

Journal of Government & Civil Society

Journal of Government
and Civil Society

Volume 9

No. 2

Pages 194 - 405

October 2025

ISSN 2579-4396



Daftar Isi (Table of Content)

Journal of Government Civil Society

194 – 215	Collaborative Governance in Driving MSME Technology Adoption for Smart Economy Acceleration in Yogyakarta Awang Darumurti¹, Helen Dian Fridayani², Muhammad Eko Atmojo³, Li-Chun Chiang⁴ <i>(^{1,2,3} Department of Government Studies, Faculty of Social and Political Sciences, Universitas Muhammadiyah Yogyakarta, Indonesia)</i> <i>(⁴ Department of Political Science, National Cheng Kung University, Tainan, Taiwan)</i>
216 – 231	Civil Society, Accountability, and Anti-Corruption: A Critical Examination of CSOs in Uganda Mesharch Walto Katusiimeh¹, Mary Baremirwe Bekoreire¹ <i>(¹ Department of Governance, Kabale University, Uganda)</i>
232 – 250	Ethical Mechanisms in Preventing Bureaucratic Corruption: A Comparative Study across Indonesian Government Institutions Abdi¹, Hafiz Elfiansyah¹, Nursaleh Hartaman² <i>(¹ Department of Public Administration, Universitas Muhammadiyah Makassar, Indonesia)</i> <i>(² Department of Government Studies, Universitas Muhammadiyah Makassar, Indonesia)</i>
251 – 266	The Political Existence of Muslim Immigrants in The United Kingdom Jeni Minan¹, Hanim Ismail², Mohamad Basri Bin Jamal³, Dian Wahyu Danial¹ <i>(¹ Department of Government Science, Banten Raya College of Social and Political Sciences (STISIP), Indonesia)</i> <i>(² Faculty of Administrative Sciences and Police Studies, Universiti Teknologi MARA, Malaysia)</i> <i>(³ Faculty of Human Sciences, Sultan Idris Education University (UPSI), Tanjung Malim, Perak, Malaysia)</i>
267 – 288	Gender Transformation and Social Mobility of The Malind Women: Tradition, Affirmative Action, and Meritocracy in Papua's Bureaucracy Rosmayasinta Makasau¹, Ulfa Sevia Azni², Alfons No Embu³, Karolus B. Bala¹, Luigi Pellizzoni⁴, Eko Wahyono² <i>(¹ Saint James Catholic College of Merauke (Sekolah Tinggi Katolik Santo Yakobus) Merauke, South Papua, Indonesia)</i> <i>(² Badan Riset dan Inovasi Nasional (BRIN), Indonesia)</i>

(³ Ministry of Religious Affairs Office, Merauke, South Papua, Indonesia)

(⁴ Scuola Normale Superiore di Pisa, Pisa, Italy)

Collaborative Government in Poverty Reduction Through the Learning Forum and Its Impacts for NGOs in Surakarta, Indonesia

Haryani Saptaningtyas¹, Drajat Tri Kartono², Akbarudin Arif³, Sapja Anantanju¹

289 – 302

(¹ Doctoral Program in Community Development/Empowerment, Postgraduate School, Sebelas Maret University, Indonesia)

(² Department of Sociology of Faculty of Social and Political Sciences, Sebelas Maret University, Indonesia)

(³ Magister Program in Community Development/Empowerment, Postgraduate School, Sebelas Maret University, Indonesia)

Deep Learning-Based Sentiment Analysis of Twitter Discourse on the Gaza and Ukraine Conflicts Using Bi-GRU Architecture

Garcia Krisnando Nathanael¹, Rizal Akbar Aldyan², Tran Minh Hop³, Imelda Masni Juniaty Sianipar⁴, Dairatul Maarif⁵, Zayyin Abdul Quddus⁶

303 – 321

(¹ Department of Communication Science, Universitas Pembangunan Nasional Veteran Jakarta, Jakarta, Indonesia)

(² National Research and Innovation Agency (BRIN), Jakarta, Indonesia)

(³ Faculty of International Relations, Ho Chi Minh City University of Economics and Finances Binh Thanh District, Ho Chi Minh City, Vietnam)

(⁴ Department of International Relations, Universitas Kristen Indonesia)

(⁵ Ph.D Student of Asia-Pacific Regional Studies, College of Humanities and Social Sciences, National Dong Hwa University Hualien 974, Taiwan)

(⁶ Department of Sains Information, Universitas Pembangunan Nasional Veteran Jakarta, Indonesia)

Digital Innovations in Southeast Asian: Research-Driven Mapping Local Governance for Efficiency and Participation

Sukwan Hanafi¹, Achamad Nurmandi¹, Herman Lawelai², Elaine Baulete³, Imron Sohsan⁴

322 – 348

(¹ Department of Government Affairs and Administration, Jusuf Kalla School of Government, Universitas Muhammadiyah Yogyakarta, Indonesia)

(² Department of Government Studies, Universitas Muhammadiyah Buton, Indonesia)

(³ Department of Political Science, Mindanao State University-Iligan Institute of Technology, Philippines)

(⁴ Department of Public Administration, Khon Kaen University, Thailand)

Analyzing the Dynamics of Double Movement in Water Resource Conflicts: A Critical Examination of Umbul Gemulo Spring in Batu City

Raihan Rakha Dhiya Achmadinata¹, Adhi Cahya Fahadayana², Aswin Ariyanto Azis³

349 – 367

(¹ Department of Politics, Government, and International Relations, Universitas Brawijaya, Indonesia)

(² Department of Politics, Government, and International Relations, Universitas Brawijaya, Indonesia & Department of Global Studies and Human Security, University of Massachusetts, Boston)

(³ Department of Politics, Government, and International Relations, Universitas Brawijaya, Indonesia)

Religious-Based Women's Movement Typology in Modern Indonesia as a Social Movement in West Java

368 – 386

Antik Bintari¹, Ida Widianingsih², Mudiwati Rahmatunnisa³

(¹ Department of Government, Universitas Padjadjaran, Indonesia)

(² Department of Public Administration, Universitas Padjadjaran)

(³ Department of Political Science, Universitas Padjadjaran)

Spatial Politics: Questioning Land Use in the IKN Region from a Spatial Production Perspective

387 – 405

Muh Fichriyadi Hastira¹, Armin Arsyad¹, Gustiana Kambo¹, Muhammad Muhammad¹, Muhammad Saad¹, Mimi Arifin²

(¹ Departement of Political Science, Hasanudin University, Indonesia)

(¹ Departement of Urban and Regional Planning, Hasanuddin University, Indonesia)

Digital Innovations in Southeast Asian: Research-Driven Mapping Local Governance for Efficiency and Participation

Sukwan Hanafi¹ , Achamad Nurmandi¹ , Herman Lawelai² ,
Elaine Baulete³ , Imron Sohsan⁴ 

¹ Department of Government Affairs and Administration, Jusuf Kalla School of Government, Universitas Muhammadiyah Yogyakarta, Indonesia

² Department of Government Studies, Universitas Muhammadiyah Buton, Indonesia

³ Department of Political Science, Mindanao State University-Iligan Institute of Technology, Philippines

⁴ Department of Public Administration, Khon Kaen University, Thailand

Email Correspondence: sukwan.hanafi.psc24@mail.umy.ac.id

Submitted:

16 July 2025

Revised:

21 Sept 2025

Accepted:

21 October 2025

Abstract

This study addresses issues of bureaucratic inefficiency and low public participation in governance by systematically mapping the scope of digital innovation in local governance throughout Southeast Asia. The research seeks to understand how technology aids governance outcomes, guided by the region's disparities in digital infrastructure and institutional readiness. The study conducts a systematic literature review of 996 publications from Scopus, following the PRISMA protocol and employing bibliometric analysis via RStudio-Biblioshiny and CiteSpace to derive trends, themes, and gaps concerning Indonesia, Malaysia, Singapore, Thailand, and the Philippines. The results demonstrate and actively reinforce the three dominant innovation clusters: smart cities, e-government systems, and citizen participation platforms that foster greater democratic engagement alongside improved administrative efficiency. The analysis emphasizes the factors critical for successful digital transformation: institutional readiness, digital competency, and cross-organizational collaboration. By synthesizing regional best practices and thematic patterns, the research provides strategic recommendations for policymakers aiming to cultivate flexible, inclusive, and ethically responsible frameworks of implications focused on formulated digital governance. These findings emphasize the need to align technology with community needs and participatory processes, thereby directing further research on interoperability, AI ethics, and public trust in digital public administration.

Keywords: Digital governance, public participation, smart cities

Abstrak

Studi ini membahas masalah ketidak efisienan birokrasi dan rendahnya partisipasi publik dalam tata kelola pemerintahan dengan secara sistematis memetakan ruang lingkup inovasi digital dalam tata kelola pemerintahan di seluruh Asia Tenggara. Penelitian ini bertujuan untuk memahami bagaimana teknologi mendukung hasil tata kelola pemerintahan, dengan mempertimbangkan disparitas infrastruktur digital dan kesiapan institusional di wilayah tersebut. Studi ini melakukan tinjauan literatur sistematis terhadap 996 publikasi dari Scopus, mengikuti protokol PRISMA, dan menggunakan analisis bibliometrik melalui RStudio-Biblioshiny dan CiteSpace untuk mengidentifikasi tren, tema, dan celah terkait Indonesia, Malaysia, Singapura, Thailand, dan Filipina. Hasilnya menunjukkan dan secara aktif memperkuat tiga kluster inovasi

CITATION Hanafi, S., Nurmandi, A., Lawelai, H., Baulete, E., & Sohsan, I. (2025). Digital Innovations in Southeast Asian: Research-Driven Mapping Local Governance for Efficiency and Participation. *Journal of Government and Civil Society*, 9(2), 322–348.



Licensed Under a [Creative Commons Attribution-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-sa/4.0/)

dominan: kota pintar, sistem e-pemerintahan, dan platform partisipasi warga yang mendorong keterlibatan demokratis yang lebih besar bersamaan dengan efisiensi administratif yang lebih baik. Analisis ini menyoroti faktor-faktor kritis untuk transformasi digital yang sukses: kesiapan institusional, kompetensi digital, dan kolaborasi lintas organisasi. Dengan mensintesis praktik terbaik regional dan pola tematik, penelitian ini memberikan rekomendasi strategis bagi pembuat kebijakan yang bertujuan untuk mengembangkan kerangka kerja yang fleksibel, inklusif, dan etis dalam tata kelola digital. Temuan ini menekankan pentingnya menyelaraskan teknologi dengan kebutuhan komunitas dan proses partisipatif, sehingga mengarahkan penelitian lebih lanjut pada interoperabilitas, etika AI, dan kepercayaan publik dalam administrasi publik digital.

Kata Kunci: Tata kelola digital, partisipasi publik, kota pintar

INTRODUCTION

In Southeast Asia, digital transformation has become one of the more pressing triggers for reform within local governance systems. Within the context of the socio-economic and political landscape frameworks, digitalization creates new opportunities for improving the bureaucratic functions of an administration, including efficiency, transparency, and public participation (Greavu-^aerban et al., 2025). In response to changing governance issues, countries like Indonesia, Malaysia, and the Philippines have incorporated varying degrees of technology with e-government systems, smart cities, and online participatory governance (Llovido et al., 2024; Matitah et al., 2021; Zukarnain et al., 2020). There is still insufficient understanding regarding the gap-driven initiatives implemented concerning the adoption and localized implementation of practical digital innovations (David et al., 2023).

Smolinski, (2024) The literature on digital technology innovation in local government shows significant thematic fragmentation (Akman & ^aahintürk, 2024) This fragmentation is evident in the different focuses of the 'smart city' literature and the 'e-participation' literature. The 'smart city' literature focuses on technology, digital infrastructure, and the provision of public services. On the other hand, e-participation focuses on citizen participation and digital democracy (Caplanova & Dimelis, 2025). These two streams have developed separately, without conceptual and methodological integration. This hinders the identification and dissemination of best practices for public policy. The impact of digitalization on bureaucracy has not been analyzed in depth. In Southeast Asia, this is exacerbated by cultural diversity and poor infrastructure.

The Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) serve as the main theoretical frameworks explaining the dynamics of innovation digitization at the local level across Southeast Asia. TAM emphasizes perceived usefulness associated with ease of use as a key factor in determining an individual's attitude and behavioral intention toward technology use (Ammenwerth, 2019), while UTAUT offers a

more comprehensive approach by synthesizing eight technology adoption models and incorporating elements of performance expectations, effort expectations, social influence, and supportive conditions (Momani, 2020). These two models thus form a solid analytical foundation for understanding responses to bureaucratic digital transformation (Graniæ, 2023; B. C. Lee & Xie, 2018).

In this study, we review the literature on the implementation of digital innovation as a focus of local government development in Southeast Asia. The main objective of this study is to explore trends, challenges, and technological solutions related to public efficiency and citizen participation, evaluate their impact on bureaucracy, and identify potential research gaps for further study. To sharpen the focus, two questions are asked: what are the dominant patterns of digital innovation in Southeast Asia, and what is their impact on public administration efficiency and citizen participation? This research is data-driven and, in some respects, adopts the PRISMA framework as a systematic standard in literature mapping (Page et al., 2021). Therefore, this research is expected to enrich the theoretical and practical discourse on inclusive and sustainable digital policies.

In Indonesia, e-Musrenbang and social media platforms in the Philippines have engaged citizens in the policy design and assessment phases (Loeffler & Martin, 2023). As Hien et al., (2024), noted, such digital participation enhances transparency and reinforces the legitimacy of public policies. Technology can also advance efficiency in administration, which is exemplified by Indonesia's Digital Land Administration and Singapore's Smart Nation Initiative, both of which streamline bureaucratic functions, enhance data precision, and increase public service accessibility (Efthymiou, 2025; Nursyamsi et al., 2020).

This study presents a systematic bibliometric synthesis of digital governance innovations in Southeast Asia that have not been widely explored. By mapping emerging contours and core clusters, this research aims to contribute to studies on the integration of bureaucratic and participatory democracy by addressing existing gaps (Suranto et al., 2025). This research underlines the role of digital literacy alongside institutional preparedness within the framework of local governance as critical to effective technology implementation. Thus far, this research has advanced the systematic mapping of local governance to include the dimension of digital innovation.

This study makes three specific contributions to the academic debate on digital governance in Southeast Asia. First, the use of bibliometric synthesis within the PRISMA and CiteSpace frameworks represents an innovative method for compiling digital policy literature that can serve as a reference for similar research in the future (Mathew et al., 2024). Second, the mature conceptual understanding of regional mapping in this study highlights the different variations in SPBE among countries and subnational regions, which enriches the theoretical understanding of digital governance in a diverse socio-political landscape (Shaw & Ow, 2019). Third, the practical aspects of the policy recommendations

offer practical value that can be used to design adaptive and inclusive policy frameworks, especially for subnational administrative units interested in developing their comprehensive digital transformation policies (Djarmiko et al., 2025).

Integrating bibliometric analysis, data visualization, and thematic synthesis substantially contributes to the digital governance and public participation literature. His results are significant, not solely for scholars, but also for practitioners and decision makers who aim to comprehend and facilitate digital transformation. Thus, this research is anticipated to be a primary strategic reference in designing regionally adaptive and inclusive governance frameworks underpinned by technology.

RESEARCH METHODS

This research performed a literature review analysis on the case of digital transformation in local governance, viewing it as a mapping of the administrative and public participation processes, efficiency, innovation, and technology using the Scopus database (Rodríguez-Bolívar et al., 2018). Scopus was chosen because of its multidisciplinary scope and reputation for rigor and relevance, as evidenced in peer-reviewed publications (Gusenbauer, 2022). This database assists in framing primary concepts related to governance and aids in synthesizing literature concerning policies and best practices about technology in public administration (Landum et al., 2020). This study analyzes literature to identify knowledge gaps and integrates conclusions to derive comprehensive reviews and describe innovations and outcomes mapping, and extensively highlights challenges, technology-algorithmic solutions to the performance and engagement enhancement for government and community collaboration (Sarafis et al., 2025).

Protocols and Frameworks

This study follows PRISMA guidelines for obtaining and analyzing literature dealing with efficiency, transparency, and public involvement in a bureaucracy for purposes of order and consistency (Page et al., 2022). Page et al., (2021), indicate that PRISMA is both a checklist and a flowchart describing stepwise reporting for all systematic mapping studies. It was deemed more beneficial to use systematic mapping in this study on the various approaches to bureaucratic efficiency, transparency, and public participation, as compared to traditional systematic reviews. (Rozanc, 2018). There is more focus on systematic reviews; however, systematic mapping targets finding gaps, classifying important research, and tracking the progress of themes over time related to bureaucratic efficiency, transparency, and public participation (Turk, 2021).

Table 1. Inclusion and Exclusion Criteria

Criteria	Inclusion	Exclusion	Justification
Language	English articles	Non-English articles	Ensuring consistency of analysis and compatibility with international bibliometric tools.
Types of publications	Indexed scientific journal articles	Presentations, posters, brief reports, editorials, books, chapters, workshop/symposium abstracts	Ensuring academic quality that meets peer-reviewed standards.
Topic relevance	Articles discussing digital transformation in local government administration	Articles that only contain policy recommendations without empirical analysis or experimentation	Ensuring a focus on empirical analysis that supports the research objectives.
Publication period	2014–2024	Articles prior to 2014	Avoiding historical bias and capturing contemporary trends in digital innovation.
Publication version	Latest version with updated data	Old version of the same article	Ensures the use of the most current data for accurate analysis.
Methodology	Articles with adequate methodology (data sources, analysis techniques, validation)	Articles with inadequate methodology (no data sources, analysis, or validation)	Ensuring the validity and reliability of the research findings reviewed.
Document completeness	Full text articles available	Articles without full text access	Ensuring a comprehensive analysis can be conducted.
Article length	Minimum of five pages	Articles less than five pages	Ensure sufficient information for in-depth analysis.

Search and Data Processing Strategies

In conducting our literature search, we used queries that combined governance, public participation, and technological innovation as the three main focuses. This resulted in 2,813 documents discussing the digitization of local government administration. From this corpus, 996 publications were further processed, which included the addition of titles, abstracts, keywords, and publication years. The analysis was conducted in accordance with the PRISMA guidelines (Athikarisamy & Patole, 2021). Using the PRISMA 2020 flowchart tool (Kahale et al., 2022), to ensure a systematic approach to literature inclusion, evaluation, and refinement.

Validity and Reliability

The literature used was limited to peer-reviewed journal articles that were available in full text and met methodological criteria to ensure the quality of the analysis. The selection process, from exclusion to inclusion, was reported in detail to reduce potential bias, in accordance with the 2020 PRISMA Guidelines (Page et al., 2021). The use of the Scopus database is in accordance with the guidelines (Baas et al., 2020), while (Rozanc, 2018) and (Turk, 2021), guidelines on data quality and consistency evaluation form the basis for data screening and coding. This evidence-based approach highlights systematic and replicable research that is in line with the main objective of assessing the impact of digital innovation on efficiency and participation in Southeast Asian governance.

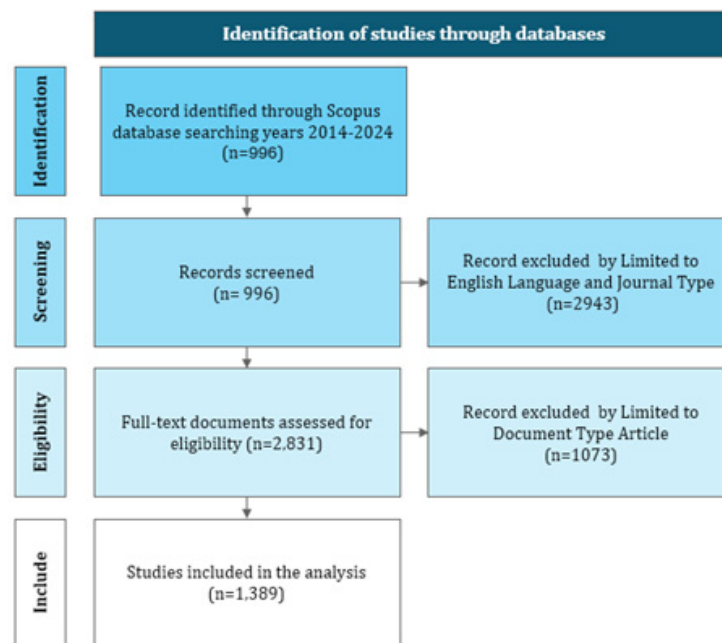


Figure 1. PRISMA Research Method

Source: Adapted from Page et al. (2021) generated thought PowerPoint

Data Analysis and Visualization

The bibliometric analysis was based on 996 documents and used VOSviewer to visualize research networks and trends in local government digital transformation (Nurmandi et al., 2021; Syahputra et al., 2023). RStudio, equipped with the Biblioshiny package, assisted in performing statistical processes, generating tree maps, identifying publication trends, and grouping data for visualization. Setting the time range (2014–2024) and keyword frequency thresholds was crucial in forming significant clusters. CiteSpace software was used to map thematic evolution and keyword bursts, using default threshold settings to validate author-institution relationships. This set of methods aims to ensure the replicability of the analysis

and assist in mapping public administration innovation and increased civic technology engagement (Barbosa, 2021; Chanduvi et al., 2015).

RESULTS AND ANALYSIS

Trends in the Emergence of Research Topics

Visualizing text data through words and their corresponding frequencies-WordCloud is an effective analysis tool for determining and tracking research trends. While text McNaught & Lam (2010), work provided a qualitative study of WordCloud's advantages in visual representation, many contemporary scholars have opted to employ it within more quantitative frameworks. More advanced algorithms have made it possible for scholars to track the advancement of the research problem, determine essential ideas, and distinguish new trends, all based on an assortment of articles and databases. Retaining raw data in aesthetically pleasing visuals gives researchers an insightful perspective on the emphasized issues and disciplines.



Figure 2. Wordcloud Analytics

Source: Author generated through RStudio-Biblioshiny

Figure (illustration) 2 illustrates the dominance of “digitalization” in the conceptual transformation of the diapositive in this case, showing an increase in attention at the local government level in the literature on the focus of local governments and the use of technology to modernize bureaucracy and improve the transparency of public services, as noted by Anggono et al., (2025). This is in line with Maulana et al., (2024), who observed that digital transformation is not only the adoption of information systems, but a profound process that restructures the entire organization, decision-making processes, and the relationship between the government and citizens. This issue has been discussed in “The Digital Obligation Gap in Southeast Asia and the Developing World” by Anggono et al., (2025). Therefore, the literature reviewed reflects the increasingly close relationship between public administration reform and the use of technology in the region.

The integration of smart city concepts, e-governance, and public participation provides an additional layer in understanding digital transformation. This integration highlights the importance of information and communication technology (ICT) for sustainable urban development in smart cities, which promotes responsiveness, inclusiveness, and efficiency (Sucupira Furtado et al., 2023). The prominent focus on Indonesia illustrates the importance of the country's context and specific challenges related to the technology gap, digital infrastructure sustainability, and organizational capacity (Kusmiarto et al., 2021). The e-governance theme of public participation also shows an academic focus on collaboration and partnership between government and citizens on digital platforms, with the aim of expanding the space for digital democracy (Boon et al., 2020). Collectively, these patterns show that the government's digitalization agenda is not only aimed at administrative efficiency. There is also a growing recognition of the need to empower local actors and improve the quality of interaction between the state and its citizens.

Mapping Research Topics

Structural conceptualization refers to a framework that uses cluster analysis to regularly review and visualize a set of specific research topics (Reutterer & Dan, 2021). This framework helps researchers identify conceptual areas and patterns of heterogeneity that emerge across disciplines (Wang et al., 2023). The use of efficient clustering algorithms enables the construction of maps that illustrate the dynamics of local governance innovation in Southeast Asia, as well as providing a framework for understanding cross-border relationships in the governance modernization agenda (Gupta et al., 2023).

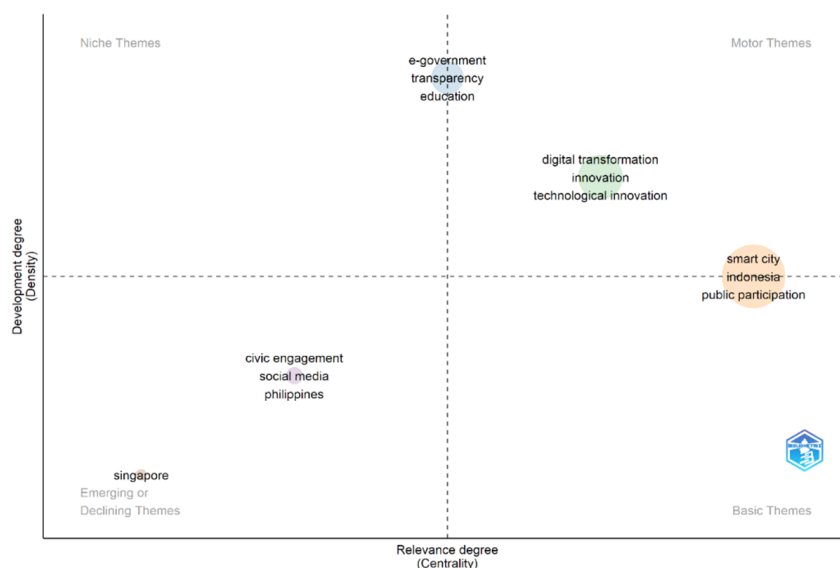


Figure 3. Conceptual Structure Map
Source: Author generated through RStudio-Biblioshiny

The first cluster shows the dominance of the themes of 'smart cities', 'Indonesia', and 'public participation'. This cluster shows that local governance innovations that use the concept of smart cities dominate collaboration between local governments and citizens. In the Indonesian context, the successful implementation of smart cities is supported by a regional innovation framework as stipulated in Law No. 23 of 2014, which emphasizes citizen participation in solving social, economic, and environmental problems (Syah et al., 2024). These findings are consistent with approaches in Malaysia and Thailand that focus on communities as active participants in smart city design, as well as Singapore's Smart Nation initiative that emphasizes the integration of available public data services (T. Lee, 2024). In the Philippines, the Smart Cebu project demonstrates the value of partnerships between local governments and information technology sector players in enhancing the sustainability of innovation programs (Montalbo et al., 2021).

The second cluster focuses on 'digital transformation' and 'technological innovation' with the premise that innovation in local governance can improve the capacity of local governments to utilize technology to strengthen institutional frameworks. At the regional level, the Digital Economy Partnership Agreement (DEPA) and the Digital Silk Road (DSR) initiative encourage cross-border collaboration and provide a framework for sub-national governments to implement digital solutions that are appropriate to the local context (Corning, 2022). A similar approach is seen in Singapore, which developed GovTech to lead public service innovation (T. Lee, 2024). While Malaysia promotes digital transformation through My Digital Blueprint (Mohd Hasni, 2023). Thailand has integrated smart technology into its Thailand 4.0 program (Puriwat & Tripopsakul, 2020). While several cities in the Philippines have adopted e-budgeting systems aimed at improving transparency in local government financial management (Franklin & Ebdon, 2020).

The third cluster highlights 'E-Government', 'Transparency', and 'Education'. The relationship between e-government services and transparency in the education sector shows an important dimension of innovation in regional governance, especially in improving the accountability of educational institutions. In Indonesia, the use of digital platforms facilitates public monitoring of the education services offered (Howard et al., 2020). Similar trends can be seen in Malaysia with the EduCloud system.

in Singapore with the Student Learning Space, and in Thailand and the Philippines with the expansion of online education information systems for public users. However, regional studies also highlight the need to place e-government in education within the framework of sustainability policies and institutional capacity building (M. Zhang & Kaur, 2024).

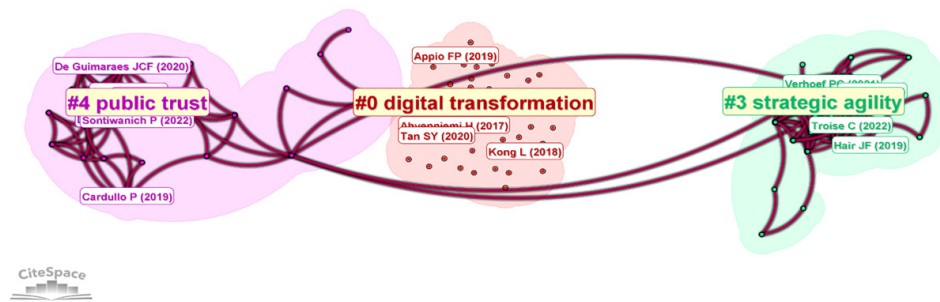


Figure 4. Cluster of Co-Cited References
Source: Author generated through CiteSpace

Figure 4 shows that three clusters have been formed through shared citation analysis in Southeast Asia's digital governance discourse, as depicted in figure 4. Cluster 0 is referred to as "smart City Strategy." It focuses on the power of digital technology to catalyze change in contemporary urban planning and sustainable development (Ziehl et al., 2023). Global discourse on smart cities focuses on their proliferation; most developed urban centers serve as nadirs for smart city influx (Joss et al., 2019). This study aims to analyze the conceptual interrelations of innovative and sustainable cities. Articles after (Sontiwanch et al., 2022). Offer their perspectives on citizen participatory engagement and the uneven planning silos in Thailand. Key topics are smart cities, digital transformation, and the "standardization" of innovative city development, describing a movement towards participatory and holistic digital urbanism.

The main focus of this study is on "Strategic Overhaul in Transformative Digitalization." Strategic agility is a vital component in driving digital innovation and governance efficiency in Southeast Asia, especially in the context of the drastic socio-economic and technological changes we are witnessing today. This capability enables organizations to proactively adapt to changes in the environment and market, resulting in effective alignment between policy and technological innovation (Subroto et al., 2024). In the context of public digital governance, strategic agility facilitates the formation of an inclusive and participatory collaborative governance framework between state and non-state actors (Pfaff, 2023). Furthermore, the integration of digital tools and technologies into an organization's digital infrastructure has an impact on organizational resilience and governance, which in turn improves organizational and governance system performance, as well as sustainable public governance innovation at the local level (J. Zhang et al., 2025).

Cluster #4, titled "Sustainable Development and Public Trust," focuses on the socio-technical aspects of digital urbanism, particularly inclusivity and public trust and legitimacy in innovative governance. This collection follows the approaches of (Przebylłowicz & Cunha, 2024) and (Jiang et al., 2020), which criticized the citizens' participation in Dublin's brilliant city initiative. It discussed big data and the implications of AI in smart cities. Citing works like

(Chang & Das, 2020). Raises worries about the smart city and Singaporean governance model using AI. Terms like 'public trust', 'citizen-centric smart cities', and 'digital legitimacy' highlight the need for the public to consider acceptance and engagement about the sustainability of smart cities in Southeast Asia.

Evolution of Research Topics

Utilizing Biblioshiny with RStudio, complemented by a Sankey diagram, provides a comprehensive perspective on the study. Such visual aids are beneficial for researchers in identifying intersections of interest among multiple themes, anticipating emerging trends, and uncovering significant relationships relevant to the investigative problems at hand (Ramasubbareddy et al., 2019). Therefore, this method sharpens the focus for thematic analysis and assists in meticulous multi-domain data evaluation.

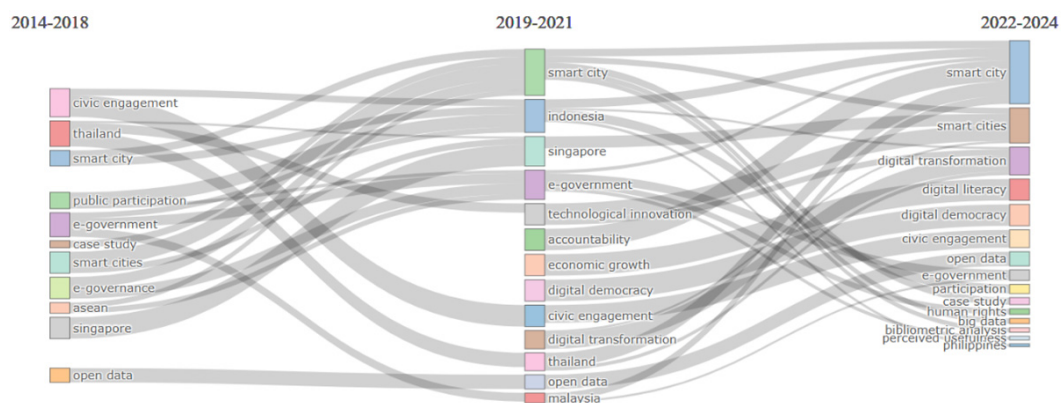


Figure 5. Sankey Diagram of Thematic Evolutionary Sources
Source: Author generated through RStudio-Biblioshiny

Figure 5 shows the Thematic evolution from 2014 to 2018 with regard to Southeast Asia's local government digital innovation, emphasizing civic engagement and government transparency. During this period, governance digital transformation was associated with heightened civic engagement, improved collaboration, active empowerment, and a better quality of life (Rashdi, 2024). Moreover, the research explores how the community in the Southeast Asia region can alter the social ecosystem digitally, reinvigorate social life, and enable better governance (Lim, 2025). During this timeframe, it was noted that the e-government systems had achieved major gains in transparency; 70% of respondents reported enhanced access to informational and governmental services (Setyarto et al., 2025).

In addition, the attention given to the capacity of technological changes to ensure the accountability of government and enable citizens' participation through digital democracy was sustained from 2019 to 2021. Retrieval and dissemination of information related to politics by governments, their affiliated agencies, civil society organizations, and citizen groups

has been made easier due to innovations in the practice of digital democracy technology (Kusumasari, 2018). Moreover, technology integration into governmental functions has proven to increase civic engagement as well as participatory citizenship (Belkhamza, 2024). This particular shift shows that e-government initiatives have a strong and positive impact in regards to citizen engagement and trust, transparency, civic effectiveness and responsibility, public service accountability, and overall public service delivery.

It is observed that Hien et al., (2024). have reported these features as a composite of factors that facilitates systematic public engagement and trust in government institutions. A notable trend from 2022-2024 is the expansion in the scope of digital transformation that has a focus on empowerment and rights of the public. The efforts within this period of the research showcase how public services are increasingly transforming towards a citizen-centric approach with real-time engagement that is holistic and inclusive (Frach et al., 2016). An illustrative example undergoing this transformational shift is the Republic of the Philippines, which is being propelled by a perfect storm of government policy, technological advancement, and changing consumer behaviors (Rey et al., 2024). Consequently, from a strategic perspective relating to public administration, there is a need to undertake service delivery improvement concerning governance through the automation of interfaces with citizens and the business community via integrated systems, online portals, and interoperable data frameworks (Di Martino et al., 2022).

Table 2. Top 10 Keywords with the Strongest Citation Bursts

Keywords	Strength	Begin	End	2014 - 2024
developing country	3.21	2014	2018	
e-government	2.49	2014	2021	
public participation	4.08	2015	2017	
civic engagement	3.27	2015	2017	
local participation	4.19	2016	2020	
public policy	2.76	2017	2019	
smart cities	2.74	2019	2020	
social media	2.74	2020	2021	
governance approach	2.16	2021	2022	
service quality	2.28	2022	2024	

Source: Author generated through CiteSpace

Table 2 shows that the literature includes topics like local and public participation, showcasing the significance of community engagement within the digital governance framework. Reaching out to communities is a crucial step towards closing the digital divide. Moving forward, the development of policies must focus on creating manageable and user-friendly systems. Such systems should be centered on community participation, where system design considers the needs of various stakeholders and their suggestions are continuously integrated into the governance cycle. A community-centric model requires the inclusion of participatory policymaking, innovative technology, and continuous feedback systems (McKinley et al., 2021). Therefore, to mitigate the digital divide while fostering community engagement, local governments must establish frameworks that position citizens as key contributors in the governance process, transcending the role of mere service consumers to active participants in policymaking and evaluation (Freeman, 2016).

In the interim, these keywords, citizen engagement and developing countries, are informative regarding the issues and possibilities of digital transformation in the Southeast Asian region. The first one, “citizen engagement”, focuses on mobilizing the public in communal activity facilitated through technology, for example, online consultations, digital forums, and citizen reporting applications (Aboucaya et al., 2022). The other one, “developing countries”, describes the region’s unique underlying socioeconomic characteristics, such as the digital divide, which has a gap in technological infrastructure, sparse technology education, and limited accessibility (Prajaknate, 2017).

Timeline Trends of Keywords

The keyword network diagram produced by CiteSpace encapsulates the overview of the entire research topic. It reveals the relationships among “smart cities,” sustainability, and “digital transformation” over the period 2014-2024, enabling advanced thematic inquiry and interdisciplinary analysis.

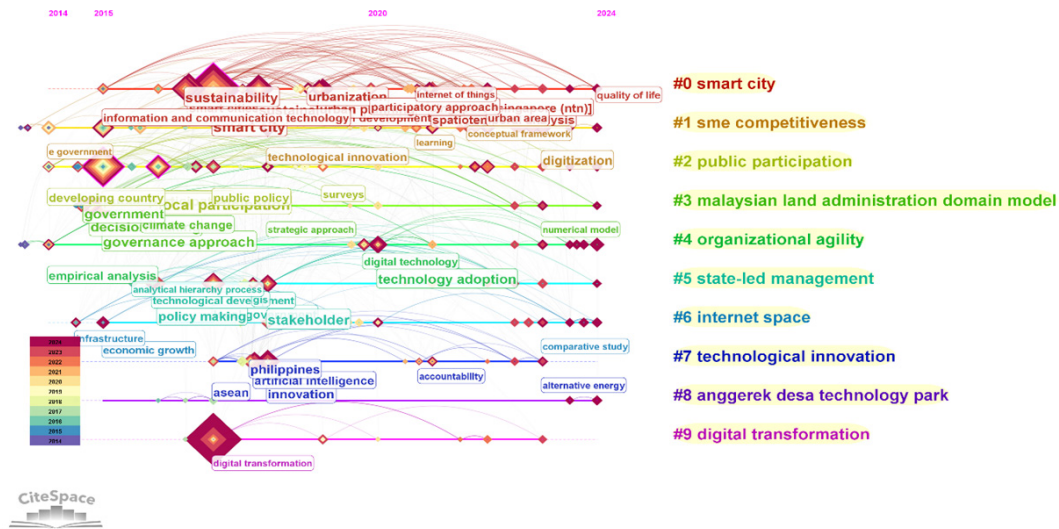


Figure 6. RESULTS, ANALYSIS Timeline View of Topics
Source: Author generated through CiteSpace

Figure 6 shows that the digital transformation landscape in local governance for Southeast Asia has been organized into three primary clusters that share thematic overlap. The smart city innovation focus, represented as the first cluster with (Cluster #0) label, has a silhouette value of 0.766 and the highest number of documents within the dataset. This cluster is defined by the emphasis on participatory and sustainability strategies in innovative city development, which has been benchmarked against case studies from Helsinki, Singapore, and London (Shamsuzzoha et al., 2021). The terms smart city, sustainability, and sustainable development characterize the focus on managing the city's environmentally oriented technologies. Singapore and Indonesia serve as the focal points in this body of literature.

The second cluster, which is labeled as (Cluster #1), focuses on the issues of digital transformation concerning the boost in productivity of small and medium enterprises in Southeast Asia, most notably in Malaysia and Indonesia. At a silhouette value of 0.73, this cluster displays a firm relation between the use of digital technology and innovation in business models. Businesses are digitally transforming, as illustrated in the study of digital business model innovation by Fang et al. (2024), and supplier loyalty in the digital transformation era by Mujiyanto et al. (2023). The keywords previously mentioned, like innovation in technology, digitization, and civic engagement, reveal that the effect of digital innovation transcends economic productivity to social relations and corporate governance changes.

Third Cluster (Cluster #2) Concentrates on Public Participation and Citizen Engagement in Public Policy and Resource Management. With Silhouette value the highest among the other three clusters (0.777), this theme illustrates the coherence of issues in the study of community participation. Concerning groundwater resources management in Thailand

(Piyapong et al., 2019), and “The Failure of E-Government in Developing Countries” Gunawong & Gao (2017), illustrates the relationship between policy awareness, policy construction, and the achievement of digital innovation. Dominant keywords, including public participation, local participation, and public policy, demonstrate that the achievement of digital governance rests on local governments’ participatory legitimacy and responsiveness.

Digital Innovations in Local Governance in Southeast Asia

Table 3. Digital Innovations in Local Governance in Southeast Asia

Country	Digital Innovation	Form of Efficiency	Form of Participation	Source
Indonesia	e-Musrenbang	Boosted transparency in planning processes	Quasi-participation framework	Anindito et al., (2022)
	Digital Land Administration	Enhanced precision and service accessibility of land registration	Support for marginalized groups	Bennett et al., (2023)
	West Java Digital Service (JDS)	Advancement of community data management	Collaborative policymaker hubs	(Maulana et al., 2024)
Singapore	Smart Nation Initiative	Data-driven service delivery	Community representation in digital policy	(Aigner et al., 2022)
	3Cs architecture (connect, collect, comprehend)	Integrated digital governance	Multi-stakeholder collaboration	(Ni, 2022).
Malaysia	Smart City Governance	Optimized service delivery via ICT	Civic engagement through social media and digital platforms	(Mutiarin & Lawelai, 2023)
Thailand	Local Government Awards	Integration of smart technology in public services	Incentivized participation mechanisms	(Thamjaroenporn & Achalakul, 2020)
Philippines	Social media platforms	Administrative interface	Participatory tool	(Aigner et al., 2022; Ni, 2022)

Table 3 shows that digital innovations transform Southeast Asia’s local governance by improving service delivery and participatory frameworks. In Indonesia, the West Java Digital Service (JDS) initiative exemplifies the effective advancement of community data management through collaborative policymaker hubs (Maulana et al., 2024). Further, Anindito

et al., (2022), argue that e-Musrenbang boosted transparency in planning processes through a quasi-participation framework, while Bennett et al., (2023). Report that initiatives under Digital Land Administration enhanced the precision and service accessibility of land registration, particularly aiding marginalized groups. Such undertakings express growing national resolve towards addressing the digital divide and consolidating the enhancement of accountability, inclusion, and decisional agility through digitized frameworks.

In Singapore, the Smart Countries Initiative is an archetype of integrated digital governance innovation as it employs the “3Cs” (connect, collect, comprehend) architecture for data-driven service delivery and citizen participation. Centrally, the program advocates for community representation in digitally framed policy processes and multi-stakeholder collaboration as key (Aigner et al., 2022; Ni, 2022). Singapore further offers global leadership in the ethical use of innovative technologies by providing inclusion benchmarks at the core of governance frameworks. Malaysia, Thailand, and the Philippines also fall within the Southeast Asian region and exhibit differing degrees of progress regarding digital governance.

Malaysia’s Smart City Governance uses ICT to optimize service delivery and promote civic engagement via social media and other digital platforms (Mutiarin & Lawelai, 2023). In Thailand, basic e-government services are complemented by Local Government Awards and other incentivized participation (Noymanee et al., 2017; Thamjaroenporn & Achalakul, 2020). The e-Governance project in South Cotabato, Philippines, highlights social media’s dual role as an administrative interface and participatory tool (Aigner et al., 2022; Ni, 2022). Collectively, these studies illustrate that sustainable digital governance stems from the collaboration of government, civil society, and the business sphere, as well as the need for steady political will and public trust to foster innovation. I can adapt these insights into a policy brief, slide deck, or infographic.

DISCUSSION

Data from this study shows increasingly sophisticated developments in digital governance practices and theory in Southeast Asia. The growth of smart cities, e-governance, and e-governance involving citizen participation demonstrates a growing interest among local and foreign academics and practitioners in the application of public administration with technology. These findings are in line with previous research (Anggono et al., 2025; Maulana et al., 2024), which identified the digital transformation process as a series of closely related phenomena related to organizational frameworks, policy formation, and the scope of citizen participation. Research focusing on smart cities, digital transformation, and e-governance in education captures the convergence of themes emerging around productivity and equity. Much of the literature focuses on Indonesia, which presents a promising policy context but also serious infrastructural and institutional difficulties. This claim is in line with the statements from Kusmiarto et al., (2021) and Syah et al., (2024), regarding the few but significant

facilitating conditions that stem from the regional legal landscape and innovation policies towards digital governance.

The data further highlights inequalities and contradictions. There is a lack of synthesis of discussions related to smart city initiatives and technological innovation in relation to the participatory governance framework. This kind of thematic fragmentation, as argued by (Smolinski, 2024), hinders the progress of a comprehensive digital governance framework. Furthermore, the focus on digital transformation governance frameworks in the 'transformation and sustainability' approach, as expressed by (Przeybilowicz & Cunha, 2024), tends to focus on the perspective of digital control, neglecting the socio-technical elements of trust and legitimacy – the basic elements of sustainable digital transformation. A comparison between Indonesia, Malaysia, Singapore, Thailand, and the Philippines reflects different levels of institutional readiness in terms of digital inclusion and varying levels of ownership. An example is Singapore with its Smart Nation initiative, which reflects a high degree of ethical agility in strategic governance. On the other hand, other countries show significant deficiencies in the principles of interoperability and citizen-centricity. These differences highlight the need for tailored policy interventions to promote balanced innovation equity.

These findings have theoretical and practical dimensions. From a theoretical perspective, they confirm the integration and completeness of the TAM and UTAUT models in the context of technology adoption in public administration. From a practical perspective, they show that policymakers should focus on digital literacy, stakeholder engagement, and governance flexibility. Local governments should go beyond service provision to engage in co-creation and participatory policymaking. However, this study has limitations. It ignores gray literature and relies solely on bibliometric data, which often fails to appreciate the diversity of empirical realities. Future studies should balance qualitative and quantitative field data with bibliometric data to validate and enrich findings. There are under-explored areas related to AI ethics, system interoperability, and public trust in governance that require attention. Overall, this study emphasizes the potential of digitalization in local governance in Southeast Asia. It advocates for a more nuanced, participatory, and data-driven digital policy framework that encourages community participation and institutional flexibility for sustainable governance.

CONCLUSIONS

This study systematically synthesized 996 scientific publications to digitally transform local governance in Southeast Asia. The results of the bibliometric analysis, along with thematic clustering, demonstrate the technological innovations of smart cities, e-government, and digital participation. These innovations have evolved over time to construct a conceptual system of digital transformation. These results reaffirm that the operational efficacy of the bureaucracy, together with heightened public engagement, is strongly influenced by the level of institutional preparedness and the digital literacy of the constituents. The research also

emphasizes how data-driven governance with advanced social policy instruments responds to the region's complex social issues.

With the primary goal of sustainability in mind, this research provides an indirect strategic reference for policymakers focusing on adaptive, technology-centered governance models. The highlighted practices from Indonesia, Malaysia, Singapore, Thailand, the Philippines, and other ASEAN countries underscore the role of cross-sector collaboration in establishing a democratic digital ecosystem. This research serves as a springboard for exploring AI ethics, interoperability within public systems, and the strengthening of trust in digital governance and transformations. Ultimately, the resilience of digital innovation in local government will rely on system design driven by community engagement as well as synergy between policies, technology, and the people's actual needs.

REFERENCES

- Aboucaya, W., Angarita, R., & Issarny, V. (2022). Detecting Obstacles to Collaboration in an Online Participatory Democracy Platform: A Use-case Driven Analysis. *Proceedings - International Workshop on Equitable Data and Technology, FairWare 2022*, 25–33. <https://doi.org/10.1145/3524491.3527307>
- Aigner, I., Garai-Fodor, M., & Szemere, T. P. (2022). Singapore's Journey as a Digit-all-ized and Innovative Smart Nation Toward Sustainability. *ICCC 2022 - IEEE 10th Jubilee International Conference on Computational Cybernetics and Cyber-Medical Systems, Proceedings*, 259–264. <https://doi.org/10.1109/ICCC202255925.2022.9922714>
- Akman, Ç., & ahintürk, D. (2024). Digital participation in local governments. In *Digital Transformation in Public Administration: Theory and Practices* (pp. 191–200). Nova Science Publishers, Inc. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85216279869&partnerID=40&md5=77c81752fda51bbfbf404f767a1201c3>
- Ammenwerth, E. (2019). Technology Acceptance Models in ealth nformatics: TAM and UTAUT. *Studies in Health Technology and Informatics*, 263, 64–71. <https://doi.org/10.3233/SHTI190111>
- Anggono, B. D., Wahanisa, R., Aulia Oktarizka Vivi Puspita Sari, A. P., & Adiyatma, S. E. (2025). Interrogating the Legal Foundations of Digital Transformation: Balancing Economic Growth and Social Welfare in the Era of Disruption. *Volksgeist: Jurnal Ilmu Hukum Dan Konstitusi*, 8(1), 191–211. <https://doi.org/10.24090/volksgeist.v8i1.12211>
- Anindito, D. B., Sagala, S. A. H., & Tarigan, A. K. M. (2022). E-musrenbang: A digital framework for local participatory planning at the community level. *International Development Planning Review*, 44(2), 191–216. <https://doi.org/10.3828/IDPR.2021.5>

- Athikarisamy, S., & Patole, S. (2021). Reporting of meta-analysis (PRISMA). In *Principles and Practice of Systematic Reviews and Meta-Analysis* (pp. 111–123). Springer International Publishing. https://doi.org/10.1007/978-3-030-71921-0_11
- Baas, J., Schotten, M., Plume, A., Côté, G., & Karimi, R. (2020). Scopus as a curated, high-quality bibliometric data source for academic research in quantitative science studies. *Quantitative Science Studies*, 1(1), 377–386. https://doi.org/10.1162/qss_a_00019
- Barbosa, M. W. (2021). Uncovering research streams on agri-food supply chain management: A bibliometric study. *Global Food Security*, 28, 100517. <https://doi.org/10.1016/j.gfs.2021.100517>
- Belkhamza, Z. (2024). The Innovation's Role in Boosting e-Government Engagement in Global Economies. *30th Americas Conference on Information Systems, AMCIS 2024*. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85213004384&partnerID=40&md5=977c69864a635e004e9fdb9223fb274>
- Bennett, R. M., Hutabarat, I. R., Unger, E.-M., Ginting, C. P., van der Vegt, H., & Latif, A. (2023). Digital Transformation in Indonesian Land Administration. In *Geospatial Science for Smart Land Management* (pp. 43–67). CRC Press. <https://doi.org/10.1201/9781003349518-7>
- Boon, L. S., Malek, J. A., Hussain, M. Y., & Tahir, Z. (2020). Participation in e-government services and smart city programs: A case study of Malaysian local authority. *Planning Malaysia*, 18(3), 300–312. <https://doi.org/10.21837/PM.V18I13.794>
- Caplanova, A., & Dimelis, S. (2025). THE DIGITAL PERFORMANCE AND COMPETITIVENESS OF PUBLIC SECTOR INSTITUTIONS IN SOUTHEAST ASIA. *Journal of Competitiveness*, 17(1), 101–126. <https://doi.org/10.7441/joc.2025.01.06>
- Chanduví, D. A. G., Lama, G. L. R., & Morey, N. D. (2015). Analysis of Research Literature of Professional Competency Models with a Cognitive-motivational Approach. *Procedia - Social and Behavioral Sciences*, 171, 1400–1409. <https://doi.org/10.1016/j.sbspro.2015.01.260>
- Chang, F., & Das, D. (2020). Smart Nation Singapore: Developing Policies for a Citizen-Oriented Smart City Initiative. In *Developing National Urban Policies* (pp. 425–440). Springer Nature Singapore. https://doi.org/10.1007/978-981-15-3738-7_18
- Corning, G. P. (2022). ASEAN and the Regime Complex for Digital Trade in the Asia-Pacific. *Journal of World Trade*, 56(6), 915–938. <https://doi.org/10.54648/trad2022038>
- David, A., Yigitcanlar, T., Li, R. Y. M., Corchado, J. M., Cheong, P. H., Mossberger, K., & Mehmood, R. (2023). Understanding Local Government Digital Technology Adoption Strategies: APRISMA Review. *Sustainability (Switzerland)*, 15(12). <https://doi.org/10.3390/su15129645>

- Di Martino, B., Graziano, M., Colucci Cante, L., Esposito, A., & Epifania, M. (2022). Application of Business Process Semantic Annotation Techniques to Perform Pattern Recognition Activities Applied to the Generalized Civic Access. In B. L. (Ed.), *Lecture Notes in Networks and Systems: Vol. 497 LNNS* (pp. 404–413). Springer Science and Business Media Deutschland GmbH. https://doi.org/10.1007/978-3-031-08812-4_39
- Djatkiko, G. H., Sinaga, O., & Pawirosumarto, S. (2025). Digital Transformation and Social Inclusion in Public Services: A Qualitative Analysis of E-Government Adoption for Marginalized Communities in Sustainable Governance. *Sustainability (Switzerland)*, 17(7). <https://doi.org/10.3390/su17072908>
- Efthymiou, I.-P. (2025). The role of e-government and e-governance in modern societies. In *Public Governance Practices in the Age of AI* (pp. 45–68). IGI Global. <https://doi.org/10.4018/979-8-3693-9286-7.ch003>
- Fang, T. M., Ahmad, N. H., Halim, H. A., Iqbal, Q., & Ramayah, T. (2024). Pathway towards SME competitiveness: Digital capability and digital business model innovation. *Technology in Society*, 79, 102728. <https://doi.org/10.1016/j.techsoc.2024.102728>
- Frach, L., Fehrmann, T., & Pfannes, P. (2016). Measuring digital government: How to assess and compare digitalisation in public sector organisations. In *Digital Government: Leveraging Innovation to Improve Public Sector Performance and Outcomes for Citizens* (pp. 25–38). Springer International Publishing. https://doi.org/10.1007/978-3-319-38795-6_2
- Franklin, A. L., & Ebdon, C. (2020). Participatory Budgeting in the Philippines. *Chinese Public Administration Review*, 11(1), 60–74. <https://doi.org/10.22140/cpar.v11i1.250>
- Freeman, J. (2016). Digital civic participation in Australian local governments: Everyday practices and opportunities for engagement. In *Public Administration and Information Technology* (Vol. 15, pp. 195–218). Springer. https://doi.org/10.1007/978-3-319-17722-9_11
- Graniæ, A. (2023). Technology Acceptance and Adoption in Education. In *Handbook of Open, Distance and Digital Education* (pp. 183–197). Springer Nature. https://doi.org/10.1007/978-981-19-2080-6_11
- Greavu-aerban, V., Gheorghiu, A., & Ungureanu, C. (2025). A multidimensional perspective of digitization in Romanian public institutions. *World Development*, 191. <https://doi.org/10.1016/j.worlddev.2025.106996>
- Gunawong, P., & Gao, P. (2017). Understanding e-government failure in the developing country context: a process-oriented study. *Information Technology for Development*, 23(1), 153–178. <https://doi.org/10.1080/02681102.2016.1269713>

- Gupta, V. K., Gupta, A., Agrawal, M., Sardana, A., Shukla, S. K., & Joshi, K. (2023). An Effectual Method for Clustering of Bigdata on the Cloud using Fuzzy c-means Algorithm. *2023 Global Conference on Information Technologies and Communications, GCITC 2023*. <https://doi.org/10.1109/GCITC60406.2023.10426546>
- Gusenbauer, M. (2022). Search where you will find most: Comparing the disciplinary coverage of 56 bibliographic databases. *Scientometrics*, 127(5), 2683–2745. <https://doi.org/10.1007/s11192-022-04289-7>
- Hien, B. N., Tuyen, N. T. K., Lan, N. T., Ngan, N. T. K., & Thanh, N. N. (2024). the Impact of Digital Government Initiatives on Public Value Creation: Evidence From Ho Chi Minh City - Vietnam. *Revista de Gestao Social e Ambiental*, 18(2). <https://doi.org/10.24857/RGSA.V18N2-092>
- Howard, T. O., Winkelmess, M. A., & Shegog, M. (2020). Transparency Teaching in the Virtual Classroom: Assessing the Opportunities and Challenges of Integrating Transparency Teaching Methods with Online Learning. *Journal of Political Science Education*, 16(2), 198–211. <https://doi.org/10.1080/15512169.2018.1550420>
- Jiang, H., Geertman, S., & Witte, P. (2020). A Sociotechnical Framework for Smart Urban Governance. *International Journal of E-Planning Research*, 9(1), 1–19. <https://doi.org/10.4018/IJEPR.2020010101>
- Joss, S., Sengers, F., Schraven, D., Caprotti, F., & Dayot, Y. (2019). The Smart City as Global Discourse: Storylines and Critical Junctures across 27 Cities. *Journal of Urban Technology*, 26(1), 3–34. <https://doi.org/10.1080/10630732.2018.1558387>
- Kahale, L. A., Piechotta, V., McKenzie, J. E., Dorando, E., Iannizzi, C., Barker, J. M., Page, M. J., Skoetz, N., & Akl, E. A. (2022). Extension of the PRISMA 2020 statement for living systematic reviews (LSRs): protocol. *F1000Research*, 11, 109. <https://doi.org/10.12688/f1000research.75449.2>
- Kusmiarto, K., Aditya, T., Djurdjani, D., & Subaryono, S. (2021). Digital transformation of land services in indonesia: A readiness assessment. *Land*, 10(2), 1–16. <https://doi.org/10.3390/land10020120>
- Kusumasari, B. (2018). Digital democracy and public administration reform in Indonesia. *International Journal of Electronic Governance*, 10(3), 317–337. <https://doi.org/10.1504/IJEG.2018.095937>
- Landum, M., Moura, M. M. M., & Reis, L. (2020). ICT Good Practices in alignment with Green IT. In R. A., P. B.E., P. F.G., del M. M. M., & G. R. (Eds.), *Iberian Conference on Information Systems and Technologies, CISTI* (Vols. 2020-June). IEEE Computer Society. <https://doi.org/10.23919/CISTI49556.2020.9141166>

- Lee, B. C., & Xie, J. (2018). How do aging adults adopt and use a new technology? New approach to understand aging service technology adoption. In S. C. (Ed.), *Communications in Computer and Information Science* (Vol. 851, pp. 161–166). Springer Verlag. https://doi.org/10.1007/978-3-319-92279-9_22
- Lee, T. (2024). Artificial intelligence: governing Singapore's smart digital journey. *Communication Research and Practice*, 10(3), 307–315. <https://doi.org/10.1080/22041451.2024.2346430>
- Lim, J. B. Y. (2025). Digital Media Interventions in Southeast Asia: A Decolonial Perspective. In *Digital Media Interventions in Southeast Asia: A Decolonial Perspective*. Springer Nature. <https://doi.org/10.1007/978-3-031-78211-4>
- Llovido, J. L., Brogada, M. A. D., Relucio, F. S., Austero, L. D., MacEda, L. L., & Abisado, M. B. (2024). BOSESKO: Designing A Synoptic Multi-Platform Digital System for Citizen Participation. *International Conference on Advanced Communication Technology, ICACT*, 376–383. <https://doi.org/10.23919/ICACT60172.2024.10472009>
- Loeffler, E., & Martin, S. (2023). Citizen engagement. In *Public Management and Governance: Fourth Edition* (pp. 284–298). Taylor and Francis. <https://doi.org/10.4324/9781003282839-25>
- Mathew, L., Govindan, V. M., Jayakumar, A., Unnikrishnan, U., & Jose, J. (2024). The evolution of financial technology: A comprehensive bibliometric review of robo-advisors. *Multidisciplinary Reviews*, 7(11). <https://doi.org/10.31893/multirev.2024274>
- Matitah, M., Arifin, S., Sumarto, S., & Widiyanto, W. (2021). Confronting E-Government Adoption in Indonesian Local Government. *Journal of Indonesian Legal Studies*, 6(2), 279–306. <https://doi.org/10.15294/jils.v6i2.47795>
- Maulana, R. Y., Durnik, M., & Decman, M. (2024). Collaborative Approach on Digital Government Transformation: In-Depth Analysis from Expert Interview. *NISPAcee Journal of Public Administration and Policy*, 17(1), 94–119. <https://doi.org/10.2478/nispa-2024-0005>
- McKinley, E., Crowe, P. R., Stori, F., Ballinger, R., Brew, T. C., Blacklaw-Jones, L., Cameron-Smith, A., Crowley, S., Cocco, C., O'Mahony, C., McNally, B., Power, P., & Foley, K. (2021). 'Going digital' - Lessons for future coastal community engagement and climate change adaptation. *Ocean and Coastal Management*, 208. <https://doi.org/10.1016/j.ocecoaman.2021.105629>
- McNaught, C., & Lam, P. (2010). Using wordle as a supplementary research tool. *Qualitative Report*, 15(3), 630–643. <https://doi.org/10.46743/2160-3715/2010.1167>

- Mohd Hasni, N. H. (2023). A Review of Digitalization and Public Health: Potentials, Integrations and Impacts to the Malaysians Well-being. *Journal of Health Research*, 37(Suppl 1), S9–S15. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85188751331&partnerID=40&md5=e7f235abc294b0429a5c4a1eba39ee80>
- Momani, A. M. (2020). The unified theory of acceptance and use of technology: A new approach in technology acceptance. *International Journal of Sociotechnology and Knowledge Development*, 12(3), 79–98. <https://doi.org/10.4018/IJSKD.2020070105>
- Montalbo, I. C., Alejandro, B. A., Baylan, S. L., Lacea, R. L., Pepito, G. M., & Villarante, G. A. (2021). Sustaining Women Empowerment Community Extension Project: A Tri-Focal Partnership Model. *Asian Journal of University Education*, 17(3), 21–33. <https://doi.org/10.24191/ajue.v17i3.14565>
- Mujianto, M., Hartoyo, H., Nurmalina, R., & Yusuf, E. Z. (2023). The Unraveling Loyalty Model of Traditional Retail to Suppliers for Business Sustainability in the Digital Transformation Era: Insight from MSMEs in Indonesia. *Sustainability (Switzerland)*, 15(3), 2827. <https://doi.org/10.3390/su15032827>
- Mutiarin, D., & Lawelai, H. (2023). Optimizing the Role of ICT and Citizen Participation: Analysis of Smart City Governance Implementation in Jakarta, Indonesia and Kuala Lumpur, Malaysia. *E3S Web of Conferences*, 440, 03027. <https://doi.org/10.1051/e3sconf/202344003027>
- Ni, M. (2022). Digital Participation for Inclusive Growth: A Case Study of Singapore's Collaborative Digital Governance Model. In *Urban Book Series* (pp. 323–337). Springer Science and Business Media Deutschland GmbH. https://doi.org/10.1007/978-3-030-96866-3_17
- Noymanee, J., San-Um, W., & Theeramunkong, T. (2017). Perspectives and innovation roadmap for service ability enhancement of Thai E-government. *2016 Management and Innovation Technology International Conference, MITiCON 2016*, MIT198–MIT203. <https://doi.org/10.1109/MITiCON.2016.8025214>
- Nurmandi, A., Kurniawan, D., Misran, & Salahudin. (2021). A Meta-analysis of Big Data Security: How the Government Formulates a Model of Public Information and Security Assurance into Big Data. In *Communications in Computer and Information Science: Vol. 1499 CCIS* (pp. 472–479). Springer. https://doi.org/10.1007/978-3-030-90179-0_60
- Nursyamsi, D., Sulaeman, Y., & Noor, M. (2020). Management package of tri-kelola plus for increasing production and productivity in wetland development for agriculture. In S. Y., N. D., P. L., & M. B. (Eds.), *Tropical Wetlands Innovation in Mapping and Management- Proceedings of the International Workshop on Tropical Wetlands: Innovation in Mapping and Management, 2018* (pp. 63–72). CRC Press/Balkema. <https://doi.org/10.1201/9780429264467-11>

- Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., ... Moher, D. (2022). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *Revista Panamericana de Salud Publica/Pan American Journal of Public Health*, 46. <https://doi.org/10.26633/RPSP.2022.112>
- Page, M. J., Moher, D., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., ... McKenzie, J. E. (2021). PRISMA 2020 explanation and elaboration: Updated guidance and exemplars for reporting systematic reviews. *The BMJ*, 372. <https://doi.org/10.1136/bmj.n160>
- Pfaff, Y. M. (2023). Agility and digitalization: why strategic agility is a success factor for mastering digitalization – evidence from Industry 4.0 implementations across a supply chain. *International Journal of Physical Distribution and Logistics Management*, 53(5–6), 660–684. <https://doi.org/10.1108/IJPDLM-06-2022-0200>
- Piyapong, J., Thidarat, B., Jaruwat, C., Siriphan, N., & Passanan, A. (2019). Enhancing citizens' sense of personal responsibility and risk perception for promoting public participation in sustainable groundwater resource management in Rayong Groundwater Basin, Thailand. *Groundwater for Sustainable Development*, 9, 100252. <https://doi.org/10.1016/j.gsd.2019.100252>
- Prajaknate, P. (2017). Information Communication Technologies (ICT) for education projects in ASEAN: Can we close the digital divide? *Communication, Culture and Change in Asia*, 2, 107–133. https://doi.org/10.1007/978-981-10-2815-1_6
- Przebylłowicz, E., & Cunha, M. A. (2024). Governing in the digital age: The emergence of dynamic smart urban governance modes. *Government Information Quarterly*, 41(1), 101907. <https://doi.org/10.1016/j.giq.2023.101907>
- Puriwat, W., & Tripopsakul, S. (2020). Preparing for industry 4.0-will youths have enough essential skills?: An evidence from Thailand. *International Journal of Instruction*, 13(3), 89–104. <https://doi.org/10.29333/iji.2020.1337a>
- Ramasubbareddy, S., Walia, A. S., Luhach, A. K., Kannayaram, G., & Evakattu, S. (2019). Big Data Analysis on Job Trends Using R. *Recent Advances in Computer Science and Communications*, 14(1), 100–108. <https://doi.org/10.2174/2213275912666190801113359>
- Rashdi, S. Al. (2024). Digital transformation for better innovation governance. In *Perspectives on Digital Transformation in Contemporary Business* (pp. 201–239). IGI Global. <https://doi.org/10.4018/979-8-3693-5966-2.ch008>

- Reutterer, T., & Dan, D. (2021). Cluster Analysis in Marketing Research. In *Handbook of Market Research* (pp. 221–249). Springer International Publishing. https://doi.org/10.1007/978-3-319-57413-4_11
- Rey, W. P., Villaluz, A. C., & Rey, K. W. J. D. (2024). The Impact of Digital Transformation in the Philippines: A Study of the Key Drivers and Barriers. *ACM International Conference Proceeding Series*, 107–113. <https://doi.org/10.1145/3647782.3647799>
- Rodríguez-Bolívar, M. P., Alcaide-Muñoz, L., & Cobo, M. J. (2018). Analyzing the scientific evolution and impact of e-Participation research in JCR journals using science mapping. *International Journal of Information Management*, 40, 111–119. <https://doi.org/10.1016/j.ijinfomgt.2017.12.011>
- Rozanc, I. (2018). Effective collection and selection of research articles for a systematic review. In V. B., T. E., G. T.G., S. V., C.-S. M., R. S., S. K., K. M., M. M., G. S., P. P., & J. M. (Eds.), *2018 41st International Convention on Information and Communication Technology, Electronics and Microelectronics, MIPRO 2018 - Proceedings* (pp. 1394–1399). Institute of Electrical and Electronics Engineers Inc. <https://doi.org/10.23919/MIPRO.2018.8400251>
- Sarafis, D., Karamitsios, K., & Kravari, K. (2025). AI and Civic Engagement: A Brief Exploration of Applications and Opportunities. *ICADEIS 2025 - 2025 International Conference on Advancement in Data Science, E-Learning and Information System: Integrating Data Science and Information System, Proceeding*. <https://doi.org/10.1109/ICADEIS65852.2025.10933183>
- Setyarto, D. B., Alimuddin, Mulyaningsih, & Judijanto, L. (2025). The role of e-government in increasing transparency and accountability of public administration in the digital era. *Edelweiss Applied Science and Technology*, 9(2), 1771–1783. <https://doi.org/10.55214/25768484.v9i2.4908>
- Shamsuzzoha, A., Niemi, J., Piya, S., & Rutledge, K. (2021). Smart city for sustainable environment: A comparison of participatory strategies from Helsinki, Singapore and London. *Cities*, 114, 103194. <https://doi.org/10.1016/j.cities.2021.103194>
- Shaw, I., & Ow, R. (2019). Asian social work: Professional work in national contexts. In *Asian Social Work: Professional Work in National Contexts*. Taylor and Francis. <https://doi.org/10.4324/9780429465222>
- Smolinski, J. (2024). Navigating the Digital Frontier: Emerging Trends in Digital Innovation Management for 2023 and Beyond. *International Journal of Innovation and Technology Management*, 21(4). <https://doi.org/10.1142/S0219877024500329>

- Sontiwanich, P., Boonchai, C., & Beeton, R. J. S. (2022). An Unsustainable Smart City: Lessons from Uneven Citizen Education and Engagement in Thailand. *Sustainability*, 14(20), 13315. <https://doi.org/10.3390/su142013315>
- Subroto, Saptono, A., & Effendi, M. S. (2024). The Impact of Transformational Leadership and Technological Adaptation on Organizational Performance. *Pakistan Journal of Life and Social Sciences*, 22(2), 12139–12145. <https://doi.org/10.57239/PJLSS-2024-22.2.00868>
- Sucupira Furtado, L., da Silva, T. L. C., Ferreira, M. G. F., de Macedo, J. A. F., & de Melo Lima Cavalcanti Moreira, J. K. (2023). A framework for Digital Transformation towards Smart Governance: using big data tools to target SDGs in Ceará, Brazil. *Journal of Urban Management*, 12(1), 74–87. <https://doi.org/10.1016/j.jum.2023.01.003>
- Suranto, B., Kovaè, N., Haryono, K., Abdul Rahman, S. F., Mohd Shukri, A. F., Suder, M., Kusa, R., & •ugiaè, D. (2025). State of digitalization in the Southeast Asia region – bibliometric analysis. *Quality and Quantity*. <https://doi.org/10.1007/s11135-025-02296-3>
- Syah, A. F., Sacipto, R., Yasin, A., Maemunah, S., Nuryadin, D., & Mutaqin, M. (2024). Smart City Implementation in Indonesian Regions: Juridical and Empirical Review. In M. D., A. M., C. D., S. J., S. M., R. A., S. P., & N. A. (Eds.), *E3S Web of Conferences* (Vol. 594). EDP Sciences. <https://doi.org/10.1051/e3sconf/202459404004>
- Syahputra, D. I., Nurmandi, A., & Subekti, D. (2023). Bibliometric Analysis of Research Publication Trends on the ICT Use in Government Institutions from 2015–2022. In *Lecture Notes in Networks and Systems: Vol. 624 LNNS* (pp. 54–67). Springer. https://doi.org/10.1007/978-3-031-25344-7_6
- Thamjaroenporn, P., & Achalakul, T. (2020). Big Data Analytics Framework for Digital Government. *2020 1st International Conference on Big Data Analytics and Practices, IBDAP 2020*, 1–6. <https://doi.org/10.1109/IBDAP50342.2020.9245461>
- Turk, N. (2021). Methodology of systematic reviews. *Zdravniški Vestnik*, 90(7–8), 432–442. <https://doi.org/10.6016/ZdravVestn.3138>
- Wang, J., Sun, W., Zhang, X., & Yang, L. (2023). Interdisciplinarity Measurement Method of Scientific Research Papers based on Adaptive Feature Selection. *Journal of Library and Information Science in Agriculture*, 35(3), 52–70. <https://doi.org/10.13998/j.cnki.issn1002-1248.23-0214>
- Zhang, J., Li, H., & Zhao, H. (2025). The Impact of Digital Transformation on Organizational Resilience: The Role of Innovation Capability and Agile Response. *Systems*, 13(2). <https://doi.org/10.3390/systems13020075>

- Zhang, M., & Kaur, M. (2024). Toward a theory of e-government: Challenges and opportunities, a literature review. *Journal of Infrastructure, Policy and Development*, 8(10). <https://doi.org/10.24294/jipd.v8i10.7707>
- Ziehl, M., Herzog, R., Degkwitz, T., Niggemann, M. H., Ziemer, G., & Thoneick, R. (2023). Transformative Research in Digital Twins for Integrated Urban Development. *International Journal of E-Planning Research*, 12(1), 1–18. <https://doi.org/10.4018/IJEPR.333851>
- Zukarnain, Z. A., Sudin, R., Rahman, N. A., & Jamaludin, M. (2020). Exploring the potential of smart city in Kota Bharu. *International Journal of Engineering Trends and Technology*, 1, 114–119. <https://doi.org/10.14445/22315381/CATI1P221>