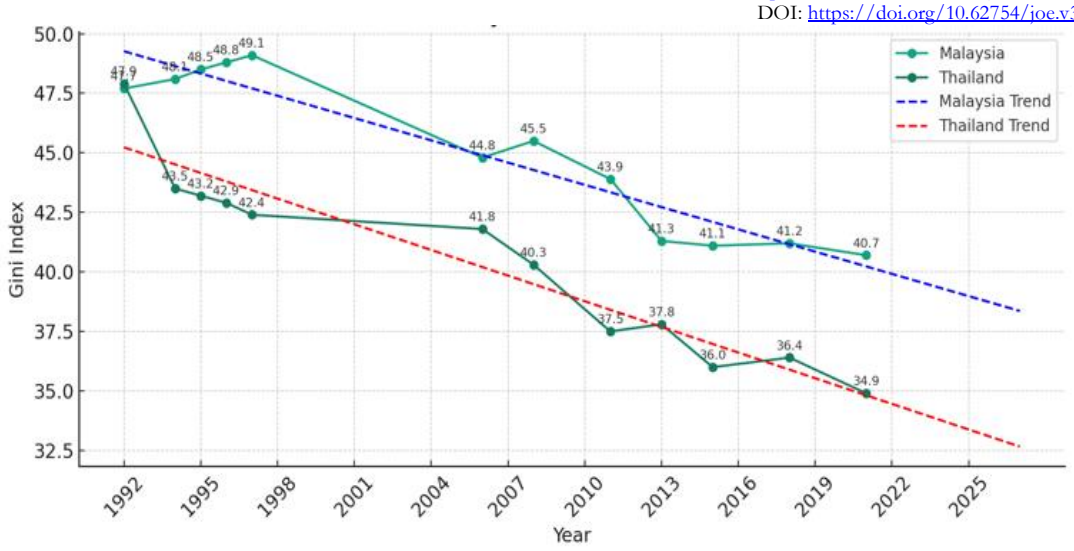

Figure12: Gini Index Trends in Malaysia and Thailand

Source: World Bank (2023)

The Gini index measures economic disparity, with 0 indicating perfect equality and 100 absolute inequality. From 1984 to 2021, Malaysia's Gini index fell from 48.6 to 40.7, showing successful efforts to achieve more equitable income distribution through effective policies. Similarly, Thailand's Gini index dropped from 45.2 to 34.9 between 1981 and 2021, reflecting significant progress in reducing income inequality. These trends highlight the positive impact of economic equity on higher education by enabling broader access and improving university performance in global rankings. The correlation between economic policies and educational outcomes underscores the importance of integrating socio-economic considerations into higher education planning

Exploring Socio-economic Indicators and Educational Outcomes: The Impact of the Human Development Index on Higher Education in Malaysia and Thailand

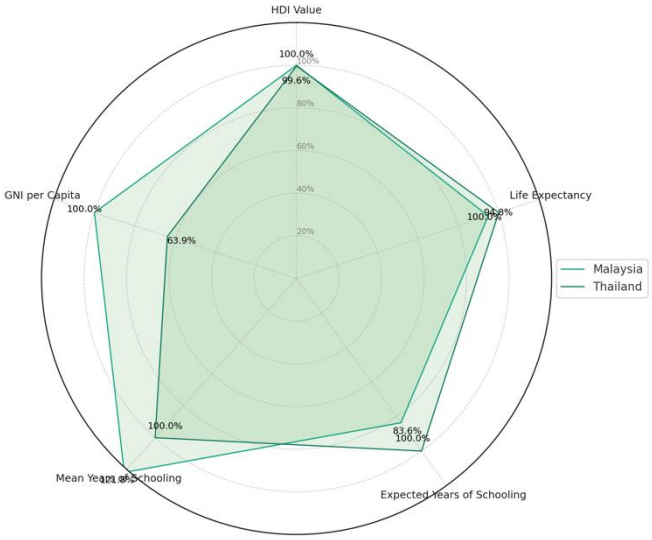

Figure 13. Comparative Analysis of HDI Components for Malaysia and Thailand

Source: World Bank (2023)

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The radar chart in Fig. 13 compares the Human Development Index (HDI) components for Malaysia and Thailand, standardizing each metric. Malaysia, with an HDI of 0.803, is at 100%, slightly higher than Thailand's 0.800 (99.6%). Thailand leads in life expectancy (78.7 years) at 100%, with Malaysia at 94.8%. For expected years of schooling, Thailand is at 100% (15.9 years), while Malaysia is at 83.6% (13.3 years). Malaysia exceeds in mean years of schooling (121.8%) and GNI per capita ($26,658 at 100%) compared to Thailand's $17,030 (63.9%). This analysis highlights how socio-economic factors influence educational systems and global university rankings

Comparative Employment Trends

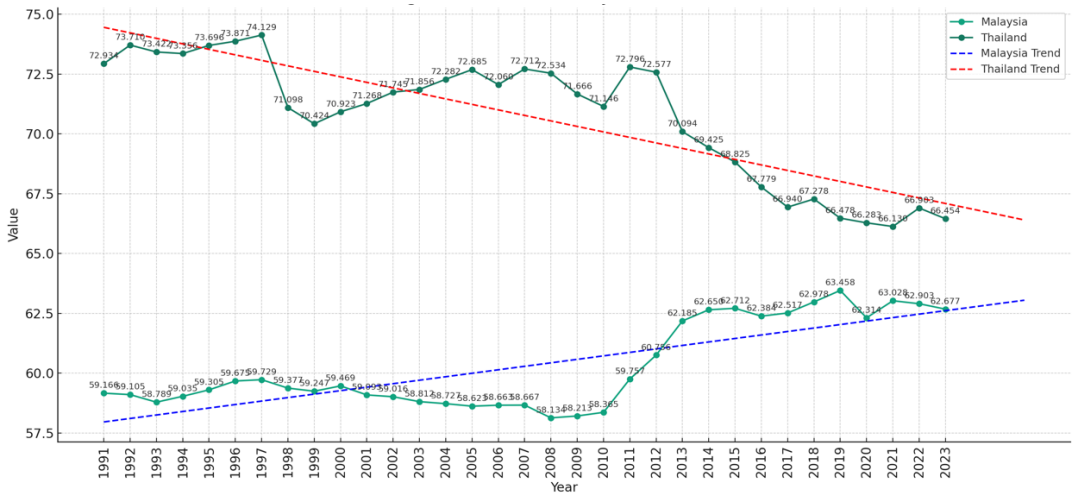

Figure 14. Comparative Trends in Employment to Population Ratios for Malaysia and Thailand (1991-2023)

Source: World Bank (2023)

The employment to population ratio measures how well the working-age population is integrated into the job market. In Malaysia, this ratio increased from 59.166% in 1991 to 63.458% in 2019, suggesting successful economic policies, but declined slightly to 62.677% by 2023. Conversely, Thailand's ratio started at 72.934% in 1991, peaked at 74.129% in 1997, but fell to 66.454% by 2023, indicating potential structural economic shifts. These trends impact higher education, with Malaysia's stable ratio implying effective graduate preparation for the labor market, enhancing university rankings, while Thailand's decline may reflect a disconnect between education and job market needs

Unemployment Trends Analysis

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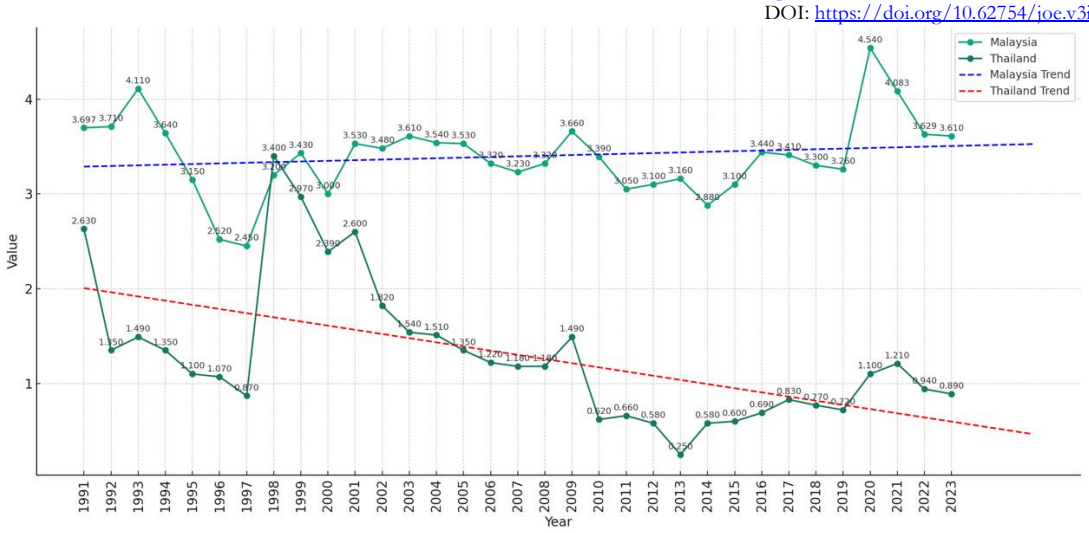

Figure. 15: Unemployment Trends for Malaysia and Thailand (1991-2023)

Source: World Bank (2023)

Investigating unemployment trends offers insights into the economic conditions affecting higher education strategies in Malaysia and Thailand. Malaysia's unemployment rate fluctuated, starting at 3.697% in 1991, peaking at 4.54% in 2020 due to COVID-19, and slightly decreasing to -2.35% by 2023, indicating a stable labor market supporting consistent educational funding and university rankings. Conversely, Thailand maintained low unemployment rates, rarely exceeding 2%, except during significant events like the 1998 Asian financial crisis. By 2020, the rate was 1.1%, reflecting a robust economy facilitating sustained educational investment. Malaysia's adaptability and Thailand's economic stability highlight the need for strategic, resilient educational policies to enhance international rankings and workforce skills.

Youth Employment Trends Analysis

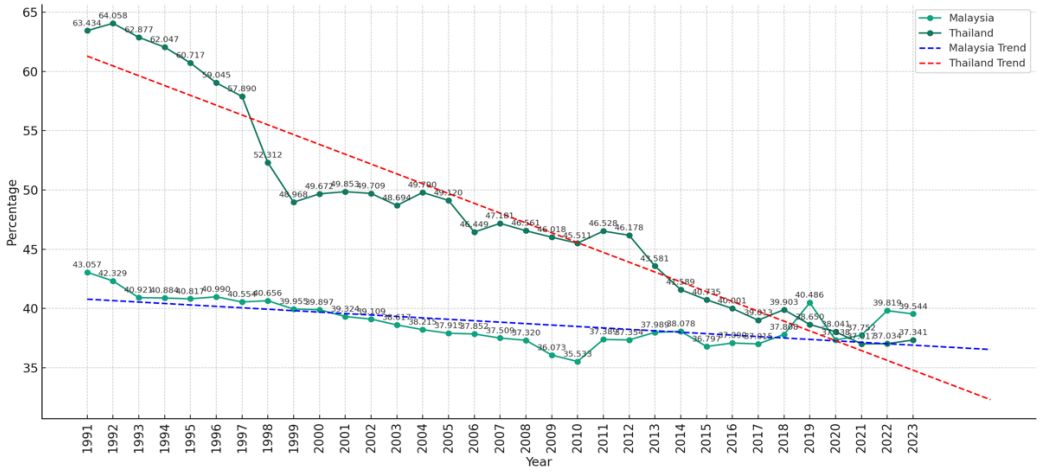

Figure. 16: Youth Employment Trends and Higher Education Implications in Ma-laysia and Thailand

Source: World Bank (2023)

This analysis assesses the youth employment-to-population ratio in Malaysia and Thailand, highlighting its impact on labor market dynamics and higher education. In Malaysia, a gradual decline suggests challenges in youth employment, possibly due to evolving job market demands, skills gaps, or increased focus on education. This trend indicates a need for universities to adapt curricula to industry needs. Conversely, Thailand's ratio shows more volatility, reflecting its dynamic economic landscape and the need for higher

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education to better prepare students for the workforce. Addressing these issues could enhance university rankings by improving graduate employability and relevance in the job market

Correlations between QS Asia University Ranking for Malaysia and Various So-cio-economic Indicators

Table 1. Correlations Between Socio-Economic Indicators and QS World University Rankings for Top Three Universities in Malaysia (2012-2022)

Variable	Pearson Correlation (r)	Significance (p)
Income share Lower 20%	-0.916	0.262
HDI	-0.677*	0.032*
Employment Rate (15-24)	-0.589	0.056
Population Growth Rate	0.964**	<0.001**
GINI Index	0.824	0.383
Government Expenditure on Education	0.625	0.053
R&D Expenditure	0.812*	0.049*

Note: **Correlation is significant at the 0.01 level (2-tailed); *. Correlation is signif-icant at the 0.05 level (2-tailed).

Analyzing the correlations between socio-economic indicators and the QS World University Rankings for the top three universities in Malaysia from 2012 to 2022 reveals significant insights. The Income Share of the Lower 20% shows a strong negative correlation with university rankings ($r = -0.916$, $p = 0.262$), suggesting that greater income equality may correlate with higher-quality education. The Human Development Index exhibits a significant negative correlation ($r = -0.677$, $p = 0.032$), indicating that improvements in health, education, and income levels could enhance educational standards. Youth employment rates have a nearly significant negative correlation ($r = -0.589$, $p = 0.056$), suggesting higher youth employment might detract from academic focus. Conversely, population growth shows a strong positive correlation ($r = 0.964$, $p < 0.001$), indicating increased demand for higher education improves resources and rankings. Research and Development Expenditure also shows a significant positive correlation ($r = 0.812$, $p = 0.049$), underscoring the role of R&D investments in promoting academic excellence. Government expenditure on education shows a moderately positive correlation ($r = 0.625$, $p = 0.053$), indicating that strategic government spending can enhance university performance. These findings highlight the importance of strategic socio-economic policies in improving the international stature of higher education institutions in Malaysia

Table 2. Impact of Socio-Economic Indicators on University Rankings of Thailand from 2012 to 2022

Variable	Pearson Correlation (r)	Significance (p-value)
Thailand GDP Growth	-0.434	0.21
Income Share Lower 20%	0.631	0.068
Employment/Pop Ratio	-0.634	0.036*
GDP per Capita	-0.417	0.231
Employment Rate (15-24)	-0.491	0.125
Population Growth	-0.528	0.117
GINI Index	-0.658	0.05*
Government Expenditure on Education	-0.414	0.235
R&D Expenditure	0.751	0.05*

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Note: *Correlation is significant at the 0.05 level (2-tailed).

The interplay between Thailand's socio-economic factors and its QS university rankings reveals complex influences on academic excellence. GDP growth inversely correlates with rankings (r = -0.434, p = 0.210), suggesting economic prosperity may bolster infrastructure but not rankings. Higher income share for the lower 20% positively correlates with quality (r = 0.631, p = 0.068), enhancing the academic environment. Employment-to-population ratio shows a significant negative correlation with rankings (r = -0.634, p = 0.036), indicating robust employment benefits education quality. Population growth negatively correlates with rankings (r = -0.528, p = 0.117), posing quality challenges. R&D investment positively correlates with rankings (r = 0.751, p = 0.052), emphasizing its role. These findings highlight the need for strategic socio-economic policies and targeted investments to improve Thailand's universities.

Table 3. Analysis of the Linear Regression Model: Impact of Socio-Economic Indicators on University Rankings in Thailand's Top 3 Universities

Model	Coefficients	Std.Error	p-Value	Sig.
(Constant)	-568.453	173.026	.046	*
X1: Employment-Population Ratio	-2.446	2.431	388	-
X2: GINI Coefficient	29.894	2.121	<.001	***
X3: R&D Expenditure	-.090	.006	<.001	***

Note: In the table, *** indicates significance at the 0.001 level, ** at the 0.01 level, and * at the 0.05 level. You can adjust the significance levels

The linear regression model examining the impact of socio-economic indicators on the rankings of the top three universities in Thailand reveals several significant findings and areas for further investigation.

Firstly, the model summary indicates an exceptionally high correlation coefficient (R = .999) and R Square value (.999), suggesting a nearly perfect linear relationship between the socio-economic indicators and university rankings. The Adjusted R Square (.997) remains similarly high, reinforcing the model's explanatory power. The standard error of the estimate (3.0776980) is relatively low, implying that the predictions are closely aligned with the actual data points. Although these metrics are impressive, they may also indicate potential overfitting, where the model is too closely tailored to the sample data.

The ANOVA results further support the model's significance, with an F-value of 706.949 and a p-value of less than .001. This high F-value indicates that the regression model provides a good fit for the data and is statistically significant.

Examining the coefficients, the constant is -568.453 with a p-value of .046, suggesting that when all predictors are zero, the university ranking would be significantly lower. This baseline value is statistically significant. The Employment-Population Ratio variable has a coefficient of -2.446 and a p-value of .388, indicating a negative but not statistically significant relationship with university rankings. This suggests that the employment-population ratio may not be a crucial factor in this context.

The GINI Coefficient variable has a coefficient of 29.894 and a highly significant p-value of less than .001, indicating a strong positive effect on university rankings. This suggests that as income inequality (measured by the GINI coefficient) increases, so do university rankings. This finding might imply that universities in more unequal societies achieve better rankings, possibly due to greater investments in elite institutions.

Conversely, the R&D Expenditure variable has a coefficient of -.090 and a highly significant p-value of less than .001, indicating a significant negative impact on university rankings. This result is counterintuitive, as one might expect higher research and development expenditures to improve rankings. This could suggest inefficiencies in how R&D funds are utilized or other confounding factors affecting the rankings.

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In conclusion, while the model appears statistically significant, the potential overfitting and the unexpected negative impact of R&D expenditures raise questions about its reliability. The findings suggest complex interactions between socio-economic factors and university performance. The significant positive impact of the GINI coefficient might reflect broader societal trends influencing higher education, while the negative impact of R&D expenditures highlights potential areas for policy intervention and efficiency improvements. Further studies with larger datasets and additional variables are necessary to confirm these findings and explore the underlying mechanisms driving these relationships. Addressing these issues could help formulate more effective policies to enhance the quality and global standing of higher education institutions in Thailand.

Discussion

The relationship between economic growth and university performance in Malaysia and Thailand underscores the critical role of economic stability and strategic investments in shaping higher education outcomes. Both nations demonstrate that economic resilience correlates with educational investments and improved university rankings, affirming the need to align educational funding with broader economic conditions. However, observed downward trends in educational spending relative to GDP raise concerns, necessitating a reassessment of long-term investment strategies to ensure sustained educational quality and competitiveness. Policymakers must leverage economic growth for educational investments to maintain and enhance the global standing of universities and foster a skilled workforce.

Human Capital Theory, which emphasizes investing in human competence and skills for economic growth, contextualizes Malaysia and Thailand's educational investments. Since the 1960s, economists like Becker (1964) and Asplund (1994) have highlighted human capital's transformative role, which is foundational to various forms of knowledge-related capital (Lucas, 1988; Romer, 1986, 1990). Malaysia's significant investment in higher education aligns with Human Capital Theory, contributing to its universities' ascending positions in QS World Rankings. Conversely, Thailand's inconsistent university rankings, despite similar educational expenditure, point to inefficiencies in fund utilization and policy implementation, emphasizing the need for more outcome-oriented strategies and reforms to maximize educational spending benefits. In addition, the importance of intangible assets like skills and knowledge for economic growth. Sveiby (1997) and Ahonen (2000) argue that human competence is a critical intangible asset for organizational and national prosperity. In Malaysia, effective utilization of educational investments has enhanced human capital, contributing to economic resilience and growth. The positive correlation between educational investments and university rankings underscores human capital's role in driving educational and economic outcomes. Conversely, Thailand must adopt more strategic and efficient approaches to leverage its educational investments. This involves not only increasing funding but also ensuring investments enhance educational quality and competitiveness.

Ahmed et al. (2021) highlighted the significant correlation between internal efficiency and global ranking achievements at the University of Malaya, emphasizing the importance of optimizing operations within financial constraints to maintain academic prestige. Cheng, Mahmood, and Yeap (2013) advocated for strategic approaches in Malaysia that prioritize information provision, cost-effectiveness, and program quality to attract international students. Schulze and Kleibert (2021) compared Malaysia's structural coupling and Singapore's functional coupling in transnational education policies, noting their impact on regional economic development. Sagarik et al. (2014) identified volatility and inequitable distribution of educational funds in Thailand, suggesting the need for equitable funding reforms. Chaemchoy, Puthpongsiriporn, and Fry (2021) emphasized addressing enrollment declines and funding constraints in Thai higher education to meet the demands of the digital economy. These insights are critical for formulating policies that enhance quality, equity, and efficiency in higher education, ensuring competitive global standings for institutions in Malaysia and Thailand. By integrating these perspectives into policy frameworks, both nations can better navigate global educational demands and economic changes, leveraging their socio-economic strengths to bolster educational outcomes and sustainability.

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The QS World University Rankings reveal differences between Malaysia's and Thailand's educational approaches. Malaysia's mix of public and private institutions enhances its academic environment, elevating universities like Universiti Malaya. In contrast, Thailand's reliance on state-funded institutions, such as Chulalongkorn University, may limit innovation. Greater private sector participation could boost Thailand's educational landscape. From 1996 to 2020, Malaysia's robust investments led to a significant rise in scholarly publications, while Thailand's steady increase reflects sustainable growth aligned with socio-economic policies. Varied governmental strategies impact research outcomes, with Malaysia benefiting from its vigorous research agenda, while Thailand could enhance its academic stature with increased investment and refined policies. Sombatsompop et al. (2010) note that Thai universities with fewer publications often achieve higher citation metrics, emphasizing research quality over quantity. This focus, aligned with the OHEC's National Research University Initiative, enhances research productivity and international recognition. Integrating these insights, both nations can strategically leverage investments to bolster global academic standings.

The Gini coefficient trends from 1984 to 2021 reveal Malaysia and Thailand's progress towards socio-economic equality, crucial for broadening access to higher education and improving global university rankings. Malaysia slightly leads Thailand in the Human Development Index, with differences in life expectancy, schooling years, and Gross National Income per capita influencing university rankings. Cuesta and Madrigal (2014) suggest Thailand's educational funding favors wealthier areas, needing reforms for equitable access. Michel (2014) emphasizes addressing disparities in educational quality and opportunity distribution in Thailand. These analyses highlight the need for integrated socio-economic and educational strategies to promote economic fairness and academic excellence. Strategic policies should address economic disparities and anticipate long-term educational needs to foster sustainable advancements and improve global university standings for both Malaysia and Thailand.

Economic stability significantly influences higher education and university rankings, as demonstrated by unemployment trends in Malaysia and Thailand. Malaysia's adaptable economy ensures consistent educational funding despite fluctuations, while Thailand's low unemployment suggests robust economic health, supporting educational investments. Scott and Guan (2022) highlight Thai higher education challenges, including disparities and inefficiencies, advocating for comprehensive reforms and increased investment. Thanalerdsopit et al. (2014) call for educational transformations to enhance regional mobility and competitiveness in Thailand. Arjomandi, Salleh, and Mohammadzadeh (2015) illustrate efficiency gains in Malaysian universities due to policy reforms, while Vegas and Coffin (2015) show that strategic education spending improves student performance. These insights underscore the need for educational policies to be flexible and responsive to economic shifts, aligning with labor market demands. Integrating QS World University Rankings data suggests that balancing government support and private sector involvement is crucial for advancing global competitiveness and academic excellence. This comprehensive approach ensures investments support current educational needs and foster long-term sustainability and growth. By refining strategies to align with economic indicators and labor market trends, Malaysia and Thailand can enhance their educational systems, meeting global standards and contributing to socio-economic development.

Conclusion

The analysis of economic trends and university performance in Malaysia and Thailand highlights the importance of strategic investments and economic stability in enhancing higher education quality and global standing. Policymakers should reassess and potentially increase educational funding relative to GDP growth to support higher education infrastructure and outcomes. Thailand's government-funded higher education system could benefit from increased private sector involvement, similar to Malaysia's public-private model. Improvements in income equality, as indicated by shifts in the Gini index, show the positive impact of equitable economic policies on educational access and quality.

Aligning higher education strategies with broader socioeconomic plans enhances effectiveness, integrating health, income, and education improvements into comprehensive planning. The dynamic labor market

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conditions call for adaptable educational policies to enhance graduate employability and responsiveness to economic changes. Strengthening investments in research and development is crucial, as evidenced by the strong correlation between R&D expenditures and improved university rankings, supporting national innovation and economic growth.

These insights urge a balanced approach between government intervention and market-driven solutions to achieve sustainable educational advancements and socio-economic growth, preparing both countries for future global educational challenges and opportunities.

Reccommendations

To improve educational investments and achieve better university rankings in Thailand, several policy recommendations emerge from the study. First, it is essential to enhance internal efficiency by streamlining faculty operations within financial constraints to boost global ranking achievements. Adopting strategic coupling approaches by aligning educational policies with regional economic goals can significantly improve outcomes. Furthermore, implementing equitable funding reforms to ensure the distribution of resources, particularly in underfunded areas, is crucial.

Addressing enrollment declines and funding constraints through investments in digital infrastructure and skills development will help align educational policies with the digital economy. Use larger and diverse datasets to confirm the results and reduce overfitting risks. Encouraging private sector participation can diversify and enhance educational quality by fostering private investment. Foster public-private partnerships to diversify funding sources and enhance educational quality. Intensifying investment in research and development, focusing on high-caliber research, will enhance global academic stature and rankings. Investigate and improve the efficiency of R&D fund utilization to enhance their positive impact on university rankings.

Integrating socio-economic and educational strategies is necessary to ensure that educational policies support broader socio-economic goals, improving access and quality. Leveraging economic growth for educational investment by aligning investments with economic growth periods ensures consistent funding and stability. Focusing on strategic investment for impactful outcomes optimizes expenditure, leading to significant educational enhancements. Explore how income inequality positively affects rankings and develop targeted funding programs for top-tier universities.

Reforming government policies and increasing investment are imperative to address disparities and inefficiencies through comprehensive reforms and enhanced investment. Preparing for regional mobility and competitiveness by enhancing competitiveness within the ASEAN Economic Community is also vital. Strengthen university-industry linkages to improve graduate employment rates and indirectly boost university performance.

Implementing these recommendations will improve the efficiency and impact of Thailand's educational expenditures, foster a skilled workforce, and enhance the international competitiveness of its higher education institutions, contributing to broader socio-economic development.

Limittations and Future Research

This study, while insightful, has limitations. It relies on secondary data, which may not fully capture the nuances affecting university rankings and economic conditions and may suffer from inconsistencies. The analysis assumes a linear relationship between economic indicators and educational performance, which oversimplifies complex interactions. Focusing on top-tier universities limits applicability to smaller institutions and the study's geographical focus on Malaysia and Thailand restricts generalizability to other regions.

Future research should include longitudinal data, broader variables, and diverse countries for a comprehensive view. Expanding to more universities and educational systems would provide deeper

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insights into global higher education challenges and strategies, aiding more effective policy formulations for educational sustainability.

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