

Impact of Information and Technology on Economy and Polity: A Covid-19 Perspective

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Abstract— There is a significant reliance on technology to solve economic and political problems worldwide because of an absolute and almost universal reluctance by the officials and government bodies' advice the changes in social and political aspects that result in inefficient production and fewer wastages. The revolution in the Information and Technology sector paying off in increased economic and social activities. This paper aims to identify the various sectors that are motivated by the technological revolution in both economic as well as in political sectors. The paper has review the related and published literature that are already available. In order to conclude that after the pandemic of COVID 19, the usage of digitalisation, information and technology, internet of things and other related technical aspects are being highlighted and shown a drastic transformation from traditional approach to the modern approach.

Keywords— Information; Technology; Economy; Polity; COVID 19.

INTRODUCTION

The economy in the present time is suffering from the global pandemic of coronavirus which has emerged from the Wuhan city of China. Later, the virus has been spread to many countries and thus given its effect on various sectors. The economy as a whole got affected on two bases that are demand side shocks and supply side shocks.

Information and technology have changed the business scenario around the world and lead out a different dimension of its usage. In the era of 21st century, digitalisation has taken a major space in the economy. It has led from paperwork economy to the to the paperless and cashless economy. The human is more of technology enabled and divert towards use of such technology on a very frequent basis. It could be more stated as dependence of human on the information technology that could be defined by word "dystopia" The technology has a direct influence on society that ultimately showcases on the entire economy. Technology is something to resist upon. There are various factors that shows the emergence of technology.

Consumer's Expectation: By the time new technology appears in the market it increases the demand of such products and such high expectations of the consumers may pose a challenging situation among business communities. Such increase in demand, expectations of better quality of product, innovative product, polluted free commodity, safer, and more comfortable, reusable products should be produced and supplied in the market. **Technology and Business Relationship:** The business activities have a direct effect of technology. The new inventions, innovations and scientific discoveries may prove as meaningless unless there are competent venture units to produce for the society what science has invented. The entire society and its working are dependent upon the business sectors to receive the innovative goods and services for mankind. The business institutes promote new discoveries and creative ideas.

Technology is a crucial platform for politics to create community at both grassroots and bureaucratic level. The internet and its associated technologies catalyze political change by creating new opportunities for cooperation. In the beginning technology was used to disseminate information and interactivity was limited. However, as the use of the internet has increased, so has the use of technologies in politics?

This study aims to draw insights into the interaction between technology and polity as well as technology and economy.

Interaction between Technology and Economy:

Increase in qualitative and quantitative production: There is a positive relation of technology on productivity. The more the better technology, the less the production cost. With the increase in productivity, real wages of the employees increase which results in decline in the price of some products. Thus the impact of technology benefits the whole social system.

Promotion of Research and Development: In the lieu of importing technology the government of the developing country should opt for research and development. The research institutes and organisations should be motivated to work upon innovation technologies that

could lead the country to be self-reliant and reduce vulnerability. The allocation of required funds in the research and development, promoting the researchers to visit foreign to get training so that it could help in implying the foreign technology at home at very less cost. Ensuring the availability of technology to all segments of the society. The R&D wing in any country provides vital input to the large and small scale enterprises.

Intellectual and Upgraded jobs: By the adoption of updated technology in the market, it requires the skilled, competent and educated workers instead of unskilled ones. The switch in the job roles demands computer and technical experts. Thus, the improvement in technology has a positive effect on the more intellectual and

upgraded jobs. In order to employ the skilled workforce, the role of education plays a vital role by providing the required training and skills to the students so that they can meet the need of jobs available.

Innovation-cluster product cycle: By the means of technology, it means to change and more change. A new technology in the market could develop a new industry but could also harm the existing ones. According to an Economist Schumpeter, there is a product cycle of every commodity. When a new technology comes, it replaces the existing one. The industries that could not cope up with the innovation will automatically disappear from the market because of the losses. The endogenous change drives the economic revolution.

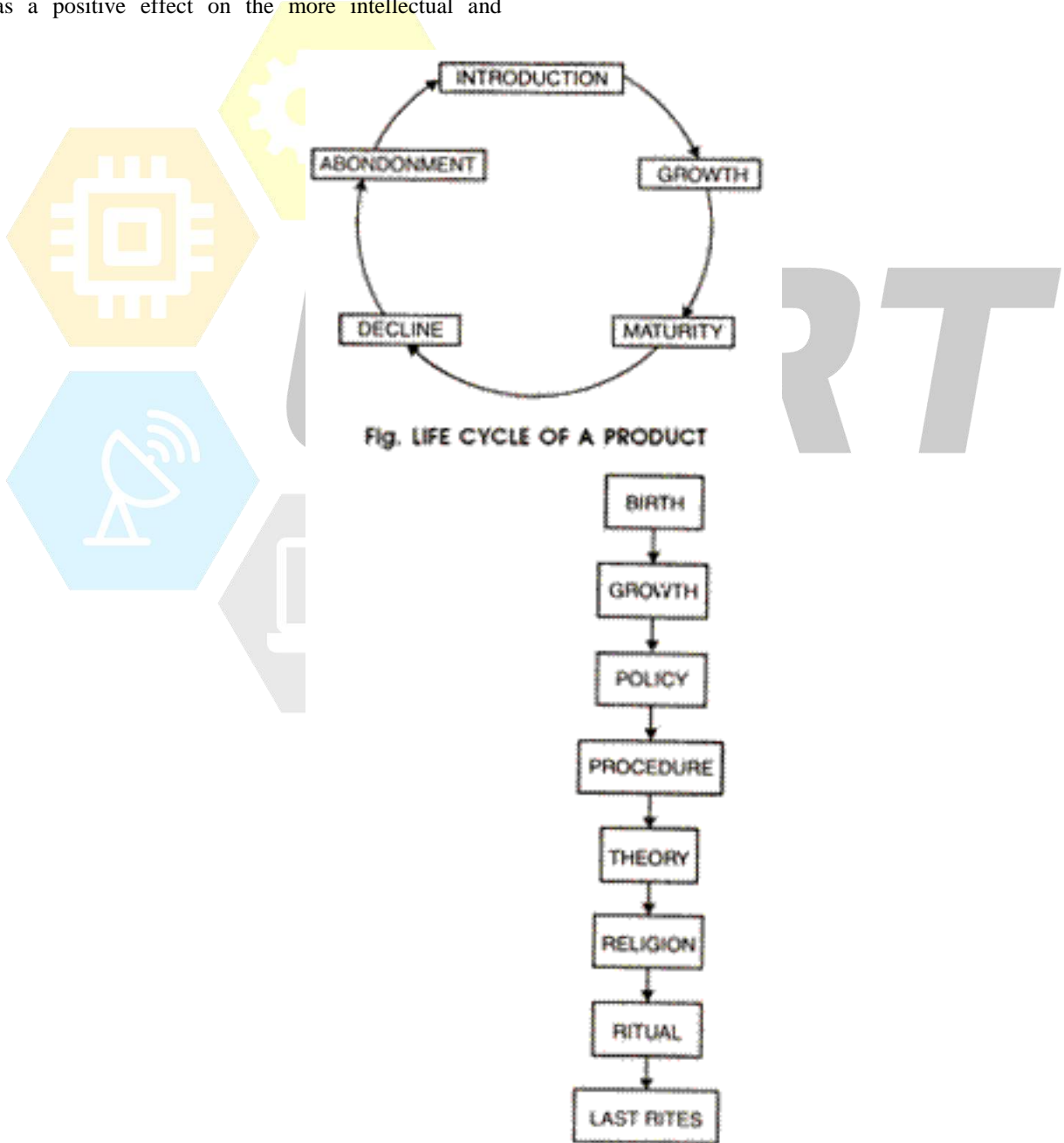


Figure 1: Life Cycle of any new product in the market.

A move towards sustainability: instead of being discarded, when the resources and capital goods re-enters in the market, technology can reduce the production cost and thus reduce wastes. Sustainability can change the nature of an economic growth of any economy. There are various tools of sustainable development that are economic instruments,

legislatives, measures and consumer pressure that aims to achieve technological reforms such as recycling, reusing, minimisation of waste, materials substitution, changed production process, control of pollution and the most efficient utilization of resources. The factors that determines the environmental impact are as follow:

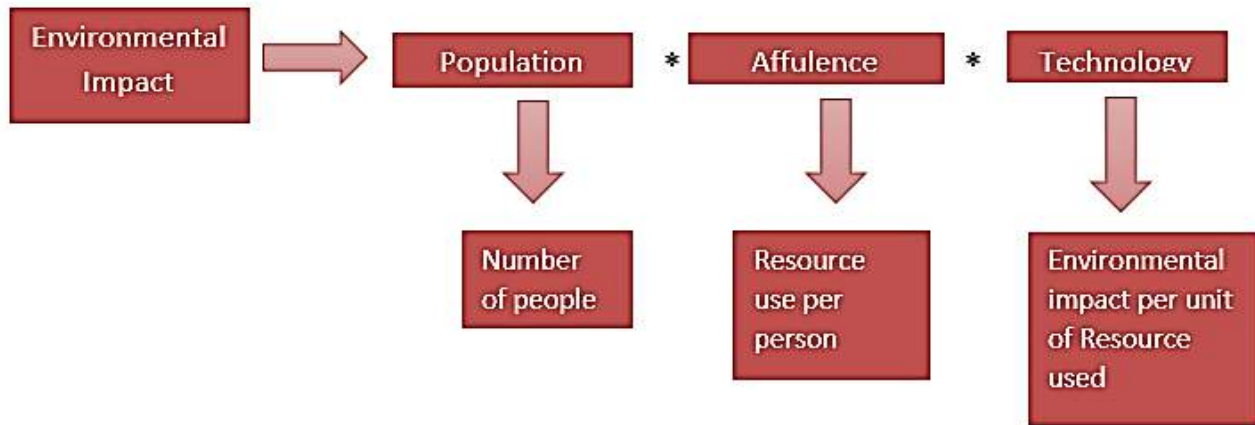


Figure 2: Impact on environment from various sources.

Capital Intensive and Labour Intensive: For an economy as a whole, an improvement in technology shifts the production possibilities frontier to outward. Investment in heavy capital machines and equipment generates high production at low cost and wastage. The technological development has enabled increased capital intensity among industries. Adoption of new technology like Artificial Intelligence, micro-computers, machine learning and the internet have enabled labour intensive industries to turn into capital intensive. The increase in investment in capital can also motivate the increase in labour productivity. To determine the long-run growth rate in an economy, capital and labour productivity plays a major role. Increase in capital intensity requires skilled labour with required skills and training so they could operate machines.

Interaction between Technology and Polity

Technology has been used in elections in organizing political efforts. This has been especially true for the young population who enter the voter base. As per the empirical observation carried out in “Digital Media and Political Engagement Worldwide” is that there is verification of a positive and remarkable effect of digital media on political engagement. At a national-level, a country’s establishment, its media system, and therefore the digital divide touch on the implications of internet-based communications for legislative issues.

The digital technologies can provide assistance to the government’s bodies to:

- Get their citizens better and achieve better results
- Provide administrative services more effectively and efficiently
- Find modern solutions to policy challenges
- Engage with external accomplices to develop latest delivery models
- Commercialize some public services and develop new sources of income.

Digital media: Digital media have significantly extended the collections and channels of political cooperation, communication, and information. The advanced interfacing given by e-mail, blogging stages, and online social organizing destinations disentangle and encourage the creation and dissemination of political messages as well as political enrollment. Advanced media empower the arrangement of emergency, adaptable systems of political organization and communication exterior of conventional civil society systems and media centers

Customer experience: Social media and mobile stages are supplanting conventional channels as a means to connect with the government, report concerns, and give criticism. Mobile services, such as apps and SMS, empower individuals to get to the administrations they require in a more helpful and focused way. These e-participation devices moreover energize more noteworthy collaboration with citizens by including them in choice-making, policy setting, budget

prioritization, issue understanding, and the co-design of administrations. The utilization of advanced analytics permits governments to use information assembled from individuals and gadgets to progress in service design and personalize delivery.

Artificial intelligence: Artificial intelligence (AI) can offer assistance to administrations to citizens, utilizing catboats to complete exchanges within government websites. It can offer assistance to make strides in urban planning by optimizing ways for transport operators, lessening commuters' travel times; give instructive feedback to students based on their personal learning needs; and empower online self-referral and screening, signposting citizens to social administrations based on their needs and qualification.

Block-chain technology: Block-chain technology can help track how money is spent through the system — for example, from finance ministry to spending department and then delivery agency. With superior visibility of investing, governments can make way better choices around how to distribute public resources.

Predictive analysis and text mining: Predictive analytics and text mining can make a vital commitment to the smart administration of public resources by anticipating issues and empowering preventative action — for instance, recognizing taxpayers at the chance of default. Such components are also essential for implementation of Industry 4.0 and its effective technologies around the globe. The concept of Industry 4.0 also plays a vital role in enhancing sustainability on all the three aspects; Economic, Social and Environment perspective.

3D printing: 3D printing has the potential to make strides in turnaround time and decrease development costs for infrastructure and public transportation projects; establish more efficient and lower-cost supply chains for defense agencies; and facilitate job creation and economic transformation of remote locations through the introduction of new manufacturing capabilities.

Citizen security: Citizens are becoming increasingly concerned about the way their data is being used. So, governments are introducing information security management systems to safeguard the data they keep and increasingly rely on. Governments must also exploit the power of cloud computing to increase their own computing capacity, support secure biometric identification programs and provide safe payment platforms for citizen transactions.

Future workforce: Whereas governments plan their own workforces for the computerized age, innovative changes such as computerization and AI have far-reaching suggestions for long-term work, economies, and society in common. Governments must adopt, update and strengthen policies to mitigate adverse social and economic consequences — such as the displacement of workers in some lower-skilled jobs, and widening social inequality.

Smart infrastructure: Smart infrastructure offers a way to saddle the most recent innovations to get maximum value and proficiency and create strength and supportability. It applies digital innovation – such as smart gadgets, sensors, and computer programs – to physical structures, from power plants to bridges. These brilliant gadgets empower more proficient and viable monitoring and control of energy and water frameworks, transportation systems, human administrations, and public security operations – all center government capacities.

Impact of COVID 19 on Economy and Polity:

The COVID-19 crisis has had a significant impact on the political and economic landscape of all the affected nations. Developed countries such as China, US, European countries have faced several socio-political issues due to this crisis. In the Indian context, the lockdown had resulted in bearing several essential services. Restriction of movement has created a good amount of uncertainty for the working class. The unorganized sector, which constitutes a significant portion of the country's GDP has been severely affected thus taking away several livelihoods. Politically, people's perception about the government at the central and state level has also changed based on the latter's response and actions to tackle the pandemic. Trust in institutions has also shifted depends on the recognition of government responsiveness and performance during the pandemic.

CONCLUSION:

The role of technology in economy and polity is significant. It is widely accepted that technology is the key-driver of economic growth of countries, regions and cities. It allows more efficient production of more and better goods and services. A significant portion of economic growth comes from innovation. Technology enabled innovation is the major spur to productivity growth. Technology acts as a tool for political actors such as governments and institutions to identify and engage with the public. It helps to establish authenticity with voters. Various dimensions of technology such as digital media, AI, etc. help to ensure better public

service delivery. However, sometimes, technology may also pose various challenges to the economy and polity. For instance, automation and digitalization are creating shifts in the labour markets. Technology that favors capital and high-level skills has contributed to a decline in labour's share in income leading to inequality. Hence, even though, technology has an enormous potential to boost growth and productivity, it has also pushed inequality and generated fears about massive job losses due to automation.

REFERENCES

- [1] Agrawal, S., Jamwal, A., & Gupta, S. (2020). Effect of COVID-19 on the Indian economy and supply chain. Working Paper. Retrieved from <https://doi.org/10.20944/preprints202005.0148.v1>
- [2] Agrawal, Shruti and Sharma, Nidhi and Singh, Manju, Employing CBPR to Understand the Well-Being of Higher Education Students During Covid-19 Lockdown in India (June 16, 2020). Available at SSRN: <https://ssrn.com/abstract=3628458> or <http://dx.doi.org/10.2139/ssrn.3628458>
- [3] Beder, S. (1994). The role of technology in sustainable development. *IEEE Technology and Society Magazine*, 13(4), 14-19.
- [4] Barnes, S. J. (2020). Information management research and practice in the post-COVID-19 world. *International Journal of Information Management*, 55, 102175.
- [5] Bhatnagar, S., Agrawal, S., Sharma, D., & Singh, M. (2020). Perception on the Community Engagement of Students of Higher Education Institutions. Available at SSRN 3664052.
- [6] Jamwal A, Bhatnagar S, Sharma P. Coronavirus Disease 2019 (COVID-19): Current Literature and Status in India. Preprints 2020,2020040189 DOI: 10.20944/preprints202004. 0189.v1
- [7] Sharm, P., Jamwal, A., Aggarwal, A., Bhardwaj, S., & Sood, R. (2018). Major challenges in adoption of RFID for Indian SME's. *Int. Res. J. Eng. Technol*, 5, 2247-2255.
- [8] Jamwal, A., Bhatnagar, S., & Sharma, P. (2020). Coronavirus disease 2019 (COVID-19): Current literature and status in India.
- [9] Lange, S., Pohl, J., & Santarius, T. (2020). Digitalization and energy consumption. Does ICT reduce energy demand?. *Ecological Economics*, 176, 106760.
- [10] Miah, M. (2020). IMPACT OF DIGITALIZATION: TRANSFORMING EMPLOYMENT AND EDUCATION. Стратегии развития социальных общностей, институтов и территорий. Т. 2.—Екатеринбург, 2020, 127-133.
- [11] Jamwal, A., Agrawal, R., Gupta, S., Dangayach, G. S., Sharma, M., & Sohag, M. A. Z. (2020). Modelling of sustainable manufacturing barriers in pharmaceutical industries of Himachal Pradesh: an ISM-fuzzy approach. In *Proceedings of International Conference in Mechanical and Energy Technology* (pp. 157-167). Springer, Singapore.
- [12] Jamwal, A., Agrawal, R., Sharma, M., & Kumar, V. (2021). Review on multi-criteria decision analysis in sustainable manufacturing decision making. *International Journal of Sustainable Engineering*, 1-24.
- [13] Jamwal, A., Agrawal, R., Sharma, M., Kumar, V., & Kumar, S. (2021). Developing A sustainability framework for Industry 4.0. *Procedia CIRP*, 98, 430-435.
- [14] Jamwal, A., Agrawal, R., & Sharma, M. (2021). Life cycle engineering: past, present, and future. In *Sustainable Manufacturing* (pp. 313-338). Elsevier.
- [15] Sharma, A. Contemplation on the Impact of Digitalization on Indian Economy: Growth, Opportunities and Challenges.
- [16] Teräs, M., Suoranta, J., Teräs, H., & Curcher, M. (2020). Post-Covid-19 education and education technology 'solutionism': A seller's market. *Postdigital Science and Education*, 2(3), 863-878.
- [17] Jamwal, A., Nayim, S. T. I., Shukla, R. K., Agrawal, R., & Gupta, S. (2021). Assessment of barriers in lead time improvement: an exploratory study of electronics manufacturing companies in Himachal Pradesh (India). *International Journal of Business and Systems Research*, 15(2), 182-199.
- [18] Jamwal, A., Agrawal, R., Manupati, V. K., Sharma, M., Varela, L., & Machado, J. (2020, December). Development of cyber physical system based manufacturing system design for process optimization. In *IOP Conference Series: Materials Science and Engineering* (Vol. 997, No. 1, p. 012048). IOP Publishing.
- [19] Dedrick, J., Gurbaxani, V., & Kraemer, K. L. (2003). Information technology and economic performance: A critical review of the empirical evidence. *ACM Computing Surveys (CSUR)*, 35(1), 1-28.
- [20] De Loo, I., & Soete, L. (1999). The impact of technology on economic growth: Some new ideas and empirical considerations.
- [21] Erumban, A. A., & Das, D. K. (2016). Information and communication technology and economic growth in India. *Telecommunications Policy*, 40(5), 412-431.

- [23] Erman, N., Rojko, K., & Lesjak, D. (2020). Traditional and New ICT Spending and Its Impact on Economy. *Journal of Computer Information Systems*, 1-13.
- [24] Ramesh, J. (2020). Science & technology in a post-Covid-19 world. *Journal of Biosciences*, 45(1), 1-4.
- [25] Choudhary, S. (2020), "Covid-19 impact: domestic demand for petrol, diesel, ATF and shipping fuel drop 10%", available at: <https://economictimes.indiatimes.com/industry/energy/oil-gas/domesticdemand-for-petrol-diesel-atf-shipping-fuel-drop-10/articleshow/74681471.cms?from=mdr>
- [26] Kumar, S., Maheshwari, V., Prabhu, J., Prasanna, M., Jayalakshmi, P., Suganya, P., ... & Jothikumar, R. (2020). Social economic impact of COVID-19 outbreak in India. *International Journal of Pervasive Computing and Communications*.
- [27] Nandi, S., Sarkis, J., Hervani, A. A., & Helms, M. M. (2021). Redesigning supply chains using blockchain-enabled circular economy and COVID-19 experiences. *Sustainable Production and Consumption*, 27, 10-22.
- [28] Liu, K. (2021). COVID-19 and the Chinese economy: impacts, policy responses and implications. *International Review of Applied Economics*, 35(2), 308-330.
- [29] Song, L., & Zhou, Y. (2020). The COVID-19 Pandemic and Its Impact on the Global Economy: What Does It Take to Turn Crisis into Opportunity?. *China & World Economy*, 28(4), 1-25.
- [30] Dwivedi, Y. K., Hughes, D. L., Coombs, C., Constantiou, I., Duan, Y., Edwards, J. S., ... & Upadhyay, N. (2020). Impact of COVID-19 pandemic on information management research and practice: Transforming education, work and life. *International Journal of Information Management*, 55, 102211.
- [31] He, W., Zhang, Z. J., & Li, W. (2021). Information technology solutions, challenges, and suggestions for tackling the COVID-19 pandemic. *International Journal of Information Management*, 57, 102287.
- [32] Jamwal, A., Aggarwal, A., Gupta, S., & Sharma, P. (2019). A study on the barriers to lean manufacturing implementation for small-scale industries in Himachal region (India). *International Journal of Intelligent Enterprise*, 6(2-4), 393-407.
- [33] Sigala, M. (2020). Tourism and COVID-19: Impacts and implications for advancing and resetting industry and research. *Journal of business research*, 117, 312-321.
- [34] He, P., Niu, H., Sun, Z., & Li, T. (2020). Accounting index of COVID-19 impact on Chinese industries: A case study using big data portrait analysis. *Emerging Markets Finance and Trade*, 56(10), 2332-2349.
- [35] Jamwal, A., Agarwal, R., Sharma, M., Kumar, A., Kumar, V., and Garza-Reyes, J.A. (2021), Machine Learning Applications for Sustainable Manufacturing: A Bibliometric-based Review for Future Research. *Journal of Enterprise Information Management*. DOI: 10.1108/JEIM-09-2020-0361
- [36] Ting, D. S. W., Carin, L., Dzau, V., & Wong, T. Y. (2020). Digital technology and COVID-19. *Nature medicine*, 26(4), 459-461.
- [37] Meijer, A., & Webster, C. W. R. (2020). The COVID-19-crisis and the information polity: An overview of responses and discussions in twenty-one countries from six continents. *Information Polity*, (Preprint), 1-32.
- [38] Cleland, J. (2020). Resilience or resistance: A personal response to COVID-19. *Medical education*, 54(7), 589-590.
- [39] Taylor, J., & Williams, H. (1990). Themes and issues in an information polity. *Journal of Information Technology*, 5(3), 151-160.
- [40] Taylor, J. A., & Williams, H. (1991). Public administration and the information polity. *Public Administration*, 69(2), 171-190.
- [41] Bellamy, C., & Taylor, J. A. (1994). Introduction: Exploiting IT in Public Administration-Towards the Information Polity?. *Public Administration*, 72(1), 1-13.
- [42] Valle-Cruz, D., Sandoval-Almazan, R., & Gil-Garcia, J. R. (2016). Citizens' perceptions of the impact of information technology use on transparency, efficiency and corruption in local governments. *Information Polity*, 21(3), 321-334.
- [43] Low, L. (2001). The Singapore developmental state in the new economy and polity. *The Pacific Review*, 14(3), 411-441.
- [44] Pate, U. A., Gambo, D., Ibrahim, A. M., Pate, U. A., Gambo, D., & Ibrahim, A. M. (2019). The impact of fake news and the emerging post-truth political era on Nigerian polity: A review of literature. *Studies in Media and Communication*, 7(1), 21-29.
- [45] Axford, B., & Huggins, R. (2000). Towards a post-national polity: the emergence of the Network Society in Europe. *The Sociological Review*, 48(S1), 173-206.
- [46] Khan, M. Z., Gilani, I. S., & Miankhel, A. K. (2013). Contemporary globalization and polity transformation. *Journal of globalization studies*, 4(2).

- [47] Hill, M. W. (2012). The impact of Information on Society: An examination of its nature, value and usage. Walter de Gruyter.
- [48] Taylor, J. A., & Lips, A. M. B. (2008). The citizen in the information polity: Exposing the limits of the e-government paradigm. *Information Polity*, 13(3, 4), 139-152.
- [49] Beynon-Davies, P. (2006). Personal identity management in the information polity: the case of the UK national identity card. *Information polity*, 11(1), 3-19.
- [50] Colom, A. (2020). *The Digital Divide*: by Jan van Dijk, Cambridge, Polity Press, 2020, 208 pp., £17.99 (paperback), ISBN: 978-1-509-534456.
- [51] Strandberg, K., & Grönlund, K. (2012). Online deliberation and its outcome—evidence from the virtual polity experiment. *Journal of Information Technology & Politics*, 9(2), 167-184.
- [52] Ruijter, E. H., & Martinius, E. (2017). Researching the democratic impact of open government data: A systematic literature review. *Information Polity*, 22(4), 233-250.
- [53] Dittmar, J. E. (2011). Information technology and economic change: the impact of the printing press. *The Quarterly Journal of Economics*, 126(3), 1133-1172.
- [54] Foth, M., Tomitsch, M., Satchell, C., & Haeusler, M. H. (2015, December). From users to citizens: Some thoughts on designing for polity and civics. In *Proceedings of the annual meeting of the Australian special interest group for computer human interaction* (pp. 623-633).

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