

REFERENCES

- A. Harris, M., & P. Patten, K. (2014). Mobile device security considerations for small- and medium-sized enterprise business mobility. *Information Management & Computer Security*, 22(1), 97–114. <https://doi.org/10.1108/IMCS-03-2013-0019>
- Abdulai, A., & Delgado, C. L. (1999). Determinants of Nonfarm Earnings of Farm-Based Husbands and Wives in Northern Ghana. *American Journal of Agricultural Economics*, 81(1), 117–130. <https://doi.org/10.2307/1244455>
- Abid, M., Scheffran, J., Schneider, U. A., & Ashfaq, M. (2015). Farmers' perceptions of and adaptation strategies to climate change and their determinants: the case of Punjab province, Pakistan. *Earth System Dynamics*, 6(1), 225–243. <https://doi.org/10.5194/esd-6-225-2015>
- Aditya, D. S. (2021). Embarking digital learning due to COVID-19: Are teachers ready? *Journal of Technology and Science Education*, 11(1), 104. <https://doi.org/10.3926/jotse.1109>
- AGUSTINA, N., & PRAMANA, S. (2019). The Impact of Development and Government Expenditure for Information and Communication Technology on Indonesian Economic Growth. *Journal of Business Economics and Environmental Studies*, 9(4), 5–13. <https://doi.org/10.13106/jbees.2019.vol9.no4.5>
- Aker, J. C., & Mbiti, I. M. (2010). Mobile Phones and Economic Development in Africa. *Journal of Economic Perspectives*, 24(3), 207–232. <https://doi.org/10.1257/jep.24.3.207>
- Ariansyah, K. (2018). The Importance of the Internet on Improving Economic Welfare: An Empirical Evidence from Indonesian Rural Household. *2018 International Conference on ICT for Rural Development (IC-ICTRuDev)*, 118–123. <https://doi.org/10.1109/ICICTR.2018.8706868>
- Arifin, Z. (2011). *THE IMPACT OF MOBILE PHONES ON HOUSEHOLD WELFARE IN INDONESIA: EVIDENCE AND IMPLICATIONS*. University of Pittsburgh.

- Atkinson, A. C., Riani, M., & Torti, F. (2016). Robust methods for heteroskedastic regression. *Computational Statistics & Data Analysis*, 104, 209–222.
<https://doi.org/10.1016/j.csda.2016.07.002>
- Awudu Abdulai, Christopher L., & DElgado. (1999). Determinants of Time Spent in Non-farm Employment by Farmers in Northern Ghana. In *Food Security, Diversification and Resource Management: Refocusing the Role of Agriculture?* (1st Edition). Routledge.
- Badan Pusat Statistik. (2014). *Banyaknya Desa/Kelurahan yang Memiliki Tower BTS menurut Provinsi dan Klasifikasi Daerah*. Data Komunikasi .
<https://www.bps.go.id/indicator/2/1677/1/-banyaknya-desa-kelurahan-yang-memiliki-menara-base-transceiver-station-bts-menurut-provinsi-dan-klasifikasi-daerah.html>
- Badan Pusat Statistik. (2021). *Banyaknya Desa/Kelurahan yang Menerima Sinyal Telepon Selular Menurut Provinsi (Sinyal Kuat) (Desa)*. Data Komunikasi .
<https://www.bps.go.id/indicator/2/1676/1/banyaknya-desa-kelurahan-yang-menerima-sinyal-telepon-selular-menurut-provinsi-sinyal-kuat-.html>
- Badan Pusat Statistik. (2023). *Badan Pusat Statistik*. Badan Pusat Statistik.
<https://www.bps.go.id/subject/35/usaha-mikro-kecil.html>
- Bagchi, K., & Udo, G. (2007). EMPIRICALLY TESTING FACTORS THAT DRIVE ICT ADOPTION IN AFRICA AND OECD SET OF NATIONS. *Issues In Information Systems*, VIII(2). https://doi.org/10.48009/2_iis_2007_45-52
- Barrantes, R. (2010). Analysis of ICT Demand: What Is and How to Measure Digital Poverty? In *Digital Poverty* (pp. 29–53). Practical Action Publishing.
<https://doi.org/10.3362/9781780441115.002>
- Baser, O. (2006). Too Much Ado about Propensity Score Models? Comparing Methods of Propensity Score Matching. *Value in Health*, 9(6), 377–385.
<https://doi.org/10.1111/j.1524-4733.2006.00130.x>

- Basri, W. Sh., Alandejani, J. A., & Almadani, F. M. (2018). ICT Adoption Impact on Students' Academic Performance: Evidence from Saudi Universities. *Education Research International*, 2018, 1–9. <https://doi.org/10.1155/2018/1240197>
- Becker, S. O., & Ichino, A. (2002). Estimation of Average Treatment Effects Based on Propensity Scores. *The Stata Journal: Promoting Communications on Statistics and Stata*, 2(4), 358–377. <https://doi.org/10.1177/1536867X0200200403>
- Bollen, K. A., Kirby, J. B., Curran, P. J., Paxton, P. M., & Chen, F. (2007). Latent Variable Models Under Misspecification: Two-Stage Least Squares (2SLS) and Maximum Likelihood (ML) Estimators. *Sociological Methods & Research*, 36(1), 48–86. <https://doi.org/10.1177/0049124107301947>
- Boston Consulting Group, & Blibli. (2022). *Unlocking Inclusive Growth Through Digitalization of Indonesian MSMEs*. <https://web-assets.bcg.com/f7/12/69a982464a39922b1951f28fa4f0/whitepaper-unlocking-inclusive-growth-through-digitalization-of-indonesian-msmes.pdf>
- Boston Consulting Group, & Giga Connect. (2021). *Indonesia case study Giga in collaboration with Boston Consulting Group (BCG)*. www.gigaconnect.org
- Browning, M., & Chiappori, P. A. (1998). Efficient Intra-Household Allocations: A General Characterization and Empirical Tests. *Econometrica*, 66(6), 1241. <https://doi.org/10.2307/2999616>
- Bruno Losch, Sandrine Fréguin-Gresh, & Eric Thomas White. (2012). Structural Transformation and Rural Change Revisited : Challenges for Late Developing Countries in a Globalizing World. *World Bank Publications - Books*.
- Bruque, S., & Moyano, J. (2007). Organisational determinants of information technology adoption and implementation in SMEs: The case of family and cooperative firms. *Technovation*, 27(5), 241–253. <https://doi.org/10.1016/j.technovation.2006.12.003>
- Brynjolfsson, E. (1993). The productivity paradox of information technology. *Communications of the ACM*, 36(12), 66–77. <https://doi.org/10.1145/163298.163309>

- Busaidi, N. S. Al, Bhuiyan, A. B., & Zulkifli, N. (2019). The Critical Review on the Adoption of ICTs in the Small and Medium Enterprises (SMEs) in the Developing Countries. *International Journal of Small and Medium Enterprises*, 2(2), 33–40. <https://doi.org/10.46281/ijsmes.v2i2.437>
- Cahyadi, A. (2020). Covid-19 Outbreak and New Normal Teaching in Higher Education: Empirical Resolve from Islamic Universities in Indonesia. *Dinamika Ilmu*, 255–266. <https://doi.org/10.21093/di.v20i2.2545>
- Caldarola, B. (2022). Mobile Internet Adoption and Inclusive Structural Change: Evidence from Nigerian Non-Farming Enterprises. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.4233182>
- Caliendo, M., & Kopeinig, S. (2008). SOME PRACTICAL GUIDANCE FOR THE IMPLEMENTATION OF PROPENSITY SCORE MATCHING. *Journal of Economic Surveys*, 22(1), 31–72. <https://doi.org/10.1111/j.1467-6419.2007.00527.x>
- Chapman, D. W., & Mahlck, L. O. (2004). *dapting technology for school improvement: A global perspective*. UNESCO .
- Chinyuku, M., Karim, A. M., Dikito, A. R., Mugodza, A., & Mavani, B. (2022). Conceptual Framework of the Impact of Social Media Adoption by Selected MSMEs in Zimbabwe. *International Journal of Academic Research in Business and Social Sciences*, 12(11). <https://doi.org/10.6007/IJARBSS/v12-i11/15584>
- Cochran, W. G. (2006). Controlling Bias in Observational Studies: A Review. In *Matched Sampling for Causal Effects* (pp. 30–58). Cambridge University Press. <https://doi.org/10.1017/CBO9780511810725.005>
- Daramola, A. O., Fashoto, B. T., Ogunbiyi, T. F., & Ekpeni, N. M. (2019). An assessment of the role of non-farm sources in household income diversification in Oyo State. *AFRREV STECH: An International Journal of Science and Technology*, 8(1), 90–100. <https://doi.org/10.4314/stech.v8i1.8>

- Dehejia, R. H., & Wahba, S. (2002). Propensity Score-Matching Methods for Nonexperimental Causal Studies. *Review of Economics and Statistics*, 84(1), 151–161. <https://doi.org/10.1162/003465302317331982>
- Deng, L., Zhang, H., Song, L., & Yu, K. (2020). Approximation of bias and mean-squared error in two-sample Mendelian randomization analyses. *Biometrics*, 76(2), 369–379. <https://doi.org/10.1111/biom.13169>
- Donner, J. (2008). Research Approaches to Mobile Use in the Developing World: A Review of the Literature. *The Information Society*, 24(3), 140–159. <https://doi.org/10.1080/01972240802019970>
- East Ventures, PwC Indonesia, & Kata Data Insights. (2023). *Digital Competitiveness Index 2023*. <https://east.vc/reports/east-ventures-digital-competitiveness-index-2023/>
- Elena-Bucea, A., Cruz-Jesus, F., Oliveira, T., & Coelho, P. S. (2021). Assessing the Role of Age, Education, Gender and Income on the Digital Divide: Evidence for the European Union. *Information Systems Frontiers*, 23(4), 1007–1021. <https://doi.org/10.1007/s10796-020-10012-9>
- Escobal, J. (2001). The Determinants of Nonfarm Income Diversification in Rural Peru. *World Development*, 29(3), 497–508. [https://doi.org/10.1016/S0305-750X\(00\)00104-2](https://doi.org/10.1016/S0305-750X(00)00104-2)
- Esselaar, S., Stork, C., Ndiwalana, A., & Deen-Swarrray, M. (2006). ICT usage and its impact on profitability of SMEs in 13 African Countries. *2006 International Conference on Information and Communication Technologies and Development*, 40–47. <https://doi.org/10.1109/ICTD.2006.301836>
- Eze, S. C., Awa, H. O., Chinedu-Eze, V. C. A., & Bello, A. O. (2021). Demographic determinants of mobile marketing technology adoption by small and medium enterprises (SMEs) in Ekiti State, Nigeria. *Humanities and Social Sciences Communications*, 8(1), 82. <https://doi.org/10.1057/s41599-021-00762-5>

- Fafchamps, M. (1992). Cash Crop Production, Food Price Volatility, and Rural Market Integration in the Third World. *American Journal of Agricultural Economics*, 74(1), 90–99. <https://doi.org/10.2307/1242993>
- Frempong, G. (2009). Mobile telephone opportunities: the case of micro- and small enterprises in Ghana. *Info*, 11(2), 79–94. <https://doi.org/10.1108/14636690910941902>
- Guo, S., Fraser, M., & Chen, Q. (2020). Propensity Score Analysis: Recent Debate and Discussion. *Journal of the Society for Social Work and Research*, 11(3), 463–482. <https://doi.org/10.1086/711393>
- Haggblade, S., Hazell, P. B. R., & Thomas Reardon. (2007). *Transforming the Rural Nonfarm Economy Opportunities and Threats in the Developing World*. [https://doi.org/https://doi.org/10.1016/0305-750x\(89\)90232-5](https://doi.org/https://doi.org/10.1016/0305-750x(89)90232-5)
- Hamilton, L. C., & Asundi, R. (2008). Technology usage and innovation. *Management Research News*, 31(11), 830–845. <https://doi.org/10.1108/01409170810913033>
- Harshana P Suriyapperuma, Mohd Shukri, Ab Yajid, Ali Khatibi, & Sandaram P Premaratna. (2015). The Impact of Internet Adoption on SME performance in Sri Lanka: Development of a Conceptual Framework . *International Journal of Arts and Commerce*, 4(1), 46–58.
- Hasbi, M., & Dubus, A. (2020). Determinants of mobile broadband use in developing economies: Evidence from Sub-Saharan Africa. *Telecommunications Policy*, 44(5), 101944. <https://doi.org/10.1016/J.TELPOL.2020.101944>
- Heckman, J. J., Ichimura, H., & Todd, P. E. (1997). Matching As An Econometric Evaluation Estimator: Evidence from Evaluating a Job Training Programme. *The Review of Economic Studies*, 64(4), 605–654. <https://doi.org/10.2307/2971733>
- Hitt, L. M., & Brynjolfsson, E. (1996a). Productivity, Business Profitability, and Consumer Surplus: Three Different Measures of Information Technology Value. *MIS Quarterly*, 20(2), 121. <https://doi.org/10.2307/249475>

- Imbens, G. W., & Wooldridge, J. M. (2009). Recent Developments in the Econometrics of Program Evaluation. *Journal of Economic Literature*, 47(1), 5–86.
<https://doi.org/10.1257/jel.47.1.5>
- Indosat, & Twimbit. (2023). *Empowering Indonesia Report 2023*.
https://ioh.co.id/portal/en/ioh-qos-detail?_id=10012824
- International Bank for Reconstruction and Development, & World Bank. (2017). *Growing the rural nonfarm economy to alleviate poverty an evaluation of the contribution of the World Bank Group*. 0–289.
<https://documents1.worldbank.org/curated/fr/708691509117647052/pdf/Growing-the-rural-nonfarm-economy-to-alleviate-poverty-an-evaluation-of-the-contribution-of-the-World-Bank-Group.pdf>
- International Trade Centre. (2022). *SME COMPETITIVENESS OUTLOOK 2022*.
<http://www.intracen.org>
- J, S., Witoelar, F., & Sikoki, B. (2014). *The Fifth Wave of the Indonesia Family Life Survey (IFLS5): Overview and Field Report*.
- J Twisk, L Bosman, T Hoekstra, J Rijnhart, M Welten, & M Heymans. (2018). Different ways to estimate treatment effects in randomised controlled trials. *Contemporary Clinical Trials Communications*, 10, 80–85.
<https://doi.org/10.1016/j.conctc.2018.03.008>
- Jaganathan, D., Ramasamy, K., Sellamuthu, G., Jayabalan, S., & Venkataraman, G. (2018). CRISPR for Crop Improvement: An Update Review. *Frontiers in Plant Science*, 9. <https://doi.org/10.3389/fpls.2018.00985>
- Junior Davis. (2006). Rural Non-farm Livelihoods in Transition Economies: Emerging Issues and Policies. *The Electronic Journal of Agricultural and Development Economics*, 3(2), 180–224.
<https://EconPapers.repec.org/RePEc:fao:tejade:v:3:y:2006:i:2:p:180-224>

- Kallol Bagchi, & Godwin Udo. (2007). EMPIRICALLY TESTING FACTORS THAT DRIVE ICT ADOPTION IN AFRICA AND OECD SET OF NATIONS. *Issues In Information Systems*, VIII(2). https://doi.org/10.48009/2_iis_2007_45-52
- Karakaya, F., & Khalil, O. (2004). Determinants of internet adoption in small and medium-sized enterprises. *International Journal of Internet and Enterprise Management*, 2(4), 341. <https://doi.org/10.1504/IJIEEM.2004.005568>
- KEMENKOPUKM, & Smesco Indonesia. (2023). *Peta Sebaran UKM di Indonesia* . <https://smesco.go.id/ukm/peta-sebaran>
- Kenessey, Z. (1987). THE PRIMARY, SECONDARY, TERTIARY AND QUATERNARY SECTORS OF THE ECONOMY. *Review of Income and Wealth*, 33(4), 359–385. <https://doi.org/10.1111/j.1475-4991.1987.tb00680.x>
- Khalil Moghaddam, B., & Khatoon-Abadi, A. (2013). Factors affecting ICT adoption among rural users: A case study of ICT Center in Iran. *Telecommunications Policy*, 37(11), 1083–1094. <https://doi.org/10.1016/j.telpol.2013.02.005>
- Khanal, A. R., & Mishra, A. K. (2016). Financial performance of small farm business households: the role of internet. *China Agricultural Economic Review*, 8(4), 553–571. <https://doi.org/10.1108/CAER-12-2014-0147>
- Kumar, A., & Ayedee, N. (2020). Technology Adoption: A Solution for SMEs to Overcome Problems during COVID-19. *Forthcoming, Academy of Marketing Studies Journal* , 25(1).
- Kumar, A., & Kalse, A. (2022). Usage and adoption of artificial intelligence in SMEs. *Materials Today: Proceedings*. <https://doi.org/10.1016/j.matpr.2021.01.595>
- Kusumaningtyas, N., & Suwanto, D. H. (2015). ICT Adoption, Skill and Use Differences among Small and Medium Enterprises Managers Based on Demographic Factors. *Procedia - Social and Behavioral Sciences*, 169, 296–302. <https://doi.org/10.1016/j.sbspro.2015.01.313>

- Loane, S., Bell, J., & Deans, K. R. (2007). Internet adoption by rapidly internationalising SMEs: a further challenge to staged e-adoption models. *International Journal of Entrepreneurship and Small Business*, 4(3), 277.
<https://doi.org/10.1504/IJESB.2007.013252>
- Lu, H., Pishdad-Bozorgi, P., Wang, G., Xue, Y., & Tan, D. (2019). ICT Implementation of Small- and Medium-Sized Construction Enterprises: Organizational Characteristics, Driving Forces, and Value Perceptions. *Sustainability*, 11(12), 3441.
<https://doi.org/10.3390/su11123441>
- Magsamen-Conrad, K., Upadhyaya, S., Joa, C. Y., & Dowd, J. (2015). Bridging the divide: Using UTAUT to predict multigenerational tablet adoption practices. *Computers in Human Behavior*, 50, 186–196.
<https://doi.org/10.1016/j.chb.2015.03.032>
- Mariyono, J. (2019). Microcredit and technology adoption. *Agricultural Finance Review*, 79(1), 85–106. <https://doi.org/10.1108/AFR-05-2017-0033>
- Mathews, S., Perks, K. J., Bianchi, C., Chen, H.-L., & Glavas, C. (2021). Leveraging Internet capabilities for international business relationships: a comparison between Australian, Chilean and Taiwanese exporting SMEs. *Journal of Small Business and Enterprise Development*, 28(3), 380–398. <https://doi.org/10.1108/JSBED-12-2018-0385>
- Mmbando, F., Mbeyagala, E., Binagwa, P., Karimi, R., Opie, H., Ochieng, J., Mutuoki, T., & Nair, R. M. (2021). Adoption of Improved Mungbean Production Technologies in Selected East African Countries. *Agriculture*, 11(6), 528.
<https://doi.org/10.3390/agriculture11060528>
- Muhaimin, Asrial, Habibi, A., Mukminin, A., & Hadisaputra, P. (2020). Science teachers' integration of digital resources in education: A survey in rural areas of one Indonesian province. *Heliyon*, 6(8), e04631.
<https://doi.org/10.1016/j.heliyon.2020.e04631>

- Navarro-García, A., Peris-Ortiz, M., & Barrera-Barrera, R. (2016). Market intelligence effect on perceived psychic distance, strategic behaviours and export performance in industrial SMEs. *Journal of Business & Industrial Marketing*, 31(3), 365–380. <https://doi.org/10.1108/JBIM-03-2013-0065>
- Neves, B. B., Waycott, J., & Malta, S. (2018). Old and afraid of new communication technologies? Reconceptualising and contesting the ‘age-based digital divide.’ *Journal of Sociology*, 54(2), 236–248. <https://doi.org/10.1177/1440783318766119>
- O’Brien, R. M. (2007). A Caution Regarding Rules of Thumb for Variance Inflation Factors. *Quality & Quantity*, 41(5), 673–690. <https://doi.org/10.1007/s11135-006-9018-6>
- Ogutu, S. O., Okello, J. J., & Otieno, D. J. (2014). Impact of Information and Communication Technology-Based Market Information Services on Smallholder Farm Input Use and Productivity: The Case of Kenya. *World Development*, 64, 311–321. <https://doi.org/10.1016/j.worlddev.2014.06.011>
- Okundaye, K., Fan, S. K., & Dwyer, R. J. (2019). Impact of information and communication technology in Nigerian small-to medium-sized enterprises. *Journal of Economics, Finance and Administrative Science*, 24(47), 29–46. <https://doi.org/10.1108/JEFAS-08-2018-0086>
- Olken, B. A. (2009). Do Television and Radio Destroy Social Capital? Evidence from Indonesian Villages. *American Economic Journal: Applied Economics*, 1(4), 1–33. <https://doi.org/10.1257/app.1.4.1>
- Ongori, H., & Migiro, S. O. (2010). Information and communication technologies adoption in SMEs: literature review. *Journal of Chinese Entrepreneurship*, 2(1), 93–104. <https://doi.org/10.1108/17561391011019041>
- Pradono, W. (2021). Analysis on Competition Type between Fixed and Mobile Broadband Service in Indonesia. *Buletin Pos Dan Telekomunikasi*, 19(2), 97. <https://doi.org/10.17933/bpostel.2021.190202>

- Priya, R., Gandhi, A. V., & Shaikh, A. (2018). Mobile banking adoption in an emerging economy. *Benchmarking: An International Journal*, 25(2), 743–762.
<https://doi.org/10.1108/BIJ-01-2016-0009>
- Rahayu, B. I., & Riyanto, R. (2020). The Role of Mobile Phone and Internet Use in the Performance of Rural Non-Farm Enterprises: An Analysis of Indonesian Rural Households. *Buletin Pos Dan Telekomunikasi*, 18(1), 29.
<https://doi.org/10.17933/bpostel.2020.180103>
- Rahayu, R., & Day, J. (2017). E-commerce adoption by SMEs in developing countries: evidence from Indonesia. *Eurasian Business Review*, 7(1), 25–41.
<https://doi.org/10.1007/s40821-016-0044-6>
- Rahiem, M. D. H. (2020). Technological Barriers and Challenges in the Use of ICT during the COVID-19 Emergency Remote Learning. *Universal Journal of Educational Research*, 8(11B), 6124–6133.
<https://doi.org/10.13189/ujer.2020.082248>
- Ramadhani, C. E. (2023). Household Economic Welfare During the Rise of Mobile Phone Expansion in Indonesia. *Jurnal Perencanaan Pembangunan: The Indonesian Journal of Development Planning*, 7(1), 161–179. <https://doi.org/10.36574/jpp.v7i1.407>
- Reardon, T., Berdegue, J., & Escobar, G. (2001). Rural Nonfarm Employment and Incomes in Latin America: Overview and Policy Implications. *World Development*, 29(3), 395–409. [https://doi.org/10.1016/S0305-750X\(00\)00112-1](https://doi.org/10.1016/S0305-750X(00)00112-1)
- Reddick, C. G., Enriquez, R., Harris, R. J., & Sharma, B. (2020). Determinants of broadband access and affordability: An analysis of a community survey on the digital divide. *Cities*, 106, 102904. <https://doi.org/10.1016/j.cities.2020.102904>
- Rekkas, A., Paulus, J. K., Raman, G., Wong, J. B., Steyerberg, E. W., Rijnbeek, P. R., Kent, D. M., & van Klaveren, D. (2020). Predictive approaches to heterogeneous treatment effects: a scoping review. *BMC Medical Research Methodology*, 20(1), 264. <https://doi.org/10.1186/s12874-020-01145-1>

- Rini, A. N., & Rahadiantino, L. (2020). The Role of Internet Utilization Among SMEs on Household Welfare in Indonesia. *Jurnal Ekonomi Indonesia*, 9(1), 25–37.
<https://doi.org/10.52813/jei.v9i1.42>
- Rodríguez-Castelán, C., & Pierola, D. (2022). *Determinants and Welfare Impacts of Mobile Internet Adoption in African Countries* *EQUITABLE GROWTH, FINANCE & INSTITUTIONS INSIGHT*. <http://hdl.handle.net/10986/38007>
- Röller, L.-H., & Waverman, L. (2001). Telecommunications Infrastructure and Economic Development: A Simultaneous Approach. *American Economic Review*, 91(4), 909–923. <https://doi.org/10.1257/aer.91.4.909>
- ROSENBAUM, P. R., & RUBIN, D. B. (1983). The central role of the propensity score in observational studies for causal effects. *Biometrika*, 70(1), 41–55.
<https://doi.org/10.1093/biomet/70.1.41>
- Rosenbaum, P. R., & Rubin, D. B. (1985a). Constructing a Control Group Using Multivariate Matched Sampling Methods That Incorporate the Propensity Score. *The American Statistician*, 39(1), 33. <https://doi.org/10.2307/2683903>
- Rosenbaum, P. R., & Rubin, D. B. (1985b). Constructing a Control Group Using Multivariate Matched Sampling Methods That Incorporate the Propensity Score. *The American Statistician*, 39(1), 33. <https://doi.org/10.2307/2683903>
- Rubin, D. B. (1979). Using Multivariate Matched Sampling and Regression Adjustment to Control Bias in Observational Studies. *Journal of the American Statistical Association*, 74(366), 318. <https://doi.org/10.2307/2286330>
- Rubin, D. B. (2001). Using Propensity Scores to Help Design Observational Studies: Application to the Tobacco Litigation. *Health Services and Outcomes Research Methodology*, 2(3/4), 169–188. <https://doi.org/10.1023/A:1020363010465>
- Rubin, D. B., & Thomas, N. (2000). Combining Propensity Score Matching with Additional Adjustments for Prognostic Covariates. *Journal of the American Statistical Association*, 95(450), 573. <https://doi.org/10.2307/2669400>

Rural non-farm livelihoods in transition economies: emerging issues and policies. (n.d.).

Retrieved June 25, 2023, from

https://econpapers.repec.org/article/faotejade/v_3a3_3ay_3a2006_3ai_3a2_3ap_3a180-224.htm

Sabani, A. (2021). Investigating the influence of transparency on the adoption of e-Government in Indonesia. *Journal of Science and Technology Policy Management*, 12(2), 236–255. <https://doi.org/10.1108/JSTPM-03-2020-0046>

Sahoo, P., Sahoo, D., & Chandra, S. (2020). Changes in Rural Poverty Among Occupational Groups in Odisha: An Analysis of Post-Reform Period. *Journal of Land and Rural Studies*, 8(2), 150–165. <https://doi.org/10.1177/2321024920914759>

Salat, H., Schlöpfer, M., Smoreda, Z., & Rubrichi, S. (2021). Analysing the impact of electrification on rural attractiveness in Senegal with mobile phone data. *Royal Society Open Science*, 8(10). <https://doi.org/10.1098/rsos.201898>

SBH Indonesia. (2021). *Market Report: Indonesia ICT MARKET REPORT: INDONESIA INFORMATION COMMUNICATIONS TECHNOLOGY (ICT)*. <https://www.sge.com/en/publication/industry-report/20182-ict-indonesia?ct>

Sekere, E. K. (2016). *IMPACT OF MOBILE PHONE COMMUNICATION ON SME PERFORMANCE: A CASE OF SELECTED UNITS*. United States International University.

Simmons, G. J., Durkin, M. G., McGowan, P., & Armstrong, G. A. (2007). Determinants of internet adoption by SME agri-food companies. *Journal of Small Business and Enterprise Development*, 14(4), 620–640. <https://doi.org/10.1108/14626000710832730>

Sin Tan, K., Choy Chong, S., Lin, B., & Cyril Eze, U. (2010). Internet-based ICT adoption among SMEs. *Journal of Enterprise Information Management*, 23(1), 27–55. <https://doi.org/10.1108/17410391011008897>

- Sircar, S., & Choi, J. (2009). A study of the impact of information technology on firm performance: a flexible production function approach. *Information Systems Journal*, 19(3), 313–339. <https://doi.org/10.1111/j.1365-2575.2007.00274.x>
- Skafi, M., Yunis, M. M., & Zekri, A. (2020). Factors Influencing SMEs' Adoption of Cloud Computing Services in Lebanon: An Empirical Analysis Using TOE and Contextual Theory. *IEEE Access*, 8, 79169–79181. <https://doi.org/10.1109/ACCESS.2020.2987331>
- Smith, H. L. (1997). 6. Matching with Multiple Controls to Estimate Treatment Effects in Observational Studies. *Sociological Methodology*, 27(1), 325–353. <https://doi.org/10.1111/1467-9531.271030>
- Spanos, Y. E., Prastacos, G. P., & Poulymenakou, A. (2002). The relationship between information and communication technologies adoption and management. *Information & Management*, 39(8), 659–675. [https://doi.org/10.1016/S0378-7206\(01\)00141-0](https://doi.org/10.1016/S0378-7206(01)00141-0)
- Sridhar, V., & Sridhar, K. S. (2008). E-Commerce Infrastructure and Economic Impacts in Developing Countries. In *Global Information Technologies* (pp. 1499–1519). IGI Global. <https://doi.org/10.4018/978-1-59904-939-7.ch109>
- Stuart, E. A. (2010). Matching Methods for Causal Inference: A Review and a Look Forward. *Statistical Science*, 25(1). <https://doi.org/10.1214/09-STS313>
- Tarutè, A., & Gatautis, R. (2014). ICT Impact on SMEs Performance. *Procedia - Social and Behavioral Sciences*, 110, 1218–1225. <https://doi.org/10.1016/j.sbspro.2013.12.968>
- Teo, T. S. H. (2001). Demographic and motivation variables associated with Internet usage activities. *Internet Research*, 11(2), 125–137. <https://doi.org/10.1108/10662240110695089>
- Ullah, A., Saqib, S. E., & Kächele, H. (2022). Determinants of Farmers' Awareness and Adoption of Extension Recommended Wheat Varieties in the Rainfed Areas of Pakistan. *Sustainability*, 14(6), 3194. <https://doi.org/10.3390/su14063194>

- Untari, R., Priyarsono, D. S., & Novianti, T. (2019). Impact of Information and Communication Technology (ICT) Infrastructure on Economic Growth and Income Inequality in Indonesia. *International Journal of Scientific Research in Science, Engineering and Technology*, 109–116. <https://doi.org/10.32628/IJSRSET196130>
- Wang, J., Yin, Z., & Jiang, J. (2023). The effect of the digital divide on household consumption in China. *International Review of Financial Analysis*, 87, 102593. <https://doi.org/10.1016/J.IRFA.2023.102593>
- Wang, Q., Yang, J., Chiu, Y., & Lin, T. (2023). Cross-regional comparative study on digital finance and finance efficiency in China: The eastern and non-eastern areas. *Managerial and Decision Economics*, 44(1), 68–83. <https://doi.org/10.1002/mde.3667>
- Wang, Y., Kofi Andoh-Baidoo, F., & Sun, J. (2014). Security investment in aviation industry: a longitudinal analysis. *Industrial Management & Data Systems*, 114(2), 276–291. <https://doi.org/10.1108/IMDS-04-2013-0176>
- World Bank, & International Finance Group. (2017). *Growing the Rural Non-Farm Economy to Alleviate Poverty*. <https://doi.org/10.1596/IEG120636>
- World Economic Forum, & National University of Singapore. (2022). *Future Readiness of SMEs and Mid-Sized Companies: A Year On* . <https://www.weforum.org/reports/future-readiness-of-smes-and-mid-sized-companies-a-year-on>
- Yamakawa Tsuja, P. M., & Matsumoto, M. (2003). Lessons Learned from the Adoption of Mobile Internet Services in Japan. *Cuadernos de Difusión*, 8(14), 7–18. <https://doi.org/10.46631/jefas.2003.v8n14.01>
- Yudo Wicaksono Teguh, & Simangunsong, A. (2022). *Digital Technology Adoption and Indonesia's MSMEs during the COVID-19 Pandemic*.
- Zahid, M., Rahman, H. U., Khan, M., Ali, W., & Shad, F. (2020). Addressing endogeneity by proposing novel instrumental variables in the nexus of sustainability reporting and

firm financial performance: A step-by-step procedure for non-experts. *Business Strategy and the Environment*, 29(8), 3086–3103. <https://doi.org/10.1002/bse.2559>

Zanello, G. (2012). Mobile Phones and Radios: Effects on Transactions Costs and Market Participation for Households in Northern Ghana. *Journal of Agricultural Economics*, 63(3), 694–714. <https://doi.org/10.1111/j.1477-9552.2012.00352.x>

Zeeshan, ., Mohapatra, G., & Giri, A. K. (2019). The Effects of Non-Farm Enterprises on Farm Households' Income and Consumption Expenditure in Rural India. *Economía Agraria y Recursos Naturales*, 19(1), 195. <https://doi.org/10.7201/earn.2019.01.10>

Zhang, Z., Song, J., Yan, C., Xu, D., & Wang, W. (2022). Rural Household Differentiation and Poverty Vulnerability: An Empirical Analysis Based on the Field Survey in Hubei, China. *International Journal of Environmental Research and Public Health*, 19(8), 4878. <https://doi.org/10.3390/ijerph19084878>

Zhou, R., Fong, P. S. W., & Tan, P. (2014). Internet Use and Its Impact on Engagement in Leisure Activities in China. *PLoS ONE*, 9(2), e89598. <https://doi.org/10.1371/journal.pone.0089598>