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Digital Connectivity and Economic Development: The Role of Social Media in Selected ASEAN Economies

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Abstract
The research study investigates the impact of social media on the economic development of the selected Asian countries for a time period of 2009-2022. The analysis is conducted on panel data based on a quantitative design in 21 countries by using the PCSE estimator and Two-Stage Least Squares (2SLS) design to minimize potential endogeneity. Furthermore, the Panel Quantile Regression (PQR) was employed in depicting heterogeneity in the levels of income. These results show that there is a positive correlation between social media penetration and economic performance that is statistically significant as social media penetration increases by 1 percentage point resulting into a respective increase in GDP per capita of 0.056%. This is particularly stronger in the more well-to-do economies, which is why there is a necessity to make more access to digital and boost technological possibilities.
The results are significant in the point of the centrality of social media with reference to a sharing of knowledge, market growth, and innovation- areas, which directly affect economic growth in a region. Analytical policy implications are also there that the government of the Asian nations should intensify and expand the broadband infrastructure, enhance digital literacy, and offer plausible regulatory frameworks to allow the maximum advantage of the digital platform and diminish the bottlenecks like misinformation.
The current study contributes to the existing literature by investigating the impact of social media on the growth of the economies at various levels. It offers new empirical evidence on the potential that digital interconnection can play in terms of maintaining and fair economic growth in regions that differ sharply with Western economies regarding digital potential and institutional capability.

Keywords: Asian Economies, Social Media, Economic Growth, GDP Per Capita, Broadband Access, Capital Formation, Education, Trade Openness

Introduction

Background of the Study

Social media in recent years has changed how people communicate, exchange information and do business internationally. Digital revolution has united billions of individuals and over 3.5 billion active internet users interact daily on the different platforms. Starting as a means of self-communication, it has since become a major aspect of the digital economy on the planet. Such popular tools as Facebook, YouTube, Twitter, LinkedIn, and Pinterest have become potent marketing, networking, and knowledge-sharing tools. It has led to new business possibilities and innovations especially in developing economies like Asia due to their

increasing power.

Small and medium-sized enterprises (SMEs) in most of the Asian countries are increasingly using social media to build their markets and lower the cost of marketing. Through these platforms, a business is able to reach more people, build stronger customer relationships and acquiring new growth prospects without the huge cost of the traditional advertising method. Although such benefits exist, controversy surrounds the level of economic growth that social media will bring. Although some researchers have claimed that social media improves performance and spurs innovation, others believe that it can cause distraction and inefficiency which can lower performance.

The economic benefits of social media are not the same in all Asian countries because of differences in income, infrastructure, and digital readiness. Among the Asian countries, the Singapore and Malaysia are high-income economies with high levels of technological background and high internet penetration, and therefore they can find it easy to use social media to business advantage and innovations. As an example, the World Economic Forum (2023) states that internet penetration in Singapore is more than 97 percent, which contributes to digital entrepreneurship and exchange of information. On other hand poor countries like Laos and Myanmar have issues associated with poor infrastructure and access to communication technologies, which inhibit their ability to take advantage of the digital economy. These inequalities underscore the importance of region-specific digital policies that will encourage both inclusive access and equitable development (World Bank, 2022).

The social media is not only a marketing and trade tool, but a tool of generating and disseminating knowledge which are not only essential in economic progression. Niebel (2018) explored that digital spaces are a source of greater efficiency since in this case, information may be disseminated to a large audience within a short time frame as possible. This fact is in line with the Endogenous Growth Theory that was developed by Romer in 1990 who quotes technology and knowledge as the pillars in the realization of long term economic growth. The emerging economies in Asia can use social media as a source of learning, innovations, and skills development (Czernich et al., 2011). Social networks like LinkedIn and YouTube therefore come in as keys to the professional network and learning thus preventing the upgrading of the human capital.

However, the good influences of the social media are not unambiguous. Enikolopov2018) warned that unregulated online platforms can spur the proliferation of false information, damage the trust of the population, and create instability on the market. Similarly, Habibi and Zabardast (2020) concluded that overuse of social media may result in the development of a fear of missing out (FOMO) and digital fatigue, which may reduce productivity. These facts highlight the importance of wise administration and educating the users to reduce the negative effects of social media as well as to use its potential of development.

As a result, social media has become a part and parcel of the modern economic reality, especially in emerging economies where the trend of digitalization is transforming the industry and the labour market. However, in Asia, the process of digital literacy and infrastructure development is unequal and it introduces a gap in the distribution of the benefits of online connectivity among nations (Ortiz-Ospina, 2019). The greater gains are experienced in higher-income nations like Singapore and Malaysia due to a higher technological infrastructure, and the less developed nations still struggle with the affordability and access (Boungou & Yatié, 2022).

Problem Statement

The social media has quickly become a part of modern life and the business sector. Although researchers tend to agree that its impact on the economic results may be significant, its actual role in the economic growth in general and in the Asian setting, in particular, is unclear. There are conflicting conclusions reached in the existing literature. Advocates of social media believe that it improves communication and sharing of information, as well as encourages innovation, which leads to economic growth (Niebel, 2018; Romer, 1990). However, the opponents warn against potential negative consequences like the loss of productivity,

misinformation, and market distortions (Enikolopov, Petrova, and Sonin, 2018). American surveys also show that economic value of social media is not equally spread in Asia. Advanced as well as high-income economies like Singapore and Malaysia have higher returns because they have sophisticated digital infrastructure and higher technological adoption rates (Czernich et al., 2011). Indicatively, in these countries, the popularity of social media in facilitating business development and innovations has been enhanced by the wide use of the internet. Conversely, the economic benefit of high-income economies such as Myanmar and Laos is not high, mainly due to the lack of digital infrastructure, poor internet access, and poor digital literacy (Myovella et al., 2020). The presence of these differences raises serious concerns on the impact of social media on economic development when economic and technological environments are different. In particular, what are the impacts of using social media on GDP growth levels of the Asian countries with different income levels? The answers to these questions are important for developing suitable policies that help countries and businesses use the economic potential of social media while reducing its risks. Thus, this paper examines the relationship between social media and the economic growth of Asian countries, 2009-2022. It examines how variations in the internet connectivity, digital literacy, and policy environment have had an influence on the economic development.

Research Questions

This study seeks to address the following research questions:

1. What is the impact of social media usage on the economic growth of Asian countries?
2. How do different social media platforms affect economic growth within the Asian region?
3. Is the relationship between social media usage and economic growth stronger in higher-income countries than in lower-income countries within Asia?

Research Objectives

The main objectives of this study are:

1. To assess the impact of social media usage on economic growth in Asian countries.
2. To analyze the individual effects of six major social media platforms—Facebook, Twitter, YouTube, Pinterest, LinkedIn, and Reddit—on economic growth.
3. To compare the influence of social media on economic growth between high-income and low-income Asian countries.

Significance of the Study

The results of this study have implications for several groups involved in digital development in Asia. For policymakers, the evidence suggests that progress in social media adoption is closely linked to broader investments in digital infrastructure and digital skills. Expanding broadband access and improving digital literacy may help narrow existing gaps in access and usage, particularly for lower-income groups. However, the findings also indicate that policy responses need to remain balanced, as greater connectivity can create challenges related to misinformation and unequal outcomes if it is not carefully managed.

For small and medium-sized enterprises (SMEs), the analysis highlights the practical value of social media as a relatively affordable business tool. Many firms appear to use these platforms not only for promotion, but also for maintaining customer relationships and identifying new business opportunities. The results suggest that the effects on firm performance differ across platforms, which implies that platform choice and usage strategy are likely to matter for business outcomes, including brand visibility and market expansion.

This study also makes a contribution to the academic literature on the digital economy by focusing on developing Asian countries, where empirical evidence remains limited. By providing a regional analysis of the relationship between social media use, economic growth, and sustainability, the study helps to extend existing discussions on digital transformation beyond high-income settings.

Taken together, the findings may support governments, researchers, and businesses in developing a more informed view of how social media can be integrated into broader strategies for inclusive and sustainable economic development in Asia.

Literature Review

The relationship between social media and economic growth is commonly discussed within the frameworks of Endogenous Growth Theory and Innovation Theory. Endogenous Growth Theory, as proposed by Romer (1990), emphasizes the role of human capital, knowledge accumulation, and technological progress in driving long-term economic growth. Digital connectivity influences these factors by facilitating access to information, improving knowledge exchange, and supporting innovation activities. Within this framework, social media platforms can enhance communication flows, promote idea generation, and accelerate the diffusion of new technologies. These mechanisms are particularly relevant in ASEAN countries, where rapid digital expansion has reshaped economic and social interactions over the past decade.

Innovation Theory, rooted in the work of Schumpeter (1934), views economic development as a process driven by innovation through new products, production methods, and market structures. Social media platforms such as Facebook, Twitter, and YouTube contribute to this process by transforming how firms communicate with consumers and access markets. These platforms reduce information asymmetries, lower marketing costs, and enable direct interaction between businesses and customers. As a result, they support entrepreneurial activity and business performance, especially in emerging ASEAN economies where traditional marketing channels are often costly or limited.

A growing body of empirical research supports the positive relationship between digital platforms and economic growth. Zhu et al. (2016) find that digital platform development in the ASEAN-5 countries—Indonesia, Malaysia, the Philippines, Thailand, and Vietnam—has a significant positive impact on GDP growth. Their results indicate that this effect operates largely through increased trade openness and the expansion of e-commerce activities. Similarly, Myovella, Karacuka, and Haucap (2020) show that mobile internet penetration and social media usage contribute to higher economic growth, particularly when supported by adequate digital infrastructure and higher levels of digital literacy. These findings suggest that the economic benefits of social media are conditional rather than automatic.

However, the literature also highlights important differences across countries. Niebel (2018) argues that the growth-enhancing effects of information and communication technologies (ICT) are more pronounced in economies with advanced digital systems, such as Singapore and Malaysia, compared to less developed ASEAN countries like Laos and Myanmar. This suggests that disparities in technological readiness and institutional capacity can limit the extent to which social media contributes to economic performance.

The role of social media became especially visible during the COVID-19 pandemic. Boungou and Yatié (2022) report that ASEAN countries with more developed digital infrastructures were able to adapt more quickly to online business models, helping to mitigate the economic disruptions caused by lockdowns and mobility restrictions. At the same time, several studies raise concerns about the potential negative effects of social media. Enikolopov et al. (2018) caution that the rapid spread of misinformation through social media can undermine market stability and weaken investor confidence, particularly in politically sensitive or uncertain environments.

Overall, the literature suggests that social media has a dual impact on economic growth. While it can promote innovation, entrepreneurship, and human capital development, its positive effects depend heavily on supporting factors such as digital infrastructure, regulatory quality, and digital inclusion. Persistent digital inequalities across ASEAN countries result in uneven economic outcomes. Despite the growing number of studies on digitalization and growth, empirical evidence focusing specifically on social media and economic growth across ASEAN countries with varying income levels and technological readiness remains limited. This study seeks to address this gap by empirically examining the impact of social media on economic growth

across ASEAN economies with diverse levels of development.

Research Methods and Materials

Research Design

This study examines the effect of social media activity on the economic growth of ASEAN countries from 2009 to 2022. A quantitative panel data approach was applied to capture both cross-country and time-series variations. This method reduces omitted variable bias and controls for country-specific effects using time dummies (Wooldridge, 2010).

Empirical Model

To estimate the relationship between social media usage and economic growth, the following model is use

$$\boldsymbol{GDPCAP_{it} = \beta_0 + \beta_1(SM_{it}) + \beta_2(FBS_{it}) + \beta_3(GCF_{it}) + \beta_4(SET_{it}) + \beta_5(TO_{it}) + \epsilon_{it}}\text{d:}$$

Where:

Where;

- GDPCAPit = Gross domestic product per capita, country i at time t
- SMit = Social media usage (Facebook, Twitter, YouTube, Pinterest, LinkedIn, Reddit) in country i at time t.
- FBSit = Fixed Broadband Subscriptions per 100 people in country i at time t
- GCFit = Gross Capital Formation in constant 2015 USD in country iii at time t
- TOit = Trade Openness (ratio of exports plus imports to GDP) in country i at time t
- β0 = Intercept term
- 1β1 to β5 = Coefficients to be estimated
- ϵit = Error term capturing unobserved factors

This model follows the Endogenous Growth framework (Romer, 1990) and empirical setups used by Niebel (2018) and Czernich et al. (2011) to assess the contribution of technological adoption to economic performance.

Variables Description

- **Dependent Variable:** *GDP per capita* (constant 2015 USD) measures national economic performance (World Bank, 2022).
- **Independent Variable:** *Social media usage* is measured as the share of active users on six major platforms, obtained from *StatCounter*.
- **Control Variables:**
  - Fixed broadband subscriptions (% of population)
  - Gross capital formation (2015 constant USD)
  - School enrollment, tertiary level (% of population)
  - Trade *openness* (exports + imports as % of GDP)

Data Collection

Secondary data were collected for 21 ASEAN countries from a time period **2009–2022**. Sources include:

- *World Development Indicators* (WDI) for GDP, broadband, investment, education, and trade.
- *Stat Counter* for social media usage data.
- *ASEAN Statistical Yearbook* for regional economic context. Variables are transformed into natural logarithms to address heteroscedasticity and ensure normal distribution.

Estimation Techniques

Three main econometric methods are applied:

1. **Panel Corrected Standard Errors (PCSE):** Adjusts for heteroscedasticity and cross-sectional dependence (Beck & Katz, 1995).
2. **Two-Stage Least Squares (2SLS):** Addresses endogeneity using broadband infrastructure as an instrument.
3. **Panel Quantile Regression (PQR):** Captures how the impact of social media differs across income levels (Koenker & Bassett, 1978).

Diagnostic tests, including the Hausman and Breusch-Pagan tests, ensure model validity and robustness.

Ethical Considerations

The study uses secondary, publicly available data, avoiding personal identifiers. All data sources are properly cited, ensuring transparency and research integrity.

Results & Discussion

Descriptive Analysis

Table 4.1 presents the descriptive statistics for the variables used in this study, including GDP per capita (GDPCAP), social media usage (SM), fixed broadband subscriptions (FBS), gross capital formation (GCF), school enrollment in tertiary education (SET), and trade openness (TO).

Table 4.1: Descriptive Statistics

Variable	Mean	Standard Deviation	Minimum	Maximum
GDPCAP (constant 2015 USD)	7,300	5,700	1,100	62,000
SM (total social media users, %)	45.6	15.2	10.1	85.3
FBS (per 100 people)	21.8	14.5	2.3	42.1
GCF (constant 2015 USD, billion)	35.5	28.1	5.4	120.3
SET (%)	23.4	11.6	5.7	49.8
TO (%)	101.2	45.3	60.5	221.7

The descriptive results reveal wide disparities across ASEAN countries in terms of both economic performance and digital penetration. High-income economies such as Singapore and Malaysia show much greater levels of broadband access and social media participation compared to lower-income nations like Laos and Myanmar. These differences suggest potential variations in how digital engagement translates into economic outcomes. This variation justifies the need for regression analysis to assess whether social media affects economic growth differently across income levels.

Panel Corrected Standard Error (PCSE) Results

Panel Corrected Standard Error (PCSE) estimator were employed to address issues of heteroscedasticity and cross-sectional dependence. The results have been presented in table 4.2.

The analyses of the PCSE results suggest that there is a significant positive association between social media use and economic growth, which is statistically significant. Particularly, a one per cent increase in social media penetration results in 0.042 per cent growth in GDP per capita. This confirms the Endogenous Growth Theory that emphasizes on the importance of diffusion of knowledge and adoption of technology in spurring

productivity and growth.

Table 4.2: PCSE Results

Variable	Coefficient (β)	Standard Error	z-Statistic	p-Value
SM	0.042	0.015	2.80	0.005**
FBS	0.018	0.007	2.57	0.011*
GCF	0.031	0.012	2.58	0.010*
SET	0.045	0.019	2.37	0.018*
TO	0.009	0.004	2.25	0.024*
Constant	5.89	0.678	8.68	0.000***

*Note: *p < 0.05; **p < 0.01; ***p < 0.001*.

The positive impact of control variables such as broadband subscriptions, capital formation, education and trade openness are also significant which indicates that investments into digital infrastructure, human capital and trade liberalization play a significant role in economic growth in the ASEAN countries.

Stage 2: To-Stage Least Squares (2SLS) Regression Results

To account for possible endogeneity—where economic growth may influence social media use rather than vice versa—a Two-Stage Least Squares (2SLS) regression was employed. The results of the second stage are shown below.

Table 4.3: 2SLS Stage 2 Results

Variable	Coefficient (β)	Standard Error	z-Statistic	p-Value
SM (instrumented)	0.056	0.019	2.95	0.003**
FBS	0.016	0.008	2.00	0.046*
GCF	0.029	0.013	2.23	0.026*
SET	0.038	0.018	2.11	0.035*
TO	0.008	0.004	2.00	0.045*
Constant	6.123	0.734	8.34	0.000***

The 2SLS results confirm the positive causal impact of social media on economic growth. After correcting for endogeneity, a 1% increase in social media usage raises GDP per capita by 0.056%. This slightly higher coefficient compared to the PCSE estimate indicates that earlier results may have been conservative. The outcome highlights the role of digital platforms in facilitating economic transactions, information exchange, and market integration across ASEAN nations.

Diagnostic Tests and Robustness Checks

Endogeneity Control

To control for reverse causality—where economic growth might drive social media use—the study adopted the 2SLS technique. Broadband infrastructure and internet literacy were used as instruments, as both are strongly correlated with social media usage but not directly with GDP per capita.

Stage 1: Instrumental Variable Regression

Table 4.4: 2SLS Stage 1 Results

Variable	Coefficient (β)	Standard Error	z-Statistic	p-Value
FBS (instrument)	0.306	0.055	5.56	0.000***
Internet Literacy	0.215	0.042	5.12	0.000***
Constant	3.452	0.671	5.14	0.000***

Both instruments are statistically significant at the 1% level, confirming their validity. Cross-tabulation also shows a strong positive association between broadband access, internet literacy, and social media use, supporting their use as valid instruments in the 2SLS model.

Panel Quantile Regression Results

Given the income heterogeneity among ASEAN economies, Panel Quantile Regression (PQR) was applied to examine whether the impact of social media differs across different levels of economic development.

Table 4.5: Panel Quantile Regression Results

Quantile	SM Coefficient	FBS Coefficient	GCF Coefficient	SET Coefficient	TO Coefficient
0.25	0.029	0.015	0.021	0.031	0.005
0.50	0.044	0.018	0.028	0.040	0.007
0.75	0.062	0.020	0.035	0.050	0.009

The PQR results reveal that the impact of social media on economic growth strengthens as countries move up the income distribution.

- At the 25th quantile (low-income economies such as *Laos* and *Cambodia*), a 1% rise in social media usage increases GDP per capita by 0.029%.
- At the 50th quantile (middle-income economies like *Thailand* and *the Philippines*), the effect increases to 0.044%.
- At the 75th quantile (high-income economies such as *Singapore* and *Malaysia*), the effect rises to 0.062%.

These results indicate that digital maturity amplifies the economic returns of social media. Wealthier ASEAN nations with better internet infrastructure and higher digital literacy levels benefit more from online connectivity, while lower-income countries face structural and technological limitations.

Model Validation

To confirm the robustness of results, several diagnostic tests were conducted:

- Hausman Test: Confirmed that the fixed-effects model was more appropriate than random effects, indicating country-specific influences on the social media–growth relationship.
- Breusch–Pagan Test: Detected heteroscedasticity, which was corrected through the PCSE approach.
- Wald Test: Showed that all coefficients were jointly significant, confirming the overall reliability of the model.

Discussion

The results confirm that social media plays a significant role in shaping economic growth across ASEAN countries. Both the PCSE and 2SLS estimations show that greater social media use contributes positively to

GDP per capita, supporting Endogenous Growth Theory (Romer, 1990), which links technological diffusion and knowledge sharing with sustained growth. This finding aligns with Dell'Anno et al. (2016), who found that digital platforms enhance market efficiency and productivity by improving communication and innovation opportunities, particularly for SMEs (Ahmad et al., 2021).

However, the Panel Quantile Regression (PQR) results indicate that these effects are not uniform across all nations. High-income members such as Singapore and Malaysia benefit more from social media compared to lower-income countries like Laos and Myanmar. These differences reflect varying levels of digital infrastructure, internet access, and technological literacy. As Niebel (2018) and Myovella et al. (2014) observed, advanced economies achieve stronger ICT returns due to institutional and technological readiness, while developing ones lag due to limited connectivity and skills.

Overall, social media supports entrepreneurship, innovation, and communication efficiency in ASEAN, but its impact depends greatly on each country's digital preparedness. Nations with weaker digital infrastructure experience fewer benefits, emphasizing the need for targeted policy efforts to bridge the digital divide.

Conclusion

This research paper concludes that social media has become a critical driver of economic development in the ASEAN countries, especially, in those which are more affluent and have fairly advanced digital infrastructures. The empirical evidence supports that the higher social media use; the higher GDP per capita in terms of expanding the market, sharing the information, and innovating. These findings highlight the increased economic significance of digital platforms in the attempt to increase productivity and competitiveness.

The higher penetration of broadband and the level of digital literacy in the country, will benefit the economic activity under the social media which indicates long-term investment in the technological infrastructure is necessary. Thus, the policymakers in ASEAN countries must focus on the formation of the broadband network, efficient internet connectivity, and improvement of internet skills to make sure that the countries gain equal opportunities of digital possibilities.

Besides, strict regulation is crucial to overcome the issue of misinformation, data privacy, or cyber risks that may impede the beneficial outcomes of the digital interaction. To businesses, particularly, small and medium-sized enterprises (SMEs), social media is an inexpensive way of marketing, interacting with customers and expanding into new markets, which in turn facilitates entrepreneurship and innovation.

Overall, this study demonstrates the radical nature of social media in transforming the economic outlook of ASEAN. By introducing social media in the context of the larger economic development and digitalization policies, sustainable growth, innovative changes, and resilience may be promoted in the process of switching the region to an entirely digital economy.

Policy Implications

1. **Invest in Digital Infrastructure:**
   Expanding broadband and internet access should be a priority to ensure inclusive participation in the digital economy, especially for lower-income ASEAN states.
2. **Promote Digital Literacy:**
   Governments, in collaboration with private tech firms, should establish national programs for digital-skill training, helping citizens use social media for business, education, and entrepreneurship.
3. **Encourage Innovation:**
   Policymakers should support digital start-ups, innovation hubs, and financing schemes to convert social media use into economic and creative outcomes.
4. **Ensure Digital Responsibility:**
   Moderate regulation should safeguard privacy, counter misinformation, and promote responsible online conduct while preserving freedom of expression.

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