



Potential Adoption of Smart Living and Universal Design for Aging Population Wellbeing in Malaysian Housing Development: A Systematic Literature Review

Syafiq Johari¹, Muzani Mustapa², Fara Diva Mustapa³

¹PhD Candidate, Department of Quantity Surveying, Faculty of Built Environment and Surveying, Universiti Teknologi Malaysia, Malaysia

²Senior Lecturer, Department of Quantity Surveying, Faculty of Built Environment and Surveying, Universiti Teknologi Malaysia, Malaysia

³Senior Lecturer, Department of Quantity Surveying, Faculty of Built Environment and Surveying, Universiti Teknologi Malaysia, Malaysia

Abstract

The rapid growth of the ageing population triggers the demand for innovative solutions to support independent living for seniors, given the changes in physical health, cognitive function, and mobility. Smart Living and Universal Design principles are trusted to play crucial roles in improving the quality of life, especially for the elderly and disabled individuals. Hence, this paper aims to present a theoretical background on the potential adoption of smart living and universal design in housing development in response to cater to the ageing population's well-being. A systematic literature review utilizing bibliometric analysis through the visualization of similarity viewer software is conducted to synthesise existing research on smart living and universal design housing features catering to the ageing population. Findings highlighted the potential for extensive smart living and universal design adoption in housing, with several challenges derived from the lack of standard regulations. Despite the drawbacks, the incorporation of extensive smart living and universal design is noteworthy for its efficacy in extending the life expectancy of the ageing population, particularly the elderly residing in their residences. This study provides practical implications for policymakers, designers, and practitioners to implement smart living and universal design in Malaysian housing development to foster the well-being of the ageing population in Malaysia.

© 2025 The Authors. Published by IERЕК Press. This is an open-access article under the CC BY license (<https://creativecommons.org/licenses/by/4.0/>). Peer review under the responsibility of ESSD's International Scientific Committee of Reviewers.

Keywords

Ageing Population; Housing Development; Systematic Literature Review; Smart Living; Universal Design; Malaysia

1. Introduction

The significant growth of the ageing population is a phenomenon happening globally, where the population of the elderly is increasing year by year. Malaysia is similarly experiencing the same situation as other countries, with the ageing population trend projected to increase. By 2030, it is estimated that 15% of the population will be 60 years old or older (Md Nor & Ghazali, 2021). Therefore, the increase in the number of elderly individuals has substantial effects

on the demand for care, financial resources, and facilities aimed at enhancing their well-being and quality of life (Nur Syakiran et. al., 2017; Md Nor & Ghazali, 2021).

Hence, there is a growing demand for Smart Living housing options that combine housing with health and social services to help older adults maintain their independence (Guzman, 2019). Smart living is a housing concept that caters to the residents' well-being with universal design-ready features. The rising demand for elderly-friendly housing is driven by the growing ageing population and the need for improved comfort, security, and healthcare services. Developing ageing-in-place infrastructures is essential to meet the market requirements for elderly housing units. (Subotic, 2022; Miao et al., 2022). Another concept that is well known to be applied to assist ageing people is the universal design concept house, a dwelling specifically tailored to meet the needs of elderly individuals, ensuring accessibility, safety, and comfort. However, there is little focus on the application of universal design features that facilitate ageing in place, simultaneously improving the quality of life for the elderly (Mnea & Zairul, 2023).

Smart Living and Universal Design principles are trusted to play crucial roles in enhancing the quality of life, especially for the elderly and disabled individuals. Over the years, the need to address the ageing population and the disabled sparked the smart living concept, which has been growing and evolving to fulfil the demand and technological revolution in various industries, including the construction industry (Liao, Cui, & Kim, 2023). However, despite the increasing need for ageing population housing features to support ageing in place, the housing market's response has been inadequate, with a small fraction of homes being considered suitable for seniors with mobility difficulties (Charlotte, Sidhi, & Teh, 2021). As the population continues to age, there is a pressing need for the housing market to adapt and provide more suitable options for older individuals (Harrington et al., 2023).

This research aims to investigate the feasibility of implementing smart living through universal design housing elements to enhance the well-being of the ageing population in Malaysian housing developments through a systematic literature review. The review utilizes the Bibliometric Analysis and is conducted using Visualization of Similarities (VOS) Viewer software to determine the existing practice, research gap, and the possibility of adopting universal design housing features to prepare for ageing populations in Malaysia.

2. Systematic Literature Review

The growth of academic knowledge is very significant as thousands of new articles, reports, and other materials are published day by day (To & Yu, 2020). The rapid rise in the number of journals has resulted in a proliferation of low-quality research, making it challenging for researchers to get high-quality material (Demir, 2018; Linnenluecke et al., 2020). It can also result in overlapping similarities, susceptibility to bias, poor application of evidence synthesis methods, challenges in critical writing, limited use in certain fields like social sciences, misinterpretation, and underdevelopment despite their significance. These limitations can hinder the effectiveness and reliability of literature reviews, impacting the quality of research output (Kraus et al., 2022; Neal et al., 2020).

A Systematic Literature Review (SLR) can address these limitations as it offers numerous benefits in scientific research by providing a rigorous and transparent approach to summarizing the current state of knowledge on a specific topic (Pérez, 2024). It is also used to identify, analyze, and summarize relevant research findings on specific research questions or topics as well as gather comprehensive insights from a wide range of academic and scientific documents, enabling researchers to synthesize existing knowledge effectively (Dini et al., 2024; Albérico et al., 2024). Additionally, SLR can be presented from several perspectives to highlight gaps, theories, bibliometrics, the volume of research, and the practicality of the research's outcome (Dhiman et al., 2023).

The quality of systematic literature reviews significantly influences the validity of research findings within a specific domain. By employing rigorous methods and evaluation criteria, the systematic literature review can ensure the reliability and credibility of synthesized data, ultimately enhancing the trustworthiness of research outcomes (Rakha et al., 2023; Okesola et al., 2022). Thus, the systematic literature review is basically a thorough study of designated databases such as Scopus and Web of Science, as well as other additional literature that is not accessible in these databases, that will go through a systematic process for analyzing and producing relevant findings (Linnenluecke et al., 2020).

Writing a comprehensive SLR requires appropriate procedures to establish a sound outcome. Initially, the need for identification and developing criteria for conducting a review is required to properly plan a comprehensive SLR. This is followed by the identification and assessment of studies. Next, data needs to be extracted and synthesized before finally presenting the review (Dhiman et.al.,2023).

2.1. Bibliometric Analysis with Visualisation of Similarities (VOS) Viewer

As previously highlighted, bibliometric reviews focus on presenting the data using dedicated software. The systematic literature review is conducted through bibliometric analysis, which facilitates a structured mapping of the research landscape in a specific field. This method allows for an in-depth exploration of existing knowledge, highlighting relationships between significant publications, key authors, institutions, and prevailing themes. By revealing these connections, bibliometric analysis supports the identification of research trends and gaps, providing a comprehensive understanding of the study area. (Gumpenberger et. al., 2012; Vogel, 2013). Using the Scopus database for bibliometric analysis enables researchers to pinpoint key research domains and assess the breadth and interconnections among these fields. This approach provides a comprehensive overview of how different areas intersect and evolve within the scholarly landscape (Zainudin et. al, 2022). One significant application of bibliometric methods lies in their role as a powerful tool for evaluating research impact. By examining publication patterns, citation counts, and collaborative networks, bibliometric analysis provides valuable insights into the influence and quality of research outputs, helping to assess contributions within a specific field. (Campbell et. al., 2010) where this research uses Bibliometric Analysis with Visualisation of Similarities (VOS) Viewer.

VOSviewer was selected for this study due to its user-friendly interface, aligning well with exploratory research that may involve examining numerous data relationships, including those that may not yield conclusive results. As open-access software, it is freely accessible, making it a practical option for researchers with limited funding. Importantly, VOSviewer's technical capabilities are robust, and comparative studies with multi-dimensional scaling techniques indicate that it may offer distinct advantages, particularly in visualizing complex bibliometric data. (Van Eck et. al, 2010). Indeed, Eck et al. have suggested that "the VOS approach yields improved results mainly in the case of medium and large datasets". It is emphasized, therefore, that "it is one of the best options for performing a science mapping analysis" (Moral-Muñoz et al., 2019). Mapping out the keywords of the theoretical framework provides a better outline of the current research trend on an aging population and universal design housing. In this paper, the SLR was conducted using the 4 steps: planning for SLR, identification and assessment studies, extracting and synthesizing data and finally the presentation of the review findings. The following section highlights the outcome of the SLR on the universal design of housing for the ageing population in Malaysia.

2.2. Application of Smart Living and Universal Design for the Aging Population

Addressing the increasing need for ageing population housing as discussed in the sub-topic Introduction, where smart living and universal design principles are trusted to play crucial roles in enhancing the quality of life, especially for the elderly and disabled individuals, this paper aims to establish the possibility of application of Smart Living and Universal Design for Aging Population. It is conducted utilizing Bibliometric Analysis with keywords "Smart Living" and "Aging Population".

In the preliminary stage of the literature review, the primary focus was on housing and technology, and then the two keywords "Smart Living" and "Aging Population" were highly mentioned. These topics emerged frequently across various sources, reflecting the growing academic interest in how technology-driven solutions can support the needs of an ageing society. Initially, a broad search was conducted, resulting in the identification of 31 papers that appeared to address these topics.

However, upon closer examination and using advanced filtering techniques on keywords in Scopus, it became clear that not all of these papers were directly relevant to both 'smart living' and 'ageing population.' Some papers might have touched on related concepts but lacked a strong connection to the core themes, which led to only 13 papers being found to be directly aligned with the keywords. These 13 papers reflected a more accurate and focused representation of the intersection between smart living solutions and the needs of the ageing population, and they are mostly

connected with ambient assisted living, smart city, artificial intelligence, quality of life, and others, as depicted in Figure 1 below. The analysis is generated from 13 Scopus-Indexed papers.

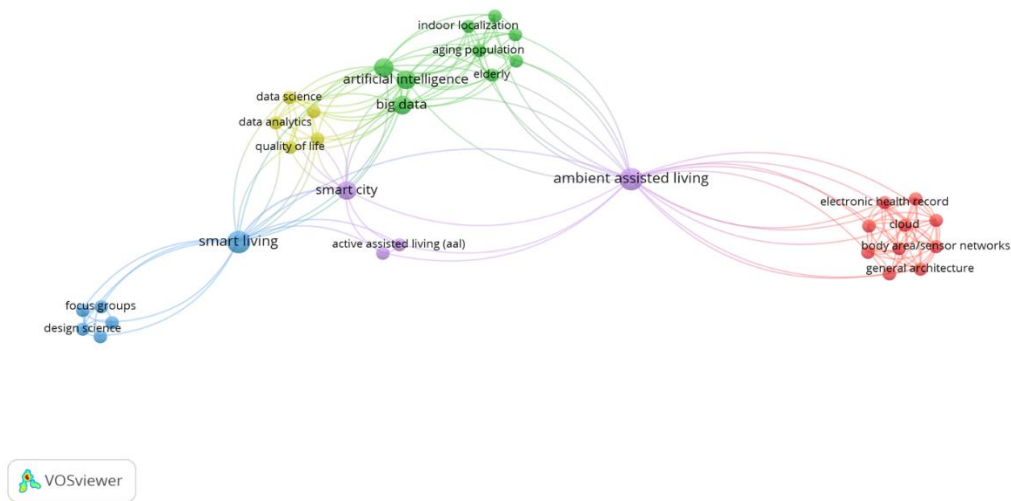


Figure 1: Bibliometric Analysis with keywords Smart Living and Aging Population (source: Bibliometric Analysis through VOSviewer software by authors)

Another Bibliometric Analysis with keywords “Universal Design” and “Aging Population” was conducted as per Figure 2 below to establish the possibility of the application of universal design for the ageing population, and they were mostly associated with accessibility, ageing consumers, flexibility, inclusive design and others. This was done to demonstrate the key parameters of salient features to be incorporated in elderly and disabled-friendly housing design.

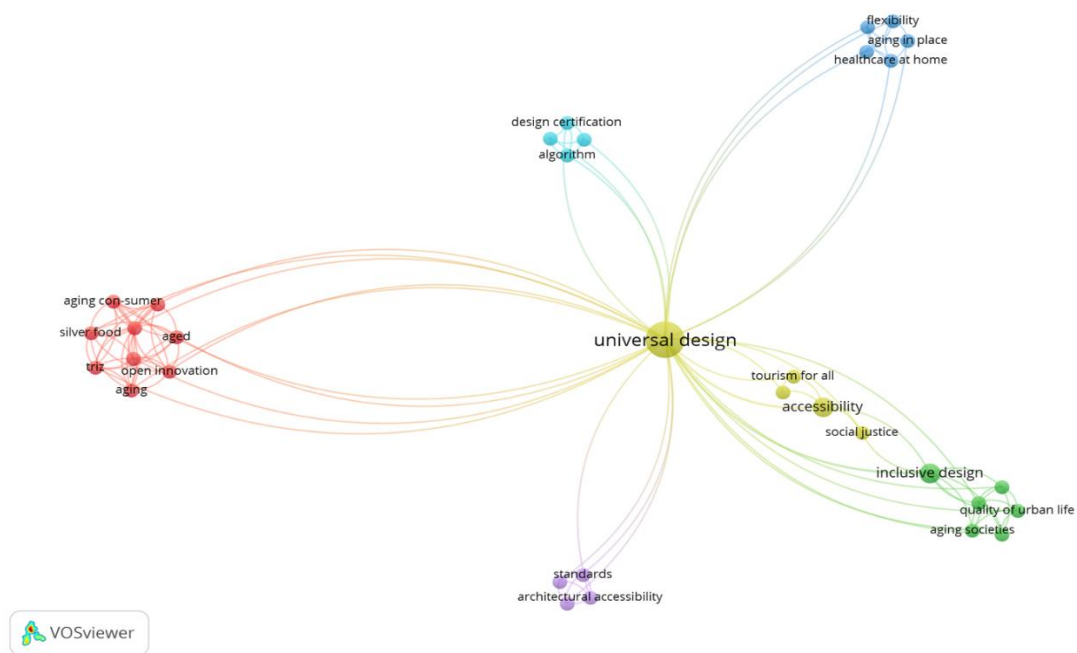


Figure 2: Bibliometric Analysis with keywords Universal Design and Aging Population (source: Bibliometric Analysis through VOSviewer software by authors)

The results of the Bibliometric Analysis will aid in the detailed descriptive analysis of the bibliographic elements. To simplify the presentation of the Systematic Literature Review findings, this paper focuses on bibliographic elements related to research methodologies, including the research approach, technique, and analysis method, as shown in Table 1. This approach is crucial for helping researchers analyze and adopt the most appropriate methodologies suited

to the nature and context of their research. By highlighting the most sought research methodology, it will indicate which research methodology works best for the research topic.

Table 1: Previous Research of Smart Living for Aging Population and Universal Design for Aging Population (source: Bibliometric Analysis through VOSviewer software by authors)

Research	Author	Approach	Technique	Analysis
Building Smart Living Environments for Ageing Societies: Decision Support for Cross-border e-services between Estonia and Finland	Weck et. al., 2022	Qualitative	Case Study	Content Analysis and DEMATEL
Smart Home Modification Design Strategies for Aging in Place: A Systematic Review	Ma et al., 2022	Qualitative	Systematic Literature Review	Content Analysis
Smart Homes for Older People: Positive Aging in a Digital World	Lê et al., 2012	Qualitative	Literature Review	Content Analysis
Smart-Home Technologies to Assist Older People to Live Well at Home	Morris et al., 2013	Qualitative	Literature Review	Content Analysis
Smart Homes and Quality of Life for the Elderly: A Systematic Review	Pal et al., 2017	Qualitative	Literature Review	Content Analysis
How smart homes are used to support older people: An integrative review	Tujama et al., 2019	Qualitative	Literature Review	Content Analysis
Malaysian Smart Retirement Cities: Perspectives of Retirees	Noordin et al., 2023	Qualitative	Semi-Structured Interview	Content Analysis
The Role of Smart Homes in Providing Care for Older Adults: A Systematic Literature Review from 2010 to 2023	Vrančić et al., 2024	Qualitative	Literature Review	Content Analysis
Housing for the ageing population	Demirkan, 2007	Qualitative	Literature Review	Content Analysis
Universal Design in Housing	Quinn & Demirbilek, 2003	Qualitative	Literature Review	Content Analysis
Universal Design and All-Age-Friendly Planning	Maher & Singh, 2021	Qualitative	Case Study	Case Study Analysis

Inclusive Design: An Approach to Adapt Homes for the Elderly	Fallah et al., 2021	Qualitative	Literature Review	Content Analysis
Universal Design and Accessibility: Towards Sustainable Built Environment in Malaysia	Abdul Rahim et al., 2014	Qualitative	Observation and Access Audit	Content Analysis
Smart Home Technologies to Facilitate Aging-in-Place: Professionals' Perception	Oladinrin et al., 2023	Quantitative	Survey Questionnaire	IRA and SLA
A Study of Universal Design in the Everyday Life of Elderly Adults	Mustaquim, 2015	Quantitative	Survey Questionnaire	Descriptive Statistical Analysis
Exploring the Market Requirements for Smart and Traditional Aging Housing Units: A Mixed Methods Approach	Li et al., 2022	Mixed Method	Semi-Structured Interview and Case Study	Content Analysis and Case Study Analysis
The Elderly-Friendly Housing Design Features Preferences by Generations in Malaysia	Ismail et al., 2020	Mixed Method	Semi-structured Interview and Survey Questionnaire	Descriptive Statistical Analysis and Content Analysis

2.2.1. Integration of Smart Living and Universal Design for the Aging Population

Based on the initial Bibliometric Analysis using the keywords Smart Living and Aging Population and Universal Design and Aging Population, respectively, the bibliometric analyses were then integrated together, as depicted in the following Figure 3. This expansion aims to illustrate that while there are some connections between these keywords, they are limited and not directly interconnected, indicating a knowledge gap in this research area. This gap suggests that further exploration is needed because relevant research findings are scarce or nonexistent (Miles, 2017). The limited research is evidenced by the fact that only one academic paper includes all three keywords of Smart Living, Universal Design, and Aging Population which indicates there is a Knowledge Gap where according to Miles (2017) and Müller-Bloch & Kranz (2014) Knowledge Gap is the absent of knowledge in the actual field to theories and literature from related research domains. Therefore, the findings highlight the potential for further exploration into the integration of Smart Living features and Universal Design in Malaysian housing to accommodate the ageing population. As research in this area remains limited, there is a significant opportunity to address the gap and develop innovative housing solutions tailored to the needs of older adults.

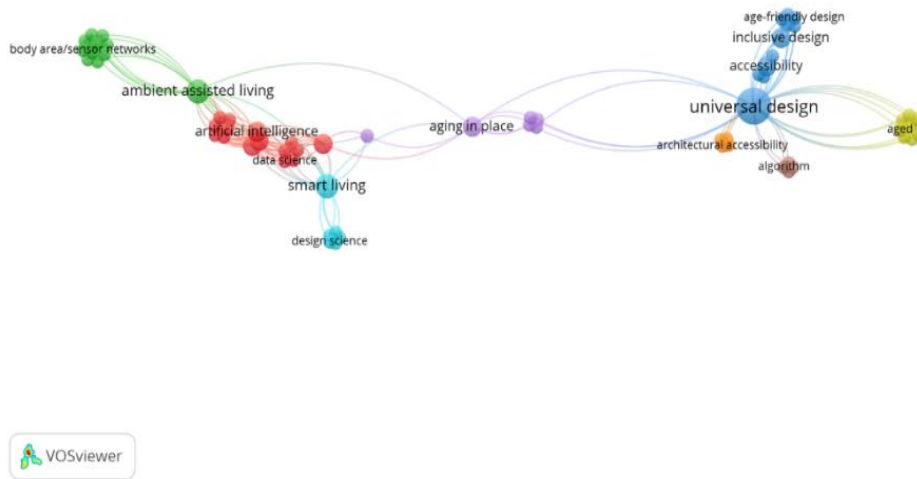


Figure 3: Bibliometric Analysis with integration keywords “Smart Living and Aging Population” and “Universal Design and Aging Population” (source: Bibliometric Analysis through VOSviewer software by authors)

3. Conclusion

The systematic literature review, supported by VOS analysis, highlights a distinct gap in the integration of Smart Living and Universal Design in the context of housing for the ageing population. While there has been considerable research focusing separately on Smart Living and Universal Design, these studies tend to treat the two concepts in isolation, without exploring their combined potential to enhance housing solutions for older adults.

Our review indicates that research on Smart Living has seen substantial growth, with many studies focusing on the incorporation of new technologies aimed at improving comfort, security, and healthcare services for the ageing population. Similarly, Universal Design has been recognized for its role in making housing more accessible and age-friendly. However, despite the proven benefits of both approaches, little research has been done to integrate Smart Living technologies with Universal Design principles specifically for the ageing population living in Malaysia.

This paper emphasizes the potential for combining these two concepts, as the integration of Smart Living and Universal Design could offer comprehensive solutions to address the unique needs of the ageing population. The findings of this review reveal a clear research gap, highlighting the need for further studies that explore how these concepts can be synergistically applied in housing development for older adults. Addressing this gap would provide a solid framework for future research and contribute significantly to the development of housing that better supports the well-being of Malaysia’s ageing population.

Acknowledgment

The abstract of this paper was presented at the Geographic Perspectives on Climate Change Mitigation in Urban and Rural Environments (GCUE) Conference – 1st Edition, which was held on the 25th - 27th of June 2024.

The authors wish to thank those who helped in facilitating and assisting this research. This research is also part of the Fundamental Research Grant Scheme (FRGS) R.J130000.7852.5F622, funded by Malaysia’s Ministry of Education.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sector/ individuals.

Ethics Approval

Not applicable.

Conflict of Interest

The authors declare there is no conflict.

Reference

- Abdul Rahim, A., Zen, I., Abd Samad, N. A., & Raikandar, C. (2014). Universal design and accessibility: Towards sustainable built environment in Malaysia. In H. Caltenco, P.-O. Hedvall, A. Larsson, K. Rasmus-Gröhn, & B. Rydeman (Eds.), *Universal design 2014: Three days of creativity and diversity* (pp. 299-308). IOS Press. <https://doi.org/10.3233/978-1-61499-403-9-299>
- Albérico, T. R., & Boechat, A. C. (2024). Systematic literature review. In *Advances in marketing, customer relationship management, and e-services book series* (pp. 123-145). IGI Global. <https://doi.org/10.4018/979-8-3693-0912-4.ch015>
- Campbell, D., Picard-Aitken, M., Côté, G., Caruso, J., Valentim, R., Edmonds, S., Williams, G., Macaluso, B., Robitaille, J.-P., Bastien, N., Laframboise, M.-C., & Lebeau, L.-M. (2010). Bibliometrics as a performance measurement tool for research evaluation: The case of research funded by the National Cancer Institute of Canada. *American Journal of Evaluation*, 31(1), 66-83. <https://doi.org/10.1177/1098214009354774>
- Charlotte, S., Sidhi, W., & Teh. (2021). Home for elderly people – fasilitas kesehatan dan rekreasi lansia di pulogebang. <https://doi.org/10.24912/STUPA.V3I1.10856>
- Demir, S. B. (2018). Predatory journals: Who publishes in them and why? *Journal of Informetrics*, 12(4), 1296–1311. <https://doi.org/10.1016/j.joi.2018.10.001>
- Demirkan, H. (2007). Housing for the aging population. *European Review of Aging and Physical Activity*, 4(1), 33-38. <https://doi.org/10.1007/s11556-007-0016-z>
- Dini, K., Hani, G., Rany, A., & Yayan, H. (2024). Systematic literature review: Peran media sosial terhadap peningkatan penju alan pada UKM Bittersweet by Najla Harapan Indah, Bekasi. *Sentri*, 3(1), Article 2186. <https://doi.org/10.55681/sentri.v3i1.2186>
- Dhiman, R., Srivastava, V., Srivastava, A., Rajni, & Uppal, A. (2023). How to plan and write for systematic literature review papers in management domain. *Journal Title*, Volume(Issue), Article Number. <https://doi.org/10.1108/S2754-58652023000002003>
- Fallah, H., Nazari, J., Choobineh, A., Morowatisharifabad, M. A., & Jafarabadi, M. (2021). Inclusive design: An approach to a dapt homes for the elderly. *Pakistan Journal of Medical and Health Sciences*, 15(4), 1599-1603. <https://doi.org/10.53350/pjmhs211551599>
- Gumpenberger, C., Wieland, M., & Gorraiz, J. (2012). Bibliometric practices and activities at the University of Vienna. *Library Management*, 33(3), 174-183. <https://doi.org/10.1108/01435121211217199>
- Guzman, S. (2019). Supportive housing: Critical to meeting the needs of an aging population. *Journal Title*. <https://doi.org/10.26419/PPI.00072.001>
- Harrington, M., McCann, A., & Coveney, E. (2023). Healthy age friendly homes programme: This programme aims to enable older people to live longer healthier lives by keeping care close to home and expanding the range of health and social care services in the community. *International Journal of Integrated Care*. <https://doi.org/10.5334/ijic.icic23205>
- Ismail, H., Nordin, M., & Zainan Abidin, A. (2020). The elderly-friendly housing design features preferences by generations in Malaysia. *Environment-Behaviour Proceedings Journal*, 5(15), 141-148. <https://doi.org/10.21834/ebpj.v5i15.2510>
- Kraus, S., Breier, M., Weng, M., Lim, M., Dabic, M., Kumar, S., Kanbach, D., Mukherjee, D., Corvello, V., Piñeiro-Chousa, J., Liguori, E., Palacios, D., Schiavone, F., Ferrarini, A., Fernandes, C. I., & Ferreira, J. J. (2022). Literature reviews as independent studies: Guidelines for academic practice. *Review of Managerial Science*. <https://doi.org/10.1007/s11846-022-00588-8>
- Lê, Q., Nguyen, H., & Barnett, T. (2012). Smart homes for older people: Positive aging in a digital world. *Future Internet*, 4(2), 607-617. <https://doi.org/10.3390/fi4020607>
- Li, R. Y. M., Shi, M., Abankwa, D., Xu, Y., Richter, A., Ng, K., & Song, L. (2022). Exploring the market requirements for smart and traditional aging housing units: A mixed methods approach. *Smart Cities*, 5(4), 1752-1775. <https://doi.org/10.3390/smartcities5040088>
- Linnenluecke, M. K., Marrone, M., & Singh, A. K. (2020). Conducting systematic literature reviews and bibliometric analyses. *Australian Journal of Management*, 45(2), 175-194. <https://doi.org/10.1177/0312896219877678>
- Liao, J., Cui, X., & Kim, H. (2023). Mapping a decade of smart homes for the elderly in Web of Science: A scientometric review in CiteSpace. *Buildings*, 13(7), 1581. <https://doi.org/10.3390/buildings13071581>
- Ma, C., Santin, O., & Mohammadi, M. (2022). Smart home modification design strategies for aging in place: A systematic review. *Journal of Housing and the Built Environment*, 37, 1-27. <https://doi.org/10.1007/s10901-021-09888-z>
- Md Nor, N. N. F., & Ghazali, S. (2021). Malaysia towards an aging country. *GEOGRAFIA Online Malaysian Journal of Society and Space*, 17(3), 234-245.
- Miao, S., Abankwa, D., Xu, Y., Richter, A. J., Ng, K. T. W., & Song, L. (2022). Exploring the market requirements for smart and traditional aging housing units: A mixed methods approach. *Smart Cities*, 5(4), 88. <https://doi.org/10.3390/smartcities5040088>
- Miles, D. A. (2017). *A Taxonomy of Research Gaps: Identifying and Defining the Seven Research Gaps*.
- Mnea, A., & Zairul, M. (2023). Evaluating the impact of housing interior design on elderly independence and activity: A thematic review. *Buildings*, 13(4), 1099. <https://doi.org/10.3390/buildings13041099>
- Moral-Munoz, J. A., López-Herrera, A. G., Herrera-Viedma, E., & Cobo, M. J. (2019). Science mapping analysis software tools: A review. In W. Glänzel, H. F. Moed, U. Schmoch, & M. Thelwall (Eds.), *Springer handbook of science and technology indicators* (pp. 159–185). Springer. <https://doi.org/10.1007/978-3-030-02511-3>

- Morris, M., Adair, B., Miller, K., Ozanne, E., Hampson, R., Pearce, A., Santamaria, N., Viegas, L., Long, M., & Said, C. (2013). Smart-home technologies to assist older people to live well at home. *Journal of Aging Science*, 1(1), 101. <https://doi.org/10.4172/2329-8847.1000101>
- Müller-Bloch, C. & Kranz, J., (2014). A Framework for Rigorously Identifying Research Gaps in Qualitative Literature Reviews, The Thirty Sixth International Conference on Information Systems, Fort Worth 2015, pp. 1–19.
- Mustaquim, M. (2015). A study of universal design in everyday life of elderly adults. *Procedia Computer Science*, 67, 57-66. <https://doi.org/10.1016/j.procs.2015.09.249>
- Neal, R., Haddaway, N. R., Bethel, A., Dicks, L. V., Koricheva, J., Macura, B., Petrokofsky, G., Pullin, A. S., Savilaakso, S., & Stewart, G. B. (2020). Eight problems with literature reviews and how to fix them. *Nature Ecology & Evolution*. <https://doi.org/10.1038/S41559-020-01295-X>
- Noordin, N., Zakaria, Z., Sawal, M., Azmi, M., & Aminuddin, A. (2023). Malaysian smart retirement cities: Perspectives of retirees. *Environment-Behaviour Proceedings Journal*, 8(SI15), 141-146. <https://doi.org/10.21834/e-bpj.v8iSI15.5103>
- Nur Syakiran Akmal, Abdullah, N., Hassan, K., Samsudin, S., Ahmad Zakuan, U. A., Yusof, R., & Zaki, N. (2017). Kesejahteraan hidup warga emas: Perancangan berasaskan gender. *Malaysian Journal of Society and Space*, 13, 75-85. <https://doi.org/10.17576/geo-2017-1303-08>
- Okesola, M. A., Okesola, O., Ogunlana, O. O., & Afolabi, I. S. (2022). Quality assessment of systematic literature on uterine fibroids: A systematic review. *F1000Research*. <https://doi.org/10.12688/f1000research.124879.1>
- Oladinrin, O., Wadu Mesthrige, J., Ojo, L., Alencastro, J., & Rana, M. (2023). Smart home technologies to facilitate aging-in-place: Professionals' perception. *Sustainability*, 15(8), 6542. <https://doi.org/10.3390/su15086542>
- Pal, D., Triyason, T., & Funilkul, S. (2017). Smart homes and quality of life for the elderly: A systematic review. In *Proceedings of the IEEE International Symposium on Multimedia (ISM)* (pp. 413-419). IEEE. <https://doi.org/10.1109/ISM.2017.83>
- Pérez, D., Acosta Vega, R., Salazar-Galán, S., Aranda, J. Á., & Sabater, F. (2024). Toward systematic literature reviews in hydrological sciences. *Water*, 16(3), 436. <https://doi.org/10.3390/w16030436>
- Quinn, J., & Demirbilek, O. (2003, January). Universal design in housing: Is it the answer for home design for the aging population? Paper presented at the International Conference on Aging (ICADI 2003), University of New South Wales, Faculty of the Built Environment, Industrial Design Program.
- Rakha, A., Mutia, R. D., Muhammad, I. L., & Prasetyo, W. (2023). Systematic literature review langchain proposed. *Proceedings of the International Conference on Industrial Engineering and Engineering Management*. <https://doi.org/10.1109/ies59143.2023.10242497>
- Subotic, J. (2022). Smart house assistive technologies for senior citizens. <https://doi.org/10.1109/acit54803.2022.9913158>
- To, W. M., & Yu, B. (2020). Rise in higher education researchers and academic publications. *Emerald Open Research*, 2, 3. <https://doi.org/10.35241/emeraldopenres.13437.1>
- Van Eck, N. J., Waltman, L., Dekker, R., & van den Berg, J. (2010). A comparison of two techniques for bibliometric mapping: Multidimensional scaling and VOS. *Journal of the American Society for Information Science and Technology*, 61, 2405–2416. <https://doi.org/10.1002/asi.21378>
- Vogel, R. (2013). What happened to the public organization? A bibliometric analysis of public administration and organization studies. *The American Review of Public Administration*, 44(4), 383–408. <https://doi.org/10.1177/0275074012470867>
- Vrančić, A., Zadavec, H., & Orehovački, T. (2024). The role of smart homes in providing care for older adults: A systematic literature review from 2010 to 2023. *Smart Cities*, 7(4), 1502-1550. <https://doi.org/10.3390/smartcities7040062>
- Weck, M., Jackson, E. B., Sihvonen, M., & Pappel, I. (2022). Building smart living environments for ageing societies: Decision support for cross-border e-services between Estonia and Finland. *Technology in Society*, 71, 102066. <https://doi.org/10.1016/j.techsoc.2022.102066>
- Zainudin, F. K., Mustapa, F. D., & Minsan, S. H. (2022). Transaction cost economics for housing development: Systematic literature review. *International Journal of Innovation and Industrial Revolution*, 4(12), 16–23. <https://doi.org/10.35631/IJIREV.412002>