

# Locality of Building Orientation in Traditional Indonesian Architecture: A Systematic Literature Review

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This study elucidates values that determine traditional Indonesian housing orientations. The diversity of cultures in Indonesia generates a firm rule in housing design and affects some elements, encompass housing orientation. Recent research on the orientation of locality-based buildings has not been much explained holistically, so this can be a potential for further discussion. In order to produce a synthesis of the orientation values, this research employs a systematic literature review from scientific papers on Scopus with certain screening processes. In brief, the results show nature, main access, and beliefs that determine the orientation of traditional Indonesian housings. Nature's role determines the orientation where dwellers respect nature, cultivate and prevent the wind. Main access also simply determines the housing orientation where transportation access is located. Furthermore, ancestors' beliefs, sacred space, and Qiblah also establish the housing orientation of traditional Indonesian housings. These results provide important insights into the development of traditional Indonesian housing knowledge that considers local culture, sustainable issues, and Islamic values

*Keywords: traditional, house, orientation, locality, Islamic architecture*

## 1. INTRODUCTION

The housing discourse is inseparable from dwellers' respective cultures, beliefs, habits, and geographic areas. Traditional housing contains those elements and respects the environment without ignoring dwellers' needs, *genius loci*. The value of *genius loci* is becoming lessened due to the modern movement's misunderstanding of pursuing the style and disregarding local wisdom (Trisno et al., 2020). Process in design involving locality from climate, culture, and even recent local issues will lead the design to the spirit of the place (Salura et al., 2020). In contrast, the ancestors had through years and beyond experience to create a building suitable to local conditions geographically and culturally. Dialogue of green building emphasises thermal comfort, frequently scapegoating orientation and simply shifting the building orientation avoiding solar direction. Hence, the study about a locality in traditional housing is required to establish a proper framework of housing and support sustainability issues. Even though contain housing locality is almost certain to improve the life quality of dwellers and the environment.

The paper provides the diversity values of orientation from several places of Indonesia, which contain *genius loci* in the current situation of architecture lexicon. The multiculturalism of Indonesia as an archipelago country generates a plenteous rule when it comes to housing. In the realm of architecture, this multiculturalism enriches the style, material, and philosophy of the current context of traditional housing. The ancestors affix the philosophy as orthodox rules to be obeyed for the dwellers. Thus, as time goes by, the orthodox housing rules remain faded and almost abandoned by the current dwellers as modernism penetrates the lexicon of architecture nowadays. Hence, the traditional housing values are immensely required to study past lifestyle evidence (İpekoğlu, 2006). A holistic study is required to prevent the chaotic understanding of the housing orientation of traditional Indonesian housings. Therefore, this study aims to explore kinds of literature regarding housing orientation in whole provinces of Indonesia to elucidate the

orientation values of each traditional Indonesian house.

Difference culture, beliefs, and geography of Indonesia will emerge divergence understanding of housing orientation additionally. Research notices that culture is an identity of a society and is inseparable from their tradition (Ratunar Rahmatulloh et al., 2020). Attention to regionality value is an effort to preserve the local architecture and adaptable to the users through a strategic design approach (Purbadi et al., 2020). This study fills the gap in research about various housing orientations in traditional Indonesian housings. Moreover, this study is fruitful for academicians and practitioners in designing a house with orientation consideration; as stated, actors' everyday practices are inseparable from their culture, activities, and spatial arrangement (Atmodiwirjo & Yatmo, 2021). Locality establishes an understanding of local values both physically and from a cultural everyday activity perspective that emerges spatial characteristic (Yatmo & Atmodiwirjo, 2013).

## 2. METHODS

A systematic literature review acquires to identify the previous studies about certain variables and specific periods or year published (Shamsul Harumain et al., 2021). This method requires identification of certain study variable, screening from selected material of a database, and eligibility of the material (Saleh et al., 2021).

### 2.1 Identification

There are several identifications in this systematic review study; identifying the research question and relevant studies (Arksey & O'Malley, 2005). Identifying the research question is a practical way to determine the guide to how search strategies are established. This study aims to reveal the orientation values from traditional houses of Indonesia. Analyse scientific papers as the study material will generate an understanding of traditional housing orientation in Indonesia and create a framework of Islamic architecture in housing orientation with locality value outright. Subsequently, another identification is relevant studies that employ electronic databases from

Scopus. The search engine database of Scopus was selected due to the reliability, quality and a large amount of published scientific papers. Thus, to reach the maximum number of published scientific papers on Scopus, this study uses these main keywords: Indonesia, traditional, and house.

## 2.2 Screening and Eligibility

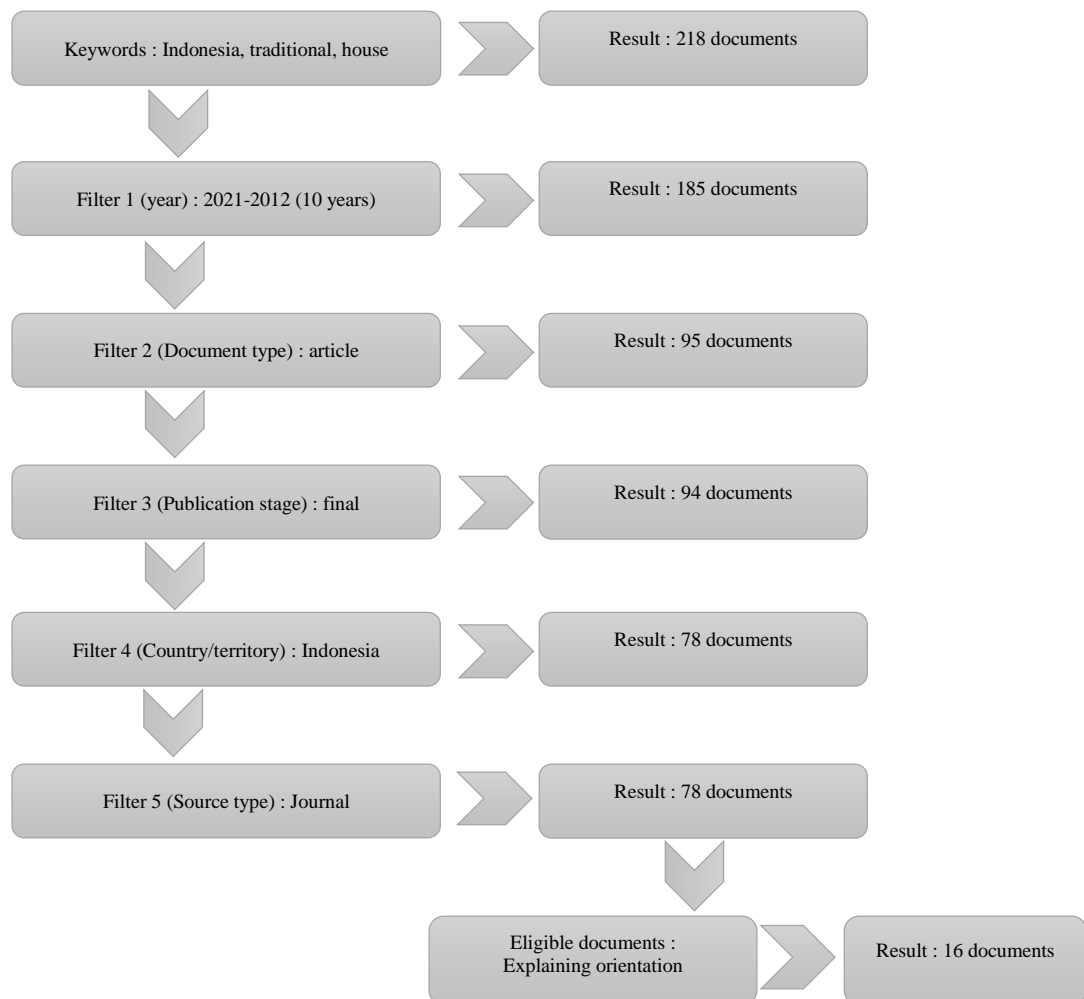
Scopus search engine emerged 218 documents with those certain keywords above, and then this study screened to find the relevant scientific papers with several filters:

- Year : 2021 – 2012 (10 years), to reach the newness of scientific papers and to support this study to emerge the novelty in findings;
- Document type : article, scientific papers about a comprehensive author(s)' study that published in article journals;

- Publication stage : final, only published journal;
- Country/ territory : Indonesia, to constrict the journals' study only in Indonesia where this study discussed;
- Source type : journal, expectedly to provide passed review journal article only;

Researchers' verification is required as a mechanism to eliminate the irrelevant documents from Scopus. This phase was undertaken by reading the documents' data: title, abstract, and journal's name. Another information found might be needed by reading the whole content of the documents if the information is unclear. The process of screening and eligibility can be seen in **Figure 1**.

The scientific papers are collected from Scopus with specific identification, screening, and eligibility process aimed to scrutinise the



**Figure 1.** Screening and eligibility process

findings. Hence, this study took several research steps:

Step 1 : The scientific papers are presented in a table with classifications comprises authors, title, explanation in housing orientation, findings, and keywords;

Step 2 : To underpin the understanding of orientation in locality context, classification and analysis are required to group the similarity of housing orientation values;

Step 3 : Analysis of the above scientific papers generate factors determining the orientation in traditional Indonesian houses, then housing orientation in Islamic architecture is presented to enhance the analysis in Islamic view;

Step 4 : The outline of housing orientation with locality values in Islamic architecture

contributes to future research and development with locality concepts in Indonesia.

Of the 78 documents that result from the filters applied screening process, only 16 documents explicitly explain housing orientation and their meaning—those 16 documents were employed in a qualitative literature review afterwards. The qualitative literature review method is believed to generate a holistic framework of a variable (van Ellen et al., 2021). This method is also believed to review the shreds of evidence to answer the question and produce a conceptual tension grounded in the literature (Petticrew & Roberts, 2006)(Meerow et al., 2016). After the identification and screening process, finally, this study employs sixteen published scientific papers with the document type is Scopus indexed journal. The outline of scientific papers is shown in table below.

**Table 1.** Outline of Scientific Documents

<b>Findings</b>	<b>Keyword</b>
<i>Rumah Lanting</i> the traditional house on Melawi River has the orientation towards land and river (Putro & Zain, 2021)	Natural resources
Entire house should facing <i>kidul</i> (south) where <i>Lalayang Sasaka Domas</i> (sacred space of baduy) is located (Nuryanto et al., 2021)	Sacred space
Housing orientation towards mountain/ highland which considered as sacred (Putra et al., 2021)	Natural resources
The kampongs were oriented to the river (Rukayah et al., 2021)	Main access
Houses orientation toward the sun symbolise the sun as resources (Faisal & Wihardyanto, 2020)	Natural resources
Korowai traditional houses used to be oriented to the sun and river (Kurniawan et al., 2020)	Natural resources
Various orientations: East refers to fertility, south direction considered good, west for Qiblah. (Naing & Hadi, 2020)	Beliefs, Qiblah
Housing orientation following axis north (mountain) and south (sea) (Nurjani, 2020)	Natural resources
Houses orientation should face east where the sun rises (Gunawan et al., 2019)	Natural resources
Housing orientation towards mountain/ highland which considered as sacred (Agung Diasana Putra et al., 2019)	Natural resources
Various housing orientations in Central Java and Yogyakarta which direction to sea and street. (Idham, 2018)	Beliefs, thermal comfort, and main access
Old Bugis traditional houses' orientation are facing west-east following the wind direction to avoid damage from strong wind (Madeali et al., 2018)	Disaster prevention
North-South axes applied to Javanese traditional houses (Ju et al., 2018)	Beliefs
Tongkonan houses were built with consideration of wind direction (Manurung, 2017)	Beliefs
Houses orientation are facing the street (Susilo & Nalaralagi, 2015)	Main access
Housing orientation towards mountain/ highland which considered as sacred (Subroto & Malangyudo, 2014)	Natural resources

### 3. RESULT AND DISCUSSION

Closer inspection of the table shows that researchers stated that natural resources, sacred space and beliefs, main access, Qiblah, thermal comfort, and disaster prevention influence Indonesian traditional housing orientation. One exciting finding is that natural resources underlie the housing orientations and spread to a variety of places. In addition, the archipelago culture engenders various ancestor civilisations and practices. Keywords of housing orientations elucidate broadly in the following next sub-chapters

#### 3.1 Natural Resources

Of the literature expanded above, eight pieces of evidence on traditional Indonesian houses made the natural resources the orientation where their houses are. The floating house of Lanting house in Melawi River, Kalimantan, built the houses simply facing land and river (Putro & Zain, 2021). The sun as a natural resource is also addressed as orientation on housing in Eastern and Western Sumatra. Talang Mamak tribe of Eastern Sumatra and Minangkabau house of Western Sumatra consider sunrise as the orientation they believe as the source of goodness (Faisal & Wihardyanto, 2020)(Gunawan et al., 2019). Other evidence in natural resources as housing oriented found in Korowai traditional settlement which it used to follow the sun as the orientation but then current Korowai house's orientation follows the river path (Kurniawan et al., 2020). Meanwhile, Balinese consider orienting their house following axis to the mountain and sea as the embodiment of respect to natural resources (Putra et al., 2021)(Nurjani, 2020)(Agung Diasana Putra et al., 2019)(Subroto & Malangyudo, 2014).

#### 3.2 Sacred Space and Beliefs

Historically, research investigating the factors associated with sacred space has been found in Baduy traditional houses. The entire house should be facing *kidul* (south), where *Lalayang Sasaka Domas* (sacred space of baduy) is located (Nuryanto et al., 2021). Research by Naing and Hadi (2019) stated that Buginese in Tulengen Village avoided north as their house direction because they consider that north

direction means less good. East and south are the dedicated wind direction for Bugis houses, which east symbolises fertility and enthusiasm of life, while house facing to south direction brings comfortable experience (Naing & Hadi, 2020). While traditional Javanese houses also emphasise north-south axes as their house orientation; however, not all Java regions employ this cosmological axis. Two classified Javanese society: *Abangan*, and *Santri*, emerge as distinctions in housing rules (Ju et al., 2018). *Abangan* means "red", Javanese Muslim with syncretic beliefs, relate to animistic and rural aspects; while *Santri* is orthodox Muslim with Islamic purity practices, relate to Islamic life and market (Idham, 2018) (Ju et al., 2018). Inland Javanese *Abangan* tends to build their houses following the rule of the sacred south-north axis to respect the South Ocean Queen (Santosa, 2019). The South axis also considers the royal palace a symbol of a ruler or leader in the microcosm realm (Suprpti, 2014). Lastly, the literature review found that particular wind direction as housing orientation differs considerably from belief in Tongkonan houses, Toraja (Manurung, 2017).

#### 3.3 Main Access

Previous research has established that Kampong (traditional urban settlement) in Semarang is considered the river for the orientation, where the river used to be an essential transportation route in Semarang (Rukayah et al., 2021). Traditional houses in South Sumatra and Lampung contribute to main road access as orientation among other Sumatra regions (Susilo & Nalaralagi, 2015). Research conducted by Idham (2018) also reveals that the diversity of Javanese housing brings variety in layout, façade, and orientation. Several northern coastal areas of Central Java tend to build housing without special meaning of orientation but main access. The primary orientation is simply facing the street as dwellers' main access (Idham, 2018). Several studies published on proceedings reveal that the façade towards the street, likewise the orientation of traditional houses in several regions of Sumatra, also happened in the Greater Jakarta region and Central Sulawesi where Betawi, Kaili, and Bugis-Makassar houses have an orientation to the road (Rahmadina & Lukito, 2020)(Suharto

et al., 2018). Slightly different in the West Kalimantan region, traditional houses were oriented to the river as their transportation access; for the local Malay race, the houses are close to the river even though not strictly facing the river (Zain & Andi, 2020).

### 3.4 Qiblah

Before Islam came to Indonesia, Hindu, Buddhist, and animism grew around the archipelago; hence, the ancestors' house orientations symbolised the beliefs and myths as the appreciation of their ancestral culture. As the Islamic culture came and received, ancestors adjusted their housing elements, including orientations. Buginese is intended to build their house toward Qiblah, considering the sacred orientation for Muslims (Naing & Hadi, 2020). Additionally, some kept their house facing the western to symbolise Qiblah (Izziah et al., 2021).

### 3.5 Thermal Comfort & Disaster Prevention

Javanese houses in several areas tend to orient their house to the southern due to the wind breeze from the coastal, instead of mythical beliefs as *Abangan* houses believed (Idham,

2018). Apart from the natural cooling system, consideration of wind direction is noticed in Old Bugis traditional houses. Buginese designed their house orientation facing west-east following the wind direction to avoid damage from strong wind (Madeali et al., 2018). Another example, *Amu Hawu*, a traditional house in East Nusa Tenggara, which has an orientation to north or south, avoiding Thypoon hazard east to west (Fanggidae et al., 2019). Prevention from wind is also why traditional Aceh houses are oriented to the east or west to protect their roof from strong wind (Asriningpuri, 2020).

### 3.6 The Aspects of Housing Orientation

The findings in this study elaborate on traditional Indonesian housing orientations considering these aspects: natural resources, sacred space and beliefs, main access, Qiblah, thermal comfort, and disaster prevention. This study needs a scrutinise of the findings to simplify the research outcome and be understandable. Hence those findings can be unified in these three aspects that determine the orientations, nature, main access, and beliefs—the elaboration of these three aspects as seen on **Table 2** below.

**Table 2.** Elaboration of three aspects

Findings	Discussion	Description
Natural Resources	Nature	Orientation toward natural resources, wind direction for the breeze, and avoiding the wind to mitigate the disaster is the consideration of nature in housing orientation.
Thermal Comfort & Disaster Prevention		
Main Access	Main Access	The most straightforward act of determining the orientation is towards the main road/ transportation access.
Sacred Space and Beliefs	Beliefs	The innumerable cultures in Indonesia generate divergent beliefs. Ancient animism, ancestors beliefs, and the Islamic culture create a colourful meaning of housing orientation.
Qiblah		

## 4. CONCLUSION

This study has argued that the various orientations aspects in traditional Indonesian houses encompass nature, main access, and beliefs. Nature plays a role in respecting natural resources, utilising wind for thermal comfort, and preventing strong wind. The ancient Indonesians used to be farmers and fishermen;

thus, the utilisation of natural resources immensely affected their lives. The natural understanding was also one of their capability, which they understood how to conquer nature to prevent damage. Then, the main access determines the housing orientation as common housings nowadays, which simply oriented the house façade towards the transportation access.

The current dwellers apply this concept to orient their houses towards the road for the practically in design. Beliefs, as last findings, encompass the location of sacred spaces, ancestor beliefs, and the influence of Islam in Qiblah orientation. The animism and ancestor beliefs turn to a traditional Indonesian housing culture and apply in current housing design. The growth of Islam in Indonesia established the role of housing orientation towards Qiblah. The scope of this study was unlimited in terms of orientations in traditional Indonesian houses. Notwithstanding the limitation, the study suggests that orientation values must be considered in the current architecture lexicon. The findings will be of interest to academicians and practitioners in architecture to expand their knowledge of traditional architecture values, particularly housing orientation. Considering the rich values of traditional Indonesian housings need to be explored more to enhance the knowledge of traditional architecture.

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