

*

CAPITAL INFLOWS TO REGIONAL MOBILITY: SERVICE EXPORTS AS THE TRANSMISSION CHANNEL UNDER DIGITAL MODERATION IN ASEAN (2013–2022)

Saranya Gajendran¹, Alfina^{2*},

¹ Department of Banking & Finance, Tamkang University, Taiwan,
gaj.saranya@gmail.com

² Master of Management, Universitas Internasional Semen Indonesia, Indonesia,
*alfina@uisi.ac.id

ABSTRACT

This study investigates how foreign direct investment (FDI) stimulates regional mobility through the service export channel, and whether digital access strengthens this transmission mechanism in ASEAN from 2013 to 2022. Although ASEAN has made significant strides in digital transformation, empirical evidence on how digitalization interacts with capital inflows to influence cross-border service performance and tourism mobility remains limited. Using panel data from ten ASEAN countries, this study applies Hayes's PROCESS macro (Model 14) in SPSS to test a moderated mediation model, where service exports mediate the effect of FDI on intra-ASEAN visitor arrivals, and internet access moderates the link between service exports and visitor arrivals. The results confirm that FDI significantly increases service exports, which in turn enhance regional visitor mobility, supporting the mediating role of services. However, the moderating effect of internet access on this mediation pathway is not statistically significant. Although the indirect effect of FDI through services grows with higher digital access, the confidence intervals of the moderated mediation index include zero, indicating that the effect is not robust across digital levels. The findings imply that ASEAN's service-led growth in tourism primarily depends on the intensity of investment rather than variations in digital penetration. Nonetheless, the consistent positive indirect effect highlights the central role of service exports as a policy-relevant bridge between capital inflows and people mobility. Enhancing service competitiveness and ensuring inclusive digital infrastructure remain essential for translating investment gains into sustainable regional tourism integration.

Keywords: fdi, service export, ASEAN, internet access, intra visitor

INTRODUCTION

Capital inflows are a strategic driver of economic integration, yet their full potential emerges when they stimulate competitive service exports that enhance regional mobility. Across developing regions, FDI has proven to be more than a financial input; it acts as a conduit for technology transfer, managerial learning, and cross-border connectivity (Dash et al., 2025; Wonyra et al., 2023). The service sector particularly transport, tourism, and digital communication translate these inflows into tangible cross-country linkages by expanding trade in intangibles and facilitating people movement. In both ECOWAS and South Asia, FDI-led service expansion has

been shown to reinforce regional circulation of knowledge, goods, and travelers, aligning with the premise that service exports function as the operational bridge between capital accumulation and regional integration (Hanif et al., 2024; Javed & Khan, 2024).

Yet, this transmission is not linear. Empirical work suggests that investment alone rarely guarantees regional mobility; its success hinges on absorptive capacity and the maturity of digital infrastructure. In West Africa, ICT variables become significant only when they interact with FDI, implying that digital access magnifies, rather than substitutes, the productivity of investment in services (Wonyra et al., 2023). Similarly, in South Asia, strong broadband and institutional systems multiply the benefits of foreign investment across service industries (Dash et al., 2025). At the macro level, exchange rate misalignment can weaken diversification and blunt the competitiveness of export-oriented services (Gnangnon, 2020). Together, these findings expose a conditional mechanism: capital inflows enhance regional connectivity only when macroeconomic stability, digital access, and governance co-evolve to sustain the service export channel.

These interdependencies are particularly significant for ASEAN, where post-pandemic recovery increasingly depends on tourism, digital trade, and service-sector expansion as engines of integration and inclusive growth. The region's economic dynamism rests on how effectively foreign direct investment (FDI) stimulates value creation in services that facilitate cross-border mobility, such as transport, hospitality, and ICT-based trade. Empirical evidence from Indonesia illustrates this complexity: while tourism exports substantially boost employment and income, ongoing digitalization tends to concentrate benefits among high-skilled workers, leaving low- and medium-skilled labor with limited access to new opportunities (Thomas et al., 2023). This outcome reveals a structural tension within ASEAN's development trajectory, in which FDI-driven technological upgrading enhances productivity but risks widening digital inequality.

At the macroeconomic level, regional competitiveness is further conditioned by exchange rate dynamics; appreciation of the real exchange rate has been found to heighten service export concentration and suppress diversification, particularly in tourism and ICT industries that depend on cost competitiveness (Gnangnon, 2022). When this occurs, the positive spillovers of FDI into tradable services weaken, constraining both export potential and regional connectivity. Environmental and sustainability concerns have also emerged as key constraints to the service-led growth model. Tourism expansion, trade liberalization, and digital infrastructure development have intensified carbon emissions and resource depletion, underscoring the urgency of integrating green investment standards, renewable energy adoption, and carbon pricing into ASEAN's integration agenda (Hanvoravongchai & Paweenawat, 2024). Against this backdrop, this study seeks to clarify the pathways through which FDI shapes regional economic mobility and inclusion by addressing two key questions: (1) Does FDI promote intra-ASEAN mobility through service exports, and (2) does digital access strengthen this transmission mechanism?

To address these dynamics, this study develops a moderated mediation model that links FDI, service exports, and regional mobility under digital moderation. The framework tests whether service exports mediate the effect of FDI on intra-ASEAN visitor mobility and whether internet access conditions the strength of this mediation. Drawing from previous regional findings that digital connectivity magnifies FDI spillovers to services (Hanif et al., 2024; Wonyra et al., 2023), the analysis employs ASEAN panel data from 2013 to 2022 using Hayes's PROCESS Model 14 in SPSS.

The model incorporates controls for trade openness, exchange rate alignment, and macroeconomic stability to isolate the digital mechanism that scales the investment-to-services pathway driving intra-ASEAN mobility.

This study advances the debate on investment-driven integration in three ways. First, it reframes the FDI–trade–growth relationship around service exports as the primary transmission mechanism linking capital inflows to regional mobility, aligning directly with ASEAN’s service-led integration agenda. Second, it unifies evidence from Africa and South Asia showing that digital access, skills, and institutional quality jointly determine how investment translates into competitive service exports, extending these insights to the ASEAN context (Dash et al., 2025; Javed & Khan, 2024). Third, it provides policy guidance by demonstrating that inclusive digital infrastructure and exchange rate discipline are essential for diversifying service exports and amplifying the regional mobility gains from FDI. These arguments position the study within the broader discourse on how digitally enabled services transform capital inflows into sustainable, people-centered integration across ASEAN.

METHODS

2.1 Research Design

This study adopted a quantitative panel design to examine the influence of foreign direct investment (FDI) on intra-ASEAN visitor mobility through service exports as a mediating mechanism, and to determine whether internet access moderates this indirect relationship. The research design integrates both mediation and moderation to capture transmission and conditional effects within a single analytical framework. Such an approach enables a nuanced understanding of how capital inflows are translated into tourism-related outcomes under varying levels of digital infrastructure. The analytical framework aligns with the conditional process modeling perspective, which has become central to advanced causal inference in social and economic research (Hayes, 2015; Igartua & Hayes, 2021). The estimation procedure was carried out using Hayes’s PROCESS macro-Model 14 in SPSS version 29, employing 5,000 bootstrap samples with heteroskedasticity-consistent (HC3) standard errors to address potential heterogeneity in the variance of residuals.

2.2 Data and Sample

The study utilized secondary panel data encompassing ten ASEAN member states: Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Viet Nam. The observation period spans from 2013 to 2022, capturing both temporal and cross-sectional variation in key indicators of economic integration and digital development. After applying listwise deletion to handle missing data, 93 valid observations were retained for the analysis. All data were sourced from the The ASEAN Secretariat (2023), ensuring comparability and methodological consistency in measurement units and reporting standards across countries and years. This regional dataset is well suited for analyzing investment–trade–mobility linkages within a policy-relevant ASEAN framework.

2.3 Variables

Foreign Direct Investment (FDI) was measured in millions of US dollars, representing capital inflows directed toward each ASEAN member state. Service Exports were transformed into their natural logarithmic values to correct for skewness and to reflect the structural efficiency of the export-driven service economy. Internet Access was measured as the number of internet users per 100 inhabitants, capturing the degree of digital connectivity and technological readiness within each country. Intra-ASEAN

Visitor Arrivals were expressed in thousands of visitors and used as an indicator of regional tourism mobility, reflecting the scale of cross-border movement within ASEAN. All variables were standardized and checked for stationarity and outliers prior to analysis.

2.4 Analytical Procedure

The analytical process was conducted in two main stages. In the first stage, descriptive statistics were generated to summarize the distribution, variability, and overall characteristics of each variable across countries and years. This step provided a foundational understanding of the economic and digital heterogeneity across ASEAN economies. In the second stage, a moderated mediation analysis was implemented following the conditional process modeling framework outlined by Hayes (2015). The first step estimated the path from FDI to Service Exports to determine whether investment inflows significantly enhanced service export performance. The second step examined the path from Service Exports to Intra-ASEAN Visitor Arrivals to evaluate the mediating role of the service sector in facilitating tourism mobility. The third step introduced an interaction term between Service Exports and Internet Access to assess whether the strength of the mediating mechanism varied depending on the level of digital connectivity.

All indirect and conditional effects were tested using bias-corrected bootstrapping with 5,000 resamples. Statistical significance was determined through 95 percent confidence intervals that exclude zero. To mitigate the potential influence of multicollinearity, all predictor variables involved in interaction terms were mean-centered prior to analysis. The interpretation of the results focused on the sign, magnitude, and confidence bounds of the coefficients rather than on isolated p-values, ensuring a comprehensive understanding of both direct and conditional effects in the ASEAN context.

FINDINGS

3.1 Descriptive Statistics

Table 1 presents the descriptive statistics of the study variables for ten ASEAN countries covering the period 2013–2022. The mean year is 2017.50, indicating balanced coverage across the decade. Internet access across ASEAN averaged 60.35 per 100 persons, with substantial variation ($SD = 25.91$), reflecting disparities in digital infrastructure among member states. FDI inflows ranged from –4,950.99 million USD to 141,187.20 million USD with a mean of 15,122.33 million USD, showing wide variability due to Singapore’s dominance as a capital destination. Intra-ASEAN visitor arrivals averaged 3,693.46 thousand, with high dispersion ($SD = 4,981.38$), illustrating uneven tourism mobility within the region. Service exports (in natural log form) averaged 9.26 ($SD = 1.93$), while the logged FDI averaged 8.66 ($SD = 1.50$). Ninety-three valid observations were retained for the moderated mediation analysis after handling missing data.

Table 1. Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Year	100	2013	2022	2017.50	2.887
Internet Access (users per 100 persons)	96	6.8	98.1	60.345	25.9119
Foreign Direct Investment (million USD)	100	–4,950.998	141,187.200	15,122.326	26,075.624
Intra-ASEAN Visitor Arrivals (thousand)	100	0.000	20,372.841	3,693.464	4,981.383

Logarithm of Service Exports	100	4.831	12.582	9.256	1.929
Logarithm of FDI	97	5.144	11.858	8.658	1.500

3.2 Multicollinearity Testing

Before proceeding with the moderated mediation analysis, diagnostic tests were conducted to examine potential multicollinearity among the predictors. Following standard criteria (Hayes, 2018; Sarstedt, 2019), tolerance values below 0.10 and variance inflation factor (VIF) values above 10 indicate a serious collinearity concern. Table 2 presents the multicollinearity statistics for all independent variables included in the regression model.

The results show that all tolerance values exceed 0.10 and all VIF values are below the threshold of 10, suggesting that multicollinearity is not a serious issue in this model. Although the VIF values for foreign direct investment (5.96) and service exports (5.43) are moderately high, this is typical in mediation structures where predictors are conceptually and empirically correlated. The relatively low VIFs for internet access (1.24) and interaction term (1.29) confirm that the moderator and interaction variables are statistically independent. Therefore, the regression coefficients can be interpreted reliably without the need for variable transformation or exclusion.

Table 2. Multicollinearity Statistics

Variable	Tolerance	VIF	Interpretation
Foreign Direct Investment	0.168	5.956	Moderate correlation with mediator but acceptable
Service Exports	0.184	5.425	Moderate correlation with predictor but acceptable
Internet Access	0.805	1.243	No multicollinearity
Interaction Term	0.776	1.289	No multicollinearity

Note: All VIF values < 10 and tolerance > 0.10 indicate that the model meets the assumption of no serious multicollinearity.

3.3 Mediation and Moderation Analysis

A moderated mediation analysis was performed using Hayes's PROCESS macro (Model 14) with 5,000 bootstrap samples and heteroskedasticity-consistent (HC3) standard errors to ensure robustness against potential variance heterogeneity. The model examined whether service exports mediate the effect of foreign direct investment (FDI) on intra-ASEAN visitor arrivals, and whether this indirect pathway is conditioned by the level of internet access across countries and years. All continuous predictors were mean-centered prior to the creation of interaction terms to minimize potential multicollinearity.

Table 3 reveal a strong positive association between FDI and service exports. The coefficient for Path a (FDI → Service Exports) was statistically significant ($b = 1.12$, $SE = 0.04$, $t = 25.72$, $p < 0.001$), indicating that higher inflows of FDI are consistently associated with stronger service export performance among ASEAN countries. Path b (Service Exports → Visitor Arrivals) was also significant and positive ($b = 2452.79$, $SE = 532.50$, $t = 4.61$, $p < 0.001$), confirming that growth in the export of services translates into increased intra-ASEAN visitor arrivals. The direct effect of FDI on visitor arrivals, after accounting for the mediating effect of services, was negative ($b = -2107.43$, $SE = 645.57$, $t = -3.26$, $p = 0.001$), suggesting that the influence of FDI on regional mobility operates primarily through the channel of service exports rather than through direct investment spillovers.

The interaction term representing the moderating role of internet access in the relationship between service exports and visitor arrivals was positive but not

statistically significant ($b = 10.68$, $SE = 8.32$, $t = 1.28$, $p = 0.20$). This indicates that variations in digital access across ASEAN countries did not significantly change the strength of the service export effect on tourism mobility. However, the conditional indirect effects of FDI through service exports remained positive and significant at all levels of internet access, with bootstrap confidence intervals that excluded zero. Specifically, the indirect effects were 2,346.77 (BootSE = 609.49) at low digital access, 2,816.94 (BootSE = 629.05) at medium access, and 3,078.90 (BootSE = 737.58) at high access. These findings confirm that the mediation mechanism is robust across digital contexts even though the moderating role of internet access is statistically unsupported.

Overall, the results indicate that FDI stimulates regional mobility primarily by enhancing service exports, and this mechanism operates consistently across different levels of digital infrastructure. Internet access may facilitate tourism communication and logistics, but it does not significantly strengthen the causal transmission from services to visitor flows. This suggests that physical and institutional capacity in the service sector remains the dominant pathway linking investment integration to regional people mobility within ASEAN.

Table 3. Mediation and Moderation Results

Path	Coefficient (b)	SE (HC3)	t	p	LLCI	ULCI
FDI → Services Exports (a)	1.12	0.04	25.72	.000	1.04	1.21
Services Exports → Visitors (b1)	2452.79	532.50	4.61	.000	1394.56	3511.02
Internet Access (W)	20.25	18.15	1.12	.27	-15.82	56.32
Interaction (M×W)	10.68	8.32	1.28	.20	-5.85	27.22
Direct Effect (FDI → Visitors)	-2107.43	645.57	-3.26	.001	-3390.35	-824.50

3.3 Conditional Indirect Effects

The analysis further examined whether the indirect effect of foreign direct investment (FDI) on intra-ASEAN visitor arrivals through service exports varied across different levels of internet access. Table 4 summarizes the conditional indirect effects calculated at the 16th (low), 50th (medium), and 84th (high) percentiles of internet access. Across all levels, the indirect effects were positive and statistically significant, as indicated by bootstrap confidence intervals that did not include zero. These findings confirm that service exports serve as a consistent mediating channel linking FDI inflows to regional tourism mobility.

Table 4. Conditional Indirect Effects of FDI on Intra-ASEAN Visitor Arrivals through Service Exports

Level of Internet Access	Indirect Effect	BootSE	BootLLCI	BootULCI
Low (16th percentile = -33.98)	2,346.77	609.49	1,264.18	3,679.99
Medium (50th percentile = 5.21)	2,816.94	629.05	1,760.98	4,256.67
High (84th percentile = 27.04)	3,078.90	737.58	1,864.62	4,747.88

Note. Bootstrap sample size = 5,000; confidence intervals are at 95%. All conditional indirect effects are statistically significant since the confidence intervals do not include zero.

At low levels of internet access (16th percentile = -33.98), the indirect effect was 2,346.77 (BootSE = 609.49, 95% CI [1,264.18, 3,679.99]), suggesting that even in less digitally connected contexts, FDI contributes to visitor flows through the development of service sectors. At medium levels of digital access (50th percentile =

5.21), the indirect effect increased to 2,816.94 (BootSE = 629.05, 95% CI [1,760.98, 4,256.67]), indicating that greater connectivity enhances the ability of service industries to translate investment into tourism activity. At high levels of internet access (84th percentile = 27.04), the indirect effect rose further to 3,078.90 (BootSE = 737.58, 95% CI [1,864.62, 4,747.88]), representing the strongest mediation under conditions of advanced digitalization.

Although the magnitude of the indirect effects increased with higher internet access, the index of moderated mediation (Index = 12.00, BootSE = 10.06, 95% CI [-3.75, 35.48]) was not significant. This result suggests that while internet access may amplify the efficiency of service export channels, its moderating influence on the mediation pathway is not statistically different across digital contexts.

Overall, the results indicate that service exports consistently mediate the relationship between FDI and intra-ASEAN visitor arrivals. The mediation remains stable regardless of internet penetration levels, implying that digital infrastructure, although beneficial for operational and communicative efficiency, does not substantially alter the causal mechanism through which FDI fosters regional tourism mobility. These findings emphasize that the expansion and sophistication of service industries play a more pivotal role than connectivity alone in translating capital inflows into greater regional integration within ASEAN.

DISCUSSION

The results indicate that foreign direct investment drives intra-ASEAN regional mobility through the growth of service exports, and this relationship remains consistent across varying levels of internet access. ASEAN's economic integration fits within global evidence showing that investment generates greater multiplier effects when it flows into service-intensive sectors such as transport, tourism, and digital communication. This outcome is consistent with (Wonyra et al., 2023), who found that ICT infrastructure enhances the FDI-service export link in ECOWAS. Yet in ASEAN, internet access does not significantly magnify this pathway, suggesting that the region's services ecosystem, which is already more established, plays the dominant role in translating capital inflows into mobility. In other words, digital access supports efficiency, but it is the institutional and structural maturity of ASEAN's service industries that sustains investment spillovers and cross-border integration.

Evidence from South Asia underscores this interpretation. Dash et al. (2025) demonstrated that digital infrastructure and human capital together determine the extent to which FDI boosts service exports. Their findings reveal that the absorptive capacity of a region, rather than digital presence alone, determines how much benefit foreign capital brings. Likewise, Hanif et al. (2024) showed that ICT exerts a positive long-run effect on services trade only when supported by adequate skills and institutional frameworks. Applying this logic to ASEAN, the present results suggest that internet access functions as a facilitator of coordination and information flow, not as an independent accelerator of service-led integration. The statistically insignificant moderation in this study therefore reflects a stage of regional development where digital readiness is widespread but not yet a differentiating source of competitive advantage.

Comparative findings from global contexts strengthen the mediated interpretation. Yangailo (2025) found that FDI and tourism reinforce one another, forming a feedback loop that stimulates regional growth, particularly when digital connectivity improves information exchange and logistics. Similar to the results for ASEAN, this relationship is indirect: FDI enhances service capacity, and service

capacity attracts visitor flows that deepen economic linkages. Dash (2025) extended this logic in a long-run study of India and China, demonstrating that services exports are the key mechanism through which foreign investment fosters growth and mobility. The ASEAN model mirrors these dynamics which FDI elevates service exports, service exports boost regional arrivals, and digital access refines this chain without fundamentally redefining it. The consistency of this pattern across economies points to the robustness of the service-export mediation mechanism in explaining regional integration.

Within ASEAN, divergent outcomes illustrate why the moderating role of internet access remains limited. Thomas et al. (2023) showed that in Indonesia, digitalization increases productivity but deepens inequality among workers, as high-skilled groups capture most of the digital gains. This uneven distribution constrains aggregate benefits and suggests that the quality of digital inclusion matters more than its quantity. Macroeconomic factors compound the challenge where Gnanngnon (2020) found that real exchange rate appreciation reduces diversification in services, concentrating exports in a few high-value segments. In ASEAN's multi-currency landscape, such volatility can weaken competitiveness and offset digital advantages. Together, these findings suggest that structural heterogeneity, unequal digital capability, and exchange rate pressures temper the moderating power of internet access on the FDI-services-mobility relationship.

Sustainability and governance dimensions further shape how capital inflows translate into mobility. Sobirov et al. (2025) and Hanvoravongchai and Paweenawat (2024) emphasized that FDI channeled into services can reduce environmental pressures if directed toward modern, less carbon-intensive sectors, yet tourism and trade expansion often increase emissions without regulatory safeguards. Shang (2024) demonstrated that political openness, transparent governance, and digital financial inclusion enhance the ability of FDI to promote sustainable tourism and regional participation. Translating these insights to ASEAN, the effectiveness of capital inflows depends on the integration of environmental standards, institutional transparency, and inclusive digital ecosystems. Policies that promote green FDI, harmonize service trade regulations, and invest in digital infrastructure are therefore central to transforming FDI into diversified and sustainable service exports that reinforce regional mobility. This balanced approach positions ASEAN to harness digital and capital synergies while mitigating inequality and ecological risk within its integration trajectory.

CONCLUSION

This study confirms that foreign direct investment contributes to intra-ASEAN regional mobility through the growth of service exports, showing that the service sector functions as the key transmission channel of capital inflows. Using a moderated mediation approach, the analysis reveals a stable and significant indirect effect of FDI via service exports across varying levels of internet access. While digital connectivity enhances operational efficiency, it does not significantly strengthen the FDI-services-mobility pathway. The evidence suggests that ASEAN's established service ecosystem, particularly in tourism, transport, and communication, already provides sufficient structural depth to transform investment into mobility gains without relying heavily on digital variation.

An advantage of this study lies in its integration of FDI, service trade, and digital access within a single analytical model. The findings extend theoretical discussions on how globalization operates through sectoral transmission rather than direct capital effects and offer an empirical foundation for regional economic

strategies. The results also emphasize that the strength of service industries remains the core determinant of regional mobility, while digital access functions as a complementary rather than catalytic force. These insights are valuable for policymaker's designing frameworks that connect digital inclusion, investment attraction, and service-sector competitiveness.

Despite these contributions, the study has certain limitations. The dataset covers a decade and a limited set of ASEAN countries, which may not fully capture longer-term structural adjustments or cyclical shocks. The use of aggregate service export and digital indicators may obscure heterogeneity among subsectors such as financial services, education, or healthcare. Moreover, institutional and human capital dimensions are not explicitly modeled, even though prior studies (e.g., Dash et al., 2025; Hanif et al., 2024) indicate their relevance to FDI absorption and service productivity. These constraints suggest the need for more granular data and multidimensional modeling to explore how institutional quality and human capital moderate the digital transmission of FDI in different service categories.

Future research could extend this work by employing disaggregated service data, incorporating governance and skill-related variables, and testing the model across longer time spans or other regional blocs such as SAARC and ECOWAS, where digital infrastructure remains a developmental constraint (Wonyra et al., 2023). Exploring nonlinear or threshold effects of digital maturity may also clarify at what stage connectivity begins to significantly amplify the FDI-services relationship. Practically, the findings can inform policy design in digital economy planning, FDI screening, and tourism integration. Strengthening digital inclusion, institutional transparency, and green service investments will enable ASEAN to convert capital inflows into sustainable, diversified, and mobility-enhancing growth that aligns with regional integration and long-term resilience.

REFERENCES

- Dash, R. K. (2025). The Role of Services Exports in Economic Growth: A Comparative Study of India and China. *Journal of Economic Integration*, 40(3), 497–525. <https://doi.org/10.11130/jei.2024052>
- Dash, R. K., Sahoo, P., & Chanda, R. (2025). *How important is Human Capital for Services Exports? Evidence from South Asia*.
- Gnangnon, S. K. (2020). Manufacturing Exports and Services Export Diversification. *International Trade Journal*, 35(3), 1–22. <https://doi.org/10.1080/08853908.2020.1779877>
- Gnangnon, S. K. (2022). Effect of economic complexity on services export diversification: do foreign direct investment inflows matter? *International Journal of Development Issues*, 21(3), 413–437. <https://doi.org/10.1108/IJDI-01-2022-0023>
- Hanif, A., Zafar, N., Batool, B., Shafi, S., & Hanif, M. (2024). ICT and Service Exports: An Empirical Investigation for South Asia Ailya. *Bulletin of Business and Economics*, 13(2), 17–23. <http://dx.doi.org/10.1016/j.neuropsychologia.2015.07.010><http://dx.doi.org/10.1016/j.visres.2014.07.001><https://doi.org/10.1016/j.humov.2018.08.006><http://www.ncbi.nlm.nih.gov/pubmed/24582474><https://doi.org/10.1016/j.gaitpost.2018.12.007><https://doi.org/10.1016/j.gaitpost.2018.12.007>
- Hanvoravongchai, P., & Paweenawat, J. (2024). Economic and Environmental Dynamics in Southeast Asia: The Impact of Tourism, Gross Domestic Product, Foreign Direct Investment, and Trade Openness on Carbon Dioxide Emissions

- Abstract. *Journal of Energy & Environmental Policy Options*, 8(1), 51–65.
- Hayes, A. F. (2015). An index and test of linear moderated mediation. *Multivariate Behavioral Research*, 50(1), 1–22.
- Hayes, A. F. (2018). Partial, conditional, and moderated moderated mediation: Quantification, inference, and interpretation. *Communication Monographs*, 85(1), 4–40.
- Igartua, J.-J., & Hayes, A. F. (2021). Mediation, moderation, and conditional process analysis: Concepts, computations, and some common confusions. *The Spanish Journal of Psychology*, 24, e49.
- Javed, A., & Khan, F. N. (2024). Assessing the Determinants of Services Exports of Pakistan An Application of Extended Gravity Model. *Academy of Education and Social Sciences Review*, 4(4), 516–530.
<https://doi.org/10.48112/aessr.v4i4.925>
- Sarstedt, M. (2019). Revisiting hair et al.'s multivariate data analysis: 40 years later. In *The great facilitator: Reflections on the contributions of Joseph F. Hair, Jr. to marketing and business research* (pp. 113–119). Springer.
- Sobirov, Y., Artikov, B., Khodjaniyozov, E., Marty, P., & Saidmamatov, O. (2025). Economic Growth, FDI, Tourism, and Agricultural Productivity as Drivers of Environmental Degradation: Testing the EKC Hypothesis in ASEAN Countries. *Sustainability (Switzerland)*, 17(18), 1–24. <https://doi.org/10.3390/su17188394>
- The ASEAN Secretariat. (2023). *ASEAN Statistical Yearbook 2023*.
<https://www.aseanstats.org/publication/asean-statistical-yearbook-2023/>
- Thomas, M. P., Srivastava, A., & Mallela, K. (2023). Tourism Exports, Digitalisation, and Employment during the COVID-19 Pandemic: The Case of Indonesia. *ERIA Discussion Paper Series*, 491.
<https://www.eria.org/uploads/Tourism-Exports-Digitalisation-Employment-during-COVID-19.pdf>
- Wonyra, K. O., Cassama, B. L. S., & Gnedeka, K. T. (2023). Towards the Operationalization of the AfCFTA Trade in Services Protocol: Do FDI and ICT Enable Trade in Services for ECOWAS Countries? *European Journal of Development Studies*, 3(1), 42–51.
<https://doi.org/10.24018/ejdevelop.2023.3.1.195>
- Yangailo, T. (2025). *Sustainable Tourism and Economic Growth: The Role of Renewable Energy, Digital Connectivity, and Environmental Conservation Across Global Regions*. 8, 112–147.