
A Study on Barriers for Micro Housing

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Abstract

The absence of affordable housing and the sector's large negative environmental impact present formidable obstacles. Although tiny homes have been suggested as a viable solution, little is known about customer behaviour and views towards them. This study used the Theory of Planned Behaviour as a theoretical framework to investigate demographic and socioeconomic characteristics, as well as reasons for and obstacles to living in tiny houses. Both an online poll and interviews were used to gather data. The findings revealed a statistically significant negative link between intention and present housing size and a statistically significant positive relationship between age and intention to live in a tiny house. Sustainability, cost-cutting, flexibility, minimalism, mobility, and a sense of community were the major drivers identified in this study. Legal limitations and a poor impression of minimalism were the main obstacles. (1) Almost 40% of individuals saw unfavourable effects from COVID-19, but those who were already interested in small houses saw statistically significant positive effects. (2) The majority of individuals seem to be interested in somewhat rural small houses, even though tiny houses placed in cities would be preferred to address the need for well-connected, high-density housing alternatives for young and old people and to solve the housing shortage. (3) Minimalism is both a driver and a deterrent for interest in tiny homes, but it may become more of a driver as society moves towards sustainability. (4) Financial limitations and a lack of available alternative housing options frequently fuel interest in tiny dwellings. The Theory of Planned Behaviour served as a reliable theoretical foundation for this study.

Keywords

Micro house, urbanization, affordable housing

Introduction

This paper's goal is to illustrate the cutting-edge and most latest composite technology, created The technology combines polyurethane foam and wild thistle (*Cynara cardunculus*) particles to create lighter, more durable furniture that competes with other materials already available on the market and is used to make a variety of furniture types. Numerous studies show that small homes are an intelligent and creative method to increase urban density and enhance affordability. The end result was the creation of a range of multipurpose furniture using a cutting-edge material that delivers higher lightness in the components, proving it to be a practical and advantageous substitute for design projects and encouraging future designers to be more conscientious of their decisions in terms of the components employed in furnishings initiatives. As a conclusion, it was intended to highlight the enormous obstacles that stand in the way of a successful and sustainable consumer transition. It is hoped that the project will culminate in the design and development of sustainable and lighter multifunctional furniture products that meet the needs of all parties

involved. Micro housing, often known as micro apartments, is a type of compact, affordable, and useful living arrangement. Micro housing units are generally less than 350 square feet in size, feature a living area, a tiny kitchen, and a bathroom. For those looking for affordable living in urban areas, these housing units are a desirable option because they are designed to be both affordable and space-efficient.

Micro housing provides a number of advantages, but there are also some drawbacks. The public's lack of understanding and acceptance of micro dwellings is one of its main obstacles. The development of micro dwelling developments may also be constrained by regulatory and zoning constraints. Affordable micro home projects may be challenging to develop due to finance and financing issues.

Despite these difficulties, micro housing has the power to transform urban life by offering a workable answer to the lack of cheap housing. Micro housing will probably become a more significant component of the remedy as urbanisation keeps rising the difficulties of finding inexpensive accommodation in cities.

Also Building management systems (BMS), sensors, and metres are among the systems that are installed in many buildings to gather a significant amount of data about operations, energy use, and other activities. (Lee et al., 2013). Because they respond to a variety of internal and exterior data sources with dynamic, real-time management over a growing diversity of building activities, this is why they are known as smart buildings. (Smart Cities Council, 2015). The smart building notion is a topic of great interest, according to Zainordin et al. (2012), because it is founded on the idea of less energy being used for building activities. According to the US Department of Energy (DOE, 2009), up to 70% of the country's electric energy usage occurs in structures. If the total expenses over the course of the project's life cycle are not considered, the price for such housing developments could rise even further.

Meaning of Micro House

Micro homes often have a living space, kitchen, bathroom, and sleeping area, however the arrangement and design can change depending on the resident's particular requirements and preferences. To minimise clutter and make the most of the limited space, these homes frequently employ a minimalist design style.

The cost of micro housing is one of its main advantages. Because of its smaller size and lower cost than regular homes, micro houses are a popular choice for people searching for an affordable home in a high-priced neighbourhood. Their decreased energy needs for maintenance, heating, and cooling can result in cheaper utility costs and a smaller carbon impact.

A second advantage of micro housing is that it might offer a remedy for the lack of affordable housing in cities. Micro housing may be an innovative option that offers a cosy and economical living space for individuals who wish to live in the centre of the city. Many cities are experiencing a lack of affordable housing. Additionally, it can increase the variety of housing alternatives available in metropolitan settings, fostering a more active and welcoming neighbourhood.

Micro housing does provide some difficulties, though. The growth of micro housing projects may be constrained by zoning laws and construction requirements, and the tiny size of the apartments may make it difficult to store possessions and host visitors. Financing issues might also arise because certain lenders could be reluctant to support a project that needs cash.

Despite these difficulties, micro housing has been more well-liked in recent years as an innovative and cost-effective response to the lack of affordable housing in metropolitan areas. Micro housing will probably play

a more and bigger role in the answer to the problems of affordable housing as housing costs grow in many metropolitan locations.

Importance

Recent years have seen a rise in the importance of micro housing as a result of the increased need for inexpensive and sustainable housing solutions. Here are a few factors supporting the significance of micro housing:

Housing that is affordable is one of the most important advantages of micro housing. Micro houses are an appealing alternative for people searching for cheap housing in high-cost metropolitan regions since they may be built and maintained at a far lesser cost than standard residences due to their smaller size. People have the chance to live in places they may not otherwise be able to afford thanks to micro housing.

Space efficiency:

Micro housing is a very effective living alternative since it is created to make the most of every square inch of space. This style not only aids in economic savings but also lessens each resident's carbon footprint. Micro housing is a sustainable and energy-efficient answer to urban living since it requires less area to heat, cool, and maintain.

More various housing alternatives may be created in metropolitan areas thanks to micro housing, which is one of the main solutions to the problem of the lack of cheap housing. Micro housing complexes, which allow for a mix of individuals from diverse origins and economic levels, can promote more inclusive and lively communities.

Mobility:

For people who require a moveable living alternative, micro housing may be the ideal solution. People who desire to travel, live, and own a little house are the perfect candidates since they are portable and easy to relocate live a simple life or reside in a location with expensive homes and rent.

Innovation:

Micro housing may be a creative and inventive response to the difficulties of urban life, inspiring architects and designers to think creatively and develop fresh approaches to housing issues.

In conclusion, micro housing plays a significant role in addressing the problem of a lack of accessible housing in metropolitan settings. It gives individuals the chance to live in the city's centre, lessen their carbon impact, and living more sustainably. Micro housing is set to play a bigger role in the solution as the need for inexpensive and ecological housing rises.

Purpose

The aim appears to be to identify and examine the obstacles that prevent micro housing from being a widely used solution to the affordable housing dilemma in metropolitan settings. The essay will examine a number of issues, including zoning laws, financial difficulties, and social stigma, that may impede the growth and acceptance of micro homes. In order to encourage the adoption of micro housing as a workable and long-term solution to the affordable housing issue, the article attempts to present a thorough analysis of these obstacles as well as potential ways to get through them. The paper's overall goal is to add to the conversation

about affordable housing and urban development by highlighting the possible advantages and difficulties of microfinance. help address the housing situation. The article will examine the potential advantages of micro housing for both individuals and communities in addition to the obstacles to its implementation. By offering people and families safe, sustainable, and inexpensive living alternatives in metropolitan locations, micro housing can be a creative response to the affordable housing dilemma. Local governments may aid in addressing the housing problem, reducing homelessness, and fostering more inclusive and lively communities by encouraging the creation of micro dwellings.

Additionally, micro housing can aid in resolving other economic and social problems. Micro housing, for instance, might be a remedy for gentrification, the process through which low-income individuals are evicted from their areas as a result of rising property values.

By doing this, the hopes to advance inclusive and sustainable communities and add to the conversation around affordable housing and urban development.

Economic factors driving micro housing

Economic considerations may be some of the main drivers of interest in compact homes (Kilman 2016). THOW give consumers an opportunity to buy a home while avoiding many of the upfront expenses related to land ownership (Kilman, 2016). Environmental sustainability is another powerful driver, and it's sometimes asserted that small homes are an example of a conscientious environmental ethos because they encourage more sustainable off-grid living (Anson, 2014; Evans 2018a; Mutter, 2013; Penfold et al., 2018). A countercultural movement that rejects the norms of mainstream society is characterised by independence from mortgage debt and the obligations of permanent and full-time paid job (Anson, 2014; Boeckermann et al., 2019; Evans, 2019; Mutter, 2013).

Economic factors the "greatest incentive for living little" (Kilman, 2016, p. 2) is conserving money while still having a home, albeit a small one. Some people may be able to build their own tiny home, giving them a "affordable" dwelling without a lot of debt. A significant section of the population in Australia cannot afford the traditional (permanent, built) housing market (Cox & Pavletich, 2018). On the other hand, the cost of detached homes has increased in Australia during the COVID-19 epidemic (2020), which is anticipated to make affordability problems worse, especially when combined with high unemployment rates and related poverty among a sizable portion of the population (Wiesel et al., 2020). Renters are more likely to experience housing stress since they frequently spend 60% or more of their whole income on housing (Anglicare, 2019), and the COVID pandemic's rise in home prices and decline in rental availability has made the issue worse (Pawson et al., 2021). Long leases are uncommon in Australia's rental market, which is also marked by instability and numerous usage restrictions.

Barriers to Micro Housing

Some people who consider themselves to be a part of a countercultural movement purposely campaign for THOW to be categorized as caravans and not as permanent houses in reaction to the limitations imposed by the majority of Australian local governments. For instance, following a court challenge, Brisbane City Council determined that a young couple's THOW was a road-registered mobile residence rather than a building or structure (BDDRC, 2016, p. 2). This is probably a Pyrrhic victory because there are now restrictions on how long they may stay in one place, and by avoiding compliance with basic building requirements, they risk having structures that are improperly built or even dangerous.

Urban planners and tiny home builders are the majority of those in the tiny house movement who have proposed ways that THOW can circumvent the restrictions on the length of time they are allowed to live there and stay for longer durations. The construction of tiny home communities, the use of small lots for dwelling, and THOW in backyards are only a few of the prospective Australian possibilities mentioned in The Tiny House Resource Guide (Bares et al., 2017). The majority already exist, for instance as RV parks or zones with a medium amount of housing. The issue is that most caravans, including THOW, do not meet the requirements to be accepted as permanent residences. According to anecdotal evidence, a sizable portion of the tiny home movement is very opposed to this method of THOW legalisation

Limitation

The first drawback of this research is that it only looked at a residential area that was using the concept of compact houses between 2022 and 2029. Instead, then discussing aesthetics, this topic will address private and public zoning (Chairul Nayla and Purisari, 2019, Siahaan, 2017, Putri and Prianto, 2016, Apriyanti, 2017, Lutz et al., 2018). The drawbacks of a compact house include the absence of precise functioning drawings in certain instances presented or cited in the literature, such as the location of light sources. The only technological advancement in IoT is the UI/UX concept, which will be applied if the IoT plan is implemented. The IoT revealed results from talks among numerous respondents, which led to respondents' demand for applications' aesthetic and UI/UX to be simple to access (Rachman, 2017, Siswipraptini et al., 2021, Obaid, 2021, Singla and Sharma, 2022, Embitel,). You can collaborate on research with a technological team that specialises in IoT if you want more information to go deeper into IoT. The scope of this study's lighting is limited by the fact that similar literature that calls for elevated levels of lighting (Cafuta, 2010, Jamala, 2017, Zakaria and Bahauddin, 2015, Bullough and Bullough, 2013, Anter, 2022, Wu et al., 2022, Richman, 2009, Górczewska, 2011) does not go into detail about the advantages of artificial lighting.

Implication

The results of this research have implications for the main use of IoT in small homes. The compact house idea is a contemporary home design that reduces room restrictions by offering a creative use of space. (Chairul Nayla and Purisari, 2019, Rahayu, 2015, Sriti Mayang, 2005). Many homes still do not use IoT or other forms of technology in this way. The only things that matter in a small home are how it looks and how it works. IoT is required to make human activity more convenient. Another discovery is that it helps prevent unwelcome crime that happens as a result of inadequate illumination. (Rankel, 2014, Nia et al., 2016).

For a designer, the first stage is to consider an IoT idea, particularly the illumination issue. It may include illumination that can be controlled by IoT for protection. The neighbourhood is anticipated to adhere to the new housing standard, particularly for the simplicity of pairing homes constructed using the compact house idea and IoT technology.

Lack of Awareness

Lack of knowledge and comprehension of the idea is one of the major obstacles to the broad adoption of micro dwellings in India. While micro housing has become more common in other nations like the United States and Japan, it is still mostly unheard of in India. Because of this, many people and communities might not be aware of the potential advantages of micro housing and would be dubious about its viability as a remedy for the affordable housing issue.

There are a number of reasons why micro housing is not more well known in India. First of all, India's historical emphasis on larger-scale housing expansions has obscured the potential advantages of more compact and smaller dwelling alternatives. In addition, there is a deficit lack of awareness and comprehension of the advantages and difficulties of micro housing among politicians and urban planners, which may lead to a lack of support and funding for micro housing efforts.

Additionally, the general population is not informed about the possible advantages of micro dwellings. Many individuals would consider micro dwelling to be a less desirable alternative to larger and roomier living alternatives. Micro housing's security and safety may also be a problem, particularly in heavily crowded metropolitan areas.

More public education and awareness activities are required to overcome the underrepresentation of micro dwellings in India. Urban planners, policymakers, and developers must collaborate to spread understanding of the advantages of micro dwellings and its potential to be an effective remedy for the shortage of affordable housing. The achievement of this can be made possible via community participation, public forums, and focused outreach activities.

In the Indian setting, there is also a need for further study and information on micro dwellings. Policymakers and urban planners may make better choices and take action to encourage the adoption of micro housing as a workable and sustainable solution to the affordable housing issue in India by doing more evidence-based study on the advantages and difficulties of this type of dwelling.

High Land Value and Construction Cost

The high cost of land and construction is a key impediment to the development of micro dwellings. Land costs have increased in many metropolitan locations, making it challenging to provide cheap housing choices, including micro dwellings. Creating affordable micro housing units that are safe and sustainable can also be challenging due to the high cost of building.

Several factors contribute to the high price of land. First, there is a strong demand for land due to the quick urbanisation of many Indian towns, which has increased the cost of land. The cost of land is also increased by the time and complexity required for land acquisition and development. On the other side, the high cost of construction might be linked to the cost of building materials.

Innovative funding methods and incentives for developers and builders are required to get beyond the barrier of expensive land and building prices. For instance, local governments may offer tax incentives, grants, and subsidies to developers that concentrate on producing cheap and environmentally friendly micro housing units. Furthermore, public-private partnerships may be developed to aid in lowering the cost of land acquisition and construction, making the creation of micro housing units simpler and more efficient.

Additionally, cutting-edge building methods and supplies can aid in lowering construction costs. For instance, the use of prefabricated and modular building techniques can contribute to a reduction in labour costs and construction time, making the creation of micro dwelling units simpler and more efficient. The utilisation of sustainable and the long-term expense of operating and maintaining micro dwelling units can be decreased with the use of environmentally friendly building materials.

In general, lowering the high cost of land and building is essential to ensuring that micro housing is widely used in India. Local governments and developers can contribute to the creation of affordable and sustainable

micro housing units that are accessible to everyone, even in the face of rising land and construction costs, by implementing innovative financing mechanisms, developer incentives, and sustainable building practises.

Lack of Community Support

Another key obstacle to the implementation of micro dwellings in India is a lack of community support. Due to concerns that the construction of micro dwelling units in their region may detract from the neighbourhood's aesthetics or property values, many communities may be opposed to the notion. This may result in opposition from the local government, which would delay or stop the construction of micro dwelling units.

Additionally, the stigma associated with residing in compact, small areas may make community members unwilling to support the notion of micro dwelling. Due of this stigma, it may be challenging to draw in new residents or foster a feeling of belonging among micro housing inhabitants.

There is a need to find a way around this obstacle for educating the public about the advantages of micro dwelling and engaging the community. Developers and local authorities should collaborate to include residents in the development process and give them the chance to express their concerns and offer suggestions. Campaigns for education and awareness can also be launched to inform locals of the advantages of micro dwelling, including its sustainability and cost.

Developers can also attempt to construct tiny housing units that blend in with the style and architecture of the neighbourhood. For instance, they may employ components and design strategies consistent with regional building practises to make the micro housing units mix in with the neighbourhood. Additionally, builders can endeavour to create micro-apartments that are visually beautiful and have public areas that are well-planned and kept up to foster a feeling of community.

In general, overcoming the absence of community support is essential for India's effective adoption of micro dwellings. Developers and local authorities may aid in removing this key obstacle to the broad acceptance of micro housing by incorporating community members in the construction process, promoting education and awareness, and building micro housing units that blend in with the neighbourhood.

Solutions To Barriers

1. Education and Awareness

To overcome the obstacles to micro house acceptance in India, education and awareness are essential. In India, micro housing is still a new idea, and because many people are unaware of its advantages, they may be reluctant to accept it.

It is possible to launch campaigns to inform the community, decision-makers, and developers about the benefits of micro dwellings. These advertising, for instance, might emphasise the micro housing units' accessibility, sustainability, and adaptability. The potential to lessen homelessness, enhance living circumstances for low-income families, and alleviate the housing crisis in metropolitan areas should also be emphasised.

These campaigns may be distributed via a number of platforms, including social media, seminars, and neighbourhood activities. For instance, local government officials and developers' events in the community where anyone may tour model homes and get an idea of what micro housing units are like and how they can fulfil their requirements. Workshops can also be held to disseminate knowledge about the design, building, and upkeep of micro housing units.

Additionally, these campaigns may be created to specifically target groups like legislators and investors in order to raise their interest in and knowledge of supporting the construction of micro housing projects. This may result in more financing and support for these initiatives, which would make it simpler to get through the remaining adoption obstacles.

In conclusion, programmes to raise awareness and knowledge of micro dwellings can be effective in India. By educating people about the advantages of micro dwelling and interacting with These efforts can assist in overcoming opposition to micro home adoption and prepare the road for its widespread adoption by the community, legislators, and investors.

2. Alternative Financing Options

In order to remove the obstacles preventing India from adopting micro dwellings, alternative finance choices are a crucial component. The widespread use of micro housing in India is hindered by the high cost of building and the lack of accessible financing alternatives. The following alternative financial solutions can aid in overcoming these difficulties:

Microfinance: Microfinance can give modest loans to people or organisations so they can build tiny homes. Even to people who might not have access to conventional banking services, microfinance firms can offer reasonable loans.

Public-private partnerships (PPPs) can be developed to finance and advance micro housing initiatives. In order to provide affordable housing, these partnerships entail cooperation between the government, private investors, and developers. The authorities can offer land at a discount, and private investors and developers can contribute money and knowledge.

Crowdfunding: This alternative fundraising method entails collecting modest sums of money from a large number of people via internet platforms. Crowdfunding may be a great approach to collect money for micro housing projects since it enables investors to combine their tiny sums of money.

Impact investing is a type of investment strategy that aims to produce social or environmental benefits in addition to monetary gains. Micro housing projects provide impact investors a way to make a financial investment that will also have a positive social impact.

Grants and subsidies: To finance the development of micro dwelling units, the government or non-profit organisations may offer grants and subsidies. By lowering the cost of construction, these grants and subsidies can enable low-income people afford micro homes.

In conclusion, finding alternate forms of finance may be essential to removing obstacles to India's acceptance of micro dwellings. These funding methods can make micro homes more affordable for low-income households and assist to alleviate the housing crisis in metropolitan areas by lowering the cost of development.

3. Economic Factors

The most frequently cited financial factors for choosing tiny house living included the high cost of purchasing or renting conventional housing, the preference for detached homes, debt freedom, the ability to leave or retire from work, moving out of the parental home or sharing houses, and avoiding homelessness. Numerous people claimed that it was virtually difficult to obtain bank financing for a tiny house, even one that was built on foundations, and that they instead built their tiny homes with their own money or income from their jobs. According to a survey member, banks in Australia frequently refuse to finance on structures that are less than 50 sq m in size. (Male, 50s).

Affordability encompassed more than just being unable to make home payments. Several individuals, particularly however, preferred separate houses to flats and preferred to purchase rather than rent, despite the fact that the aged and frail faced genuine housing difficulties.

4. Providing Incentives to Developers

The provision of work opportunities and training Bringing job possibilities to the neighbourhood can aid in boosting local capability and fostering a feeling of pride and investment in the initiative. This can be done by hiring local workers to build the micro housing units, delivering training programmes to locals, or creating job opportunities associated with the project.

Encourage social contact and community formation by designing micro dwelling units with these goals in mind. Common areas and facilities, such community gardens, playgrounds, or public kitchens, can help with this. These areas may contribute to a feeling of belonging and community among locals.

Establish ties with the local government: Establishing partnerships with the local government can aid in fostering the growth of micro dwellings. This could entail negotiating legal systems, securing permissions and clearances, and working with local authorities to get land.

Current Situation

Housing in Indonesia: current status and challenges

A nation made up of several large islands, Indonesia is an archipelago. Java Island stands out among them as Indonesia's most populous island, defining itself as the country's economic hub and where the majority of its citizens reside. In the last few years, the population of Java's five provinces—East Java, West Java, Yogyakarta Special Region, Central Java, and the Special Capital Area of Jakarta—has expanded somewhat. The provincial capital city in each of these five provinces—Jakarta, Bandung, Semarang, Yogyakarta, and Surabaya—is thought to be the best place to characterise the city in that province. Moreover, Jakarta's Special Capital Area is classified as a big city with a population of more than one million people (Monkkonen, Citation2013). Many factors such as population density, family size, dependence ratio, housing status, and sustainable development goals in housing projection are taken into account while describing each city, especially in light of the housing scarcity. The National Indonesian Socioeconomic Survey (SUSENAS) provided data spanning a number of time periods and modules (Statistics Indonesia, Citation2013b). The Special Capital Area of Jakarta, which serves as Indonesia's capital, has the greatest population density at 15,978 persons per square kilometre (km²). The Special Capital Area of Jakarta has the second-smallest area, at 664.01 km², behind Yogyakarta, which has the smallest area, measuring 32.5 km square. It's interesting to note that Yogyakarta's Special Area has a

population density of 1185 people per km², which is nearly the same as the rest of the city but over a larger area. Central Java, for instance, has a population density of 1120 people per km square. All provinces have seen a small increase in population density between 2013 and 2021. According to calculations made using the population density in 2021 and the area's average population density, Central Java has experienced the most growth over the past seven years, increasing by 5.70%. The Special Area of Yogyakarta has the lowest rise, at 0.5%.

Conclusion

In conclusion, micro housing has the potential to offer low-income people in India an inexpensive housing option. To become a practical choice, micro housing must first overcome a number of obstacles. High land and building costs, a lack of knowledge, a lack of community support, and constrained funding alternatives are some of these obstacles.

There are numerous strategies that may be used to overcome these obstacles. These include increasing community engagement and cooperation and educating the general public and legislators about the advantages of micro dwellings.

By putting these suggestions into practise, it would be feasible to foster the growth of micro dwellings in India. As a result, low-income families may have access to more inexpensive housing alternatives, which would benefit society as a whole the country's poverty and inequality must be reduced.

Micro housing may also help society as a whole by lowering homelessness, encouraging sustainability, and boosting the economy. To remove the obstacles to micro housing and build a more inclusive and fair society for everyone, it is crucial for legislators, developers, and community members to collaborate.

Reducing homelessness: For people and families who are currently homeless, micro housing can offer an inexpensive housing choice. Micro housing can assist in lowering the number of individuals living on the streets or in subpar housing by providing a safe and secure place to live.

Promoting sustainability: Energy efficiency and the use of sustainable materials are frequently used in the design of micro dwellings. This might lessen the building's carbon impact and promote a more sustainable future.

Micro housing can provide new jobs in the building, design, and maintenance industries, therefore promoting economic growth. Additionally, it can aid in reviving underutilised or deserted urban areas, fostering economic development fostering a feeling of community via the architecture of micro housing projects to incorporate shared facilities, including kitchens or living rooms. As a result, inhabitants may feel more connected to one another and part of the community.

Promoting innovation: Innovative thinking and creative problem-solving are essential to the design and construction of tiny dwellings. New concepts and methods for house design and construction can be supported by fostering the growth of micro dwellings.

Micro housing has the potential to help India overcome a number of social, economic, and environmental issues. Micro housing may contribute to the creation of a more equal and inclusive society for all by offering an inexpensive housing alternative, fostering sustainability, boosting economic growth, fostering a feeling of community, and inspiring innovation.

References

- Cattermole, S. (2007). Barriers to domestic micro-generation. University of London, University College London (United Kingdom).
<https://www.proquest.com/openview/f7b9cbd806e9d282fbc8cf0817af61b1/1?pq-origsite=gscholar&cbl=2026366>
- Junior, J. A. G., Souza, M. G. Z. N. D., & Gobbo, S. C. D. O. (2017). Barriers and challenges to smart buildings' concepts and technologies in Brazilian social housing projects. *International Journal of Sustainable Real Estate and Construction Economics*, 1(1), 31-50.
<https://www.inderscienceonline.com/doi/abs/10.1504/IJSRECE.2017.084362>
- Ford, J., & Gomez-Lanier, L. (2017). Are tiny homes here to stay? A review of literature on the tiny house movement. *Family and Consumer Sciences Research Journal*, 45(4), 394-405.
<https://onlinelibrary.wiley.com/doi/abs/10.1111/fcsr.12205>
- Evans, K. (2018). Integrating tiny and small homes into the urban landscape: History, land use barriers and potential solutions. *Journal of Geography and Regional Planning*, 11(3), 34-45.
<https://academicjournals.org/journal/JGRP/article-full-text/6A8F7C156380>
- Brown, E. (2016). Overcoming the barriers to micro-housing: Tiny houses, big potential. Heather Shearer, (2019), PERTH ,AUSTARLIA Tiny houses: love, live or leave? What factors influence the decision?
<https://apo.org.au/node/306846>
- Calhoun, K. H., Wilson, J. H., Chassman, S., & Sasser, G. (2022). Promoting safety and connection during COVID-19: Tiny homes as an innovative response to homelessness in the USA. *Journal of Human Rights and Social Work*, 7(3), 236-245.
<https://link.springer.com/article/10.1007/s41134-022-00217-0>
- Analisa, F. C. K., & Okada, S. (2023). Tiny house characteristics in Indonesia based on millennial's user preference. *Urban, Planning and Transport Research*, 11(1), 2166095.
<https://www.tandfonline.com/doi/full/10.1080/21650020.2023.2166095>
- Félix, M. J., Santos, G., Sá, J. C., Dias, S., & Saraiva, M. (2023). Multifunctional Furniture for Tiny Houses– Design, Quality, Innovation and Sustainability in Advanced Materials. In *Quality Innovation and Sustainability: 3rd ICQIS*, Aveiro University, Portugal, May 3-4, 2022 (pp. 309-321). Cham:SpringerInternationalPublishing.
https://link.springer.com/chapter/10.1007/978-3-031-12914-8_24