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Rethinking Green Building Through Traditional Wisdom: A Comparative Study of Greenship Certification and Indonesian Vernacular Architecture

Hanifah Hestyas Khumaira[1]
[1]Department of Architecture, Bursa Uludağ Üniversitesi, Bursa, Turkiye

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***Corresponding Author:**
hanifahkhumaira@gmail.com [1]

Abstract
In responding to big contributions of construction sector to global emission, Indonesia has developed Greenship as green building rating systems tools to promote sustainable construction. In the other hand, Indonesia also has a long tradition of vernacular architecture which embody sustainability through cultural, ecological, and spiritual values. This study adapts comparative case study approach in examined the alignment and divergence between Greenship criteria and the sustainability practices embedded in the vernacular house cases. The findings reveals that site development, user comfort and material consideration in vernacular practices was resonance towards Greenship. However, the mismatches in context-responsive design especially in structural durability and passive design strategy embedded in vernacular architecture have not been fully explored in modern context. By juxtaposing modern certification standards with traditional practices, this research suggests for an elaboration between green certification and vernacular architecture value to promotes better sustainability practice.

1. Introduction

Global warming and climate change is a serious problem that currently become the core attention of any development in almost all sectors. Construction sector has become one of the biggest negative-impact contributors to it, as it approximately contributes to 40% of global CO_2 emission. In the United Nations Environment Programme (UNEP) report on the global status of building and construction 2024/25, the construction sector has a big goal in achieving the 2030–2050 decarbonization goals. However, progress in reducing carbon production through less energy use continues to fall behind the annual target [1]. This urges the construction sector to move towards sustainable development.

Responding the issue, construction sector began to took a responsibility by moving towards sustainable-based development. Green building certification becomes increasingly important to promote and educate about sustainability in the construction sector. With the vast development of technology and science, the rating system keeps being updated to produce deeper analysis and consideration in producing responsible design environmentally, economically, and socially. Starting from BREEAM (Building Research Establishment Environmental Assessment Method) and LEED (Leadership in Energy and Environmental Design) as the earliest green building rating system that accepted as international rating system, to other country-based rating systems such as Green Mark (Singapore), Green Star (Australia), Greenship (Indonesia), etc. Although both use a scoring system, each certification system has different assessment criteria influenced by the background of the country where it was developed [2]. However, environmental concerns are the main focus of most certifications, with the common categories being Indoor Environment Quality, Energy, and Materials [3].

However, something seems to be neglected in the development of sustainable architecture. Although many proofs that shows the carbon, water, and energy savings as well as occupants health and comfort of the certified green buildings [4][5][6], many other studies show the inadequacies of green building

rating system as a tool to promote sustainability. Studies analyzing post-occupancy evaluations show that green-certified buildings do not guarantee user comfort despite passing the certification assessment [7]. In addition, obtaining a certificate does not guarantee that the system will remain effective as the building operates [8][9]. Existing evidence also indicates that occupants of green-certified buildings dissatisfied, suggesting that certification frameworks may not adequately consider local contexts such as climate, culture and historical knowledge. This issue highlights the need for a broader discussion on green building, emphasizing that it should not only focus on the environmental side, but also consider the social aspect [10]. Therefore, questions arise about the effectivity of green building certification system, given that it is more effectively used as a marketing tool to attract investors and users rather than as a genuine action for sustainability [11].

In the other side of sustainable architecture scope, others believe that vernacular architecture is the best practice of sustainable architecture [12]. Vernacular architecture defines an indigenous architecture that is shaped by responding to the local geography, climate and cultural traditions. It mostly built by the community according to passed down knowledge instead of expert's guidance. The term 'vernacular' to represent 'anonymous' in the context of architecture was popularized by Rudolfsky in his exhibition entitled 'Architecture without Architects'. Therefore, vernacular architecture has many other names such as non-pedigreed, indigenous, rural, spontaneous, or anonymous architecture [13]. With its sensitive and responsive nature to its context, recent studies on vernacular architecture show its good performance in terms of sustainability and adaptability to climate change [14], [15], [16], [17]. However, this potential is not recognized. Current studies on climate-resilient architecture mostly focus on technological improvements to meet climate-resilient architectural needs with little regard for vernacular or local contexts [18]. If this continues, there is a risk that these values will gradually disappear as time goes by. Whereas, this is also not in line with the concept of social sustainability.

As green building rating systems are considered to be one of the most applicable solutions in sustainable construction practices, reflecting their principles in vernacular architecture could help to fill the gap between the two. Indonesia was chosen as the context because it has developed a nationwide green building certification system called Greenship and has a variety of distinct vernacular architectural styles across the archipelago. The purpose of this comparison is not to determine which is preferable. Rather, the aim is to bring traditional practices to the fore by aligning them with Greenship certification. The focus is on identifying similarities and differences that had previously been overlooked, which could enrich the further development of Greenship in promoting sustainability. A comparative case study analysis was performed using data obtained from literature studies related to Greenship certification and sustainable practices in the vernacular architecture of Joglo and Tongkonan houses.

2. Research Methodology

2.1. Methodology

This research adopts a comparative case study approach to explore the alignment between two different nodes: modern sustainability parameters in Greenship certification system and sustainability values embedded in Indonesian vernacular architecture (Figure 1). The case study approach is suitable for deep contextual exploration, which this study needs especially in exploring the sustainability in traditional practices [19], [20]. Following that, comparative approach was carried out to systematically compared to identify patterns, gaps, and commonalities [21]. By the comparing of two case studies of vernacular house, the study investigates how sustainability practices rooted in the cultural value resonate or diverge from Greenship's assessment.

This study applies a comparative according to thematical which more appropriate for two cultural cases. Themes were identified both deductively and inductively. Deductive theme identification was carried out for Greenship for New Building 1.2 manuals, where it results in six main categories. Meanwhile, inductive theme identification applied in the traditional sustainable practices by reviewing literature that focuses on sustainability discussion, for example user comfort, ventilation, and climate adaptation, as well as the studies about ethics, religion, and ecological thought of the both cases. All of the extracted themes were aligned in a comparison matrix to show the similarities and differences between the Greenship criteria and vernacular architecture. The alignment scale was divided interpretatively into

three levels. 'High' alignment was labelled if the strategies of both variables were parallel. If the strategies were only partially parallel, it was labelled as 'medium' alignment. However, if a specific theme was not found or a completely different strategy was present in the compared variables, it was labelled as 'low'.

Through this process, the research highlights the overlaps, gaps, and tension between standardized certification and traditional knowledge. This method allows to answer whether Greenship adequately reflects locally embedded sustainability and what if overlooked if there is an undiscovered. Thus, the analysis emphasizes both technical performance and cultural-ecological dimension of sustainability.

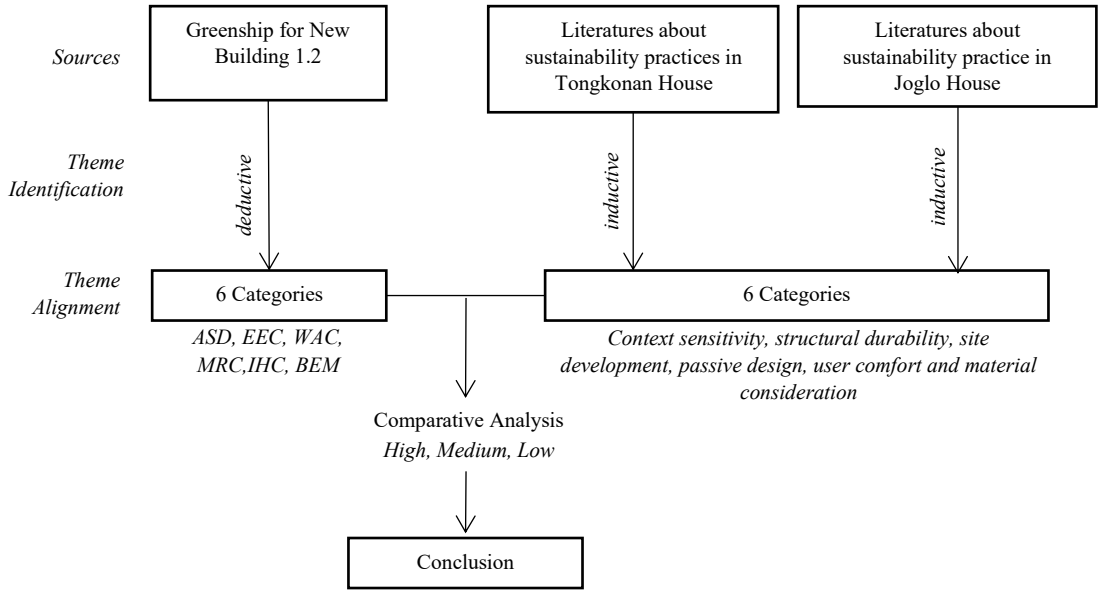

Fig 1. Research Method Scheme

2.2. Greenship

In 2010, the Green Building Council Indonesia (GBCI) established the Greenship certification system under the umbrella of the Green Building Council. The Greenship system aims to educate the public about green building practices and help the Indonesian building industry become more sustainable. GBCI also aims to transform the building market and spread green building principles throughout society. The system consists of six main assessment categories: Appropriate Site Development (ASD), Energy Efficiency and Conservation (EEC), Water Conservation (WAC), Indoor Health and Comfort (IHC), Material and Resource Conservation (MRC) and Building Environmental Management (BEM) [22]. These categories have a similar approach to that of LEED, one of the pioneers of green building certification by the United States Green Building Council (USGBC).

2.3. Joglo and Tongkonan House

Joglo is one of the traditional houses of the Javanese people made of timber, which was once closely associated with the symbol of aristocratic residences. People also often consider this house a masterpiece and include it among sacred buildings [23]. One reason for this is existing vertical and horizontal elements that have their own philosophy. They believe that the vertical components (structure) and horizontal components (room organization) of the Joglo house create harmony for its inhabitants. The vertical components are divided into three parts that have the same meaning as the structure of a Javanese temple: the upper world representing God, the middle world representing life, and the underworld representing death. Meanwhile, horizontally, the Joglo house consists of rooms called *pendopo* (the front of the house), *pringitan, dalem* (the main house), *pawon* (kitchen), *gandhok*, and *gandri* (the sides of the house). Each room has its own philosophy, and they often refer to a particular gender. In the central

structure of the joglo house, four columns (*saka guru*) together with multiple beams (*tumpang sari)* support the highest structure of the joglo roof. This part illustrates the concept of divinity '*mangunggaling kawula Gusti*' [24]. Thus, Joglo as a dwelling symbolise balance between human and God.

Another well-known vernacular architecture rooted in hundreds of years of local culture is the Tongkonan house. In the mountainous northern part of South Sulawesi Province, the Toraja ethnic group lives in one of Toraja's cultural treasures called the Tongkonan house. From the word "*tongkon*," which means "*to sit*," the Tongkonan house is described as a gathering place for a family [25]. It has a distinctive architectural element, which is a long-tilted house made of timber with a hyperbolic roof. The design of the house was shaped according to traditions and beliefs: *Aluk Todolo* (ancestral rule). According to Aluk Todolo, cosmos divided into three parts, firstly called *'Ulunma Langi'* (head of the sky) or the 'upper world' believed as the place for Puang Matua (God the Highest) who maintain the balance of the world. Secondly, the surface where the human live is called the 'middle world', where human must practice worship ceremonies for every phase of life. Meanwhile the last part is the 'underworld', where it symbolized a hell. Each section was represented in Tongkonan, where the upperworld represented by *Rattiang Banua* (roof), middle world represented by *Kale Banua* (the rooms), and underwold reprented by *Sallu Banua* which is a space underneath the house, often used for keeping animals [26]. Moreover, the cosmological believes also applied vertically. The Tongkonan house must face the north side (extending in a north-south direction) as it faces the direction of *Puang Matua* as the creator deity. The south direction related with the afterworld and the ancestors; thus, it is prohibited to face the south direction. Meanwhile the west and east represents the hands of the body [25]. By applying these cosmological principles in their dwellings, it is believed that it creates balance for the Toraja people's lives [26]

Fig 2. The Structure of Joglo House [27]

Fig 3. The Structure of Tongkonan House [28]

3. Findings

According to the comparison matrix presented in Figure 4, high alignment between Greenship and vernacular architecture (VA) can be seen in the ASD, MRC, and IHC criteria. Meanwhile, in EEC criteria has medium alignment, which means several aspects in VA have not been officially recognized in Greenship. Low alignment can be found WAC, BEM, and structure's durability. Whereas, conservation activities and waste management cannot be found in traditional practice. Unfortunately,

there is one aspect that present in vernacular architecture but was not present in Greenship: structural resilience, the criteria which related to the promotion of long-lasting structure.

3.1. The Commonalities: Where Greenship Aligns with Vernacular Architecture

3.1.1.Site Development

The first common topic identified in the comparison matrix relates to site development. In this context, Greenship has created an assessment category called Appropriate Site Development (ASD). This category mostly addresses site ecology, microclimate adaptation, and accessibility to the city's infrastructure. According to the scoring system, 'basic green area' is a mandatory assessment, while other assessments related to micro-climate improvement and run-off water management are high-score checklists. Another checklist relates to site selection and the promotion of bicycle or mass transport use [29].

Similar to the certification process, the microclimate, ecology and site selection also become priorities in the development of Joglo and Tongkonan houses. The microclimate can be seen in the placement of buildings on the site, which are oriented according to local beliefs. Tongkonan houses must face north as this is the direction of *Puang Matua*, the creator deity. The south is associated with the afterlife and ancestors, so it is forbidden to face south. Meanwhile, the west and east represent the hands of the body. The right represents the gods and the left the sanctified ancestors [25]. Joglo also face north or south, with the openings facing the appropriate direction in respect to *'Nyi Roro Kidul'*, the Goddess of the South Sea who symbolizes prosperity, and north, which symbolizes the source of life [23], [24].

Although this seems to be applied according to their beliefs, [23] argues that it is also related to microclimate control to guarantee the user's visual and thermal comfort. Other design strategies such as ecology and site selection also matter in vernacular architecture practice. In Joglo landscape development, vegetation is planted on the right and left sides of the house to supply fresh air and filter dust before it is circulated. Furthermore, the front yard is placed in the north or south to dry crops, as it receives sunlight all day [24]. For the Toraja people, the community is at the core of site selection and development. According to their ancient rules, they were directed to build their dwellings on the outskirts of the forest in order to preserve it [30]. The buildings were then organized in a linear fashion to create a communal space in the centre for traditional ceremonies [31]. Given the similarities between Greenship's practices and vernacular architecture, it can be concluded that there is a strong alignment in the theme of site development.

Table 1. The Comparison Matrix between Greenship and Indonesia Vernacular Architecture

Topics	Greenship	Vernacular Architecture		Alignment Scale
		Joglo House	Tongkonan House	
Site Development	**Appropiate Site Development (ASD)** Site ecology, microclimate improvement, run-off water management, green transportation and its accessibility to the city's infrastructure.	Site landscape and microclimate control	Site selection and microclimate control	High
Energy	**Energy Efficiency and Conservation (EEC)** Technical calculation for energy savings for lighting, cooling and vertical transportation Maximalize the use of natural lighting Use of renewable energy	Adapting passive design strategy for lighting and ventilation	Adapting passive design strategy for lighting and ventilation	Medium
Material Consideration	**Material Resource and Cycle (MRC)** Low embodied energy such as using local and safe materials and the use of recycled materials, modular structure.	Utilizing available material from the nature around the area, and demountable structure.	Utilizing available material from the nature around the area, and demountable structure.	High
User Comfort	**Indoor Health and Comfort (IHC)** Managing the air quality, natural lighting, and thermal comfort.	Performs cross ventilation, stack effect, natural lighting	Performs cross ventilation, stack effect, natural lighting	High
Water Conservation	**Water Conservation (WAC)** Maximum utilization of water with rainwater harvesting within the building and the landscape and efficient plumbing strategies.	-	-	Low
Environmental Management	**Building Environment Management (BEM)** With the operational management as it mainly addresses waste management and operational sustainability.	-	-	Low
Structural Resilience	-	Flexible joints and lightweight structure for earthquake resistant structure	Raised pile foundations for structure's resistance towards humidity	Low

3.1.2. Energy Efficiency

Energy was the second most common topic found in the comparison results, as it is one of the factors driving sustainable development. As a sustainability practice in the modern world, Greenship controls building energy usage through Energy Efficiency and Conservation (EEC) assessments. These assessments involve several technical calculations, such as determining the overall thermal transfer value (OTTV), maximizing the use of natural light, presenting energy savings in lighting, cooling and vertical transportation, installing sub-meters and using renewable energy sources [29].

Interestingly, in vernacular architecture, the topic of energy is not aimed at saving energy. Instead, without acknowledging and relying on fossil fuels as the primary energy source, buildings utilize natural conditions by applying passive design. Here, lighting and cooling energy utilize natural systems, with the role of passive building design processing these natural conditions and creating comfort. Passive design in vernacular architecture can be seen from the building orientation and composition, and its philosophy. As stated in the ASD criteria, the vernacular building orientation allows the building to receive daylighting and wind to enter the house. Figure 5 shows that he orientation of Tongkonan house towards north-south axis makes the building able to receive stable natural lighting throughout the day [32]. Moreover, both buildings have Austronesian building characteristics where the roof structure

dominates the building composition. There are two reasons for this: its massive roof functions as a shade to prevent direct sunlight from entering the building, and the massive roof with some small holes allows for the stack effect, where hot air can rise and exit through the roof while fresh air keeps coming in through the openings on the walls (Figure 6). This strategy provides users with fresh air all day long without using electricity [23], [33].

When comparing Greenship and vernacular buildings, several similarities and differences emerge in their responses to the demand for minimum energy use. These can be seen in the passive design strategies promoted by both types of building. However, Greenship only promotes passive strategies for lighting. Meanwhile, strategies such as natural ventilation are not yet specifically encouraged. The criteria still target total energy savings or specify a maximum OTTV value to minimise the building's cooling load without promoting the use of energy-efficient passive strategies, such as shading devices or cross/stack ventilation simulation. This creates a partial alignment between Greenship and traditional sustainable practices.

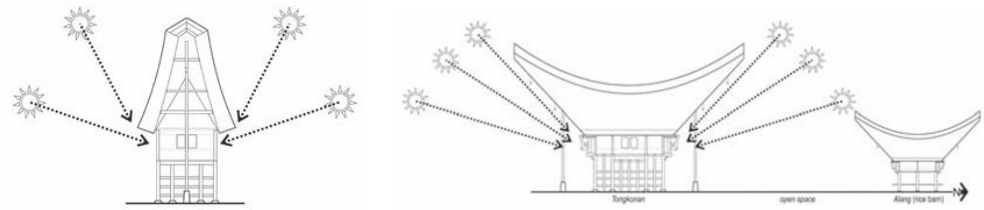

Fig 4. The Passive Design Strategy of Tongkonan [32]

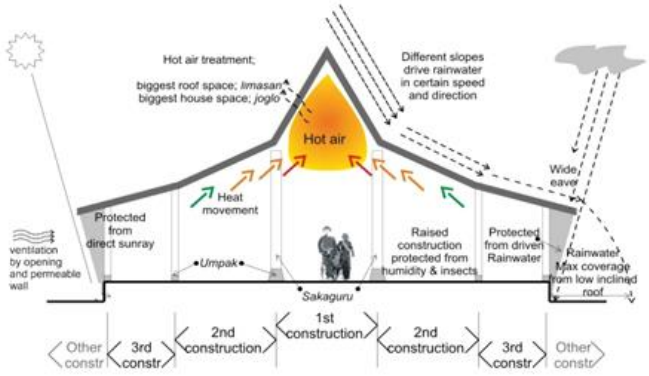

Fig 5. The Passive Design Strategy of Joglo [23]

3.1.3. Material and Resource Conservation

Another discovered theme was related to the material use and the alignment between material assessment in Greenship and vernacular architecture draws 'High'. This is due to the similar practices in both nodes. The priority of using local and/or recyclable material, and modular structures were reflected in both Greenship and vernacular architecture. Joglo may built according to the available material around the context. For example, if teak wood in some area is hard to find, bamboo can be utilized instead [23]. It also applies in Tongkonan house, where the materials can be substituted between uru, nangka (jackfruit), or ironwood that collected from the forest [15]. They also do selective logging when harvesting timber in the forest [34]. Moreover, as Greenship and even other certification promotes modularity, Joglo and Tongkonan is also have been applying demountable structure for hundred years ago. The reflection of sailors of Indonesian's ancestors can be seen from the vernacular house's craftsmanship, where it resembles the technique used for crafting a boat. The vernacular houses do not require metal connections between elements, and use some sophisticated joinery instead [35]. This technique allows the building to be built, dismantled and reused [36].

3.1.4. User Health and Comfort

Similar to the EEC and Indoor Health and Comfort (IHC), Greenship prioritizes user health in sustainable building by managing air quality, humidity, natural lighting and thermal comfort. This fulfils the values presented in vernacular building practice [29]. The high ceilings and large roofs of Joglo and Tongkonan provide passive vertical ventilation [23], [33]. For horizontal ventilation (cross ventilation) is supported by openings and small holes of the walls [23], [30]. Moreover, as Tongkonan houses are mostly built in soft-soil areas, they control the humidity of the house by implementing elevated pile foundations, which allow air to ventilate underneath the house [33]. These features create a strong alignment with the Greenship assessment in controlling user's health and comfort.

In conclusion, there is a high degree of alignment between Greenship and vernacular architecture in the ASD, MRC and IHC criteria. In other words, sustainable strategies such as site development, the wise use of materials and ensuring user health are a common language of sustainability that has been maintained for ages. These results align with the findings of Murakami and Toshiharu who compared several vernacular houses including Indonesia's vernacular house with modern housing using CASBEE, Japan's national green building certification system. Vernacular houses were categorized as 'A' according to CASBEE, meaning they have a minimum environmental impact by applying effective passive design and utilizing existing materials from the local area instead of importing them from other regions [37]. Therefore, as Greenship develops, it is expected that the value of these points will not decrease or disappear. Instead, vernacular practice must be reminded as a base for future development of sustainable building.

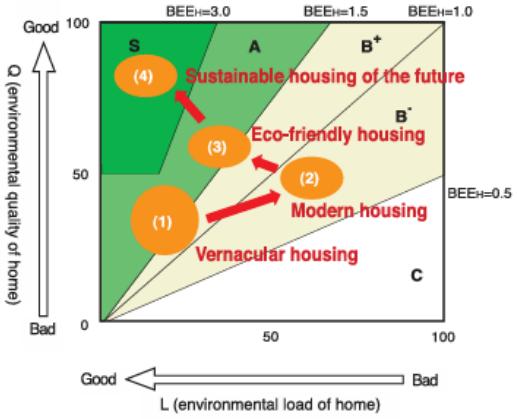

Fig 6. The Comparison Results of Vernacular Architecture Performance with Modern Housing, Eco-Friendly Housing, and Sustainable Housing [37]

3.2. The Gaps: Where The Vernacular is Overlooked

As we can see from the comparison matrix, several Greenship assessment criteria was not found in vernacular architecture. The gap was drawn for Water Conservation (WAC) category, Greenship, Building Environmental Management (BEM), and structural durability. WAC as the third assessment criteria in Greenship requires lots of technical measurements. The measurement includes managing the rain and recycled water, run-off calculation, water conservation, to the water-saving plumbing strategies. However, in Joglo and Tongkonan house, the water conservation system was no found as the part of the building. As well as BEM category, the assessment has highlighted operational management as it mainly addresses waste management and operational sustainability. Meanwhile, traditional practices in Joglo and Tongkonan does not have formal management system. Instead, they manage their environment in communal organically.

In the other hand, there is vernacular architecture's strategy that was not found in Greenship criteria. Structural durability is an aspect that allows vernacular architecture to withstand for hundreds of years. Both Joglo and Tongkonan were built by a structure that adapted to their natural threat and it was built with a foundation to their beliefs. With the absence of contextual adaptation for the structure performance in Greenship, the alignment between the two practices defined as 'low'.

Between the comparison, there are low alignments came from the responses Greenship to the changing condition that not found in vernacular era. Such as low alignment between WAC is a condition where the current situations such as floods, increased water needs, polluted water urges new building construction to calculate water conservation wisely, just like stated by [38]. However, another medium to low alignment shows several aspects in vernacular building are unrecognized even though it contains sustainability practices: energy efficiency and structural durability. Whereas, Greenship still overlooks passive design strategy for lighting and thermal comfort and structural resilience of buildings against destruction caused by natural disasters.

4. Discussions

The findings about the gap between Greenship and vernacular architecture stated above need more attention. Adaptability of building to its surrounding is part of the resilience. While resilience and sustainability synergized each other's and cannot be separated [39]. Unfortunately, the Greenship assessment focuses heavily on technical calculations without promoting adaptation to the surrounding environment through design. This finding is in line with Ascione's research, which reveals that green building rating systems are less sensitive to contextual conditions [10]. If sensitivity to context is minimal, there is a chance that score-based assessments will cause sustainability to focus only on results rather than actual conditions. Moreover, it is also easier to exploit surface-level performance, as long as it fulfills the numbers. If this continues, the risks of certification becoming a form of branding important than the pure commitment.

Another important finding is that the motivations behind sustainability practices differ between the two contexts. As a voluntary certification scheme developed by an NGO, Greenship carries no penalties or understanding about a condition if the buildings fail to meet its performance standards. This often results in a lack of motivation to pursue certification, as highlighted in Wimala's interviews with stakeholders involved in the Greenship process [40]. In contrast, vernacular architecture is rooted in a philosophical belief system where ecological sensitivity and respect for the site and climate are non-negotiable. Failure to follow these values is not merely perceived as poor design, but also as a betrayal of cultural principles believed to harm both the community and nature. Moreover, this genuine commitment to respecting the environment is accompanied by craftsmanship that results in designs that are beautiful and unique to a particular cultural background. In modern practice, where rating systems are more common than in vernacular practice, sustainability can be interpreted as insincere respect for the environment. It is downgraded to an "additional" value once accomplished. Thus, the mindset of respecting the environment, which is actually embedded in the local community, can fade along with the newly growing mindset that is the total opposite.

With the mentioned Greenship certification's shortcomings above, it does not mean that implying vernacular architecture 'as its is' is the best recommendation. The comparison shows vernacular architecture has shortcomings too in matching with the current building occupant scale and complex society's system. Therefore, in the modern point of view, Greenship is a better basis to be used as a guidance in sustainable construction. Vernacular architecture should be reinterpreted and applied as a vast knowledge system instead of just following as a 'style'. The interpretation of vernacular architecture is muchly needed to be elaborated with green building rating system especially to fulfill the gap of social, contextual, and cultural sensitivity. This also can reduce the risk of cultural erasure caused by ignorance of local wisdom in modern development at the same time.

The elaboration between these two concepts may create a powerful basis in future sustainable development. For example, if we look at several countries that have initiated green building certification, the cityscapes of both countries are very similar: concrete and glass utopias. Indonesia, which has been following the development path of developed countries, has resulted in many cities being built in the same way. This creates a feeling of monotony: there is no difference when we are inside buildings in London, Taipei, or Jakarta. In fact, these three cities have very different climates and cultures. The incorporation of vernacular architecture values can initiate sustainable vernacularism, where buildings are designed based on their context in terms of climate, culture, and environmental conditions. Thus,

one of the impacts of this elaboration is to promote a spatial experience that truly reflects the needs of users and local identity.

Lastly, the discussion of sustainability cannot be separated from social sustainability which is inclusivity. Indonesia can represent other developing countries facing similar pressures in terms of this. Building certification can no longer accepted only as an exclusive tool that used majority for high-invested project. The community, especially those who still maintain local wisdom, should be an involved as actors in the development and certification of sustainable buildings. This can support sustainable buildings as familiar knowledge for the community and restore local architectural values that have been lost through versions that are more appropriate to the modern context.

5. Conclusion

In the condition where construction sector tries to minimize the negative impacts to the environment, the findings in this study show alignment and misalignment between Greenship certification and sustainability embedded in Indonesian vernacular house that represents the traditional ecological building practice. The key alignments were related to the site development, material consideration, and indoor health and comfort. However, there are misalignments in the aspect of the promotion of passive design for energy efficiency and structural resilience. From the reflection, aspects such as site development, material consideration, and user's health and comfort must be maintained its context-sensitive approach. Meanwhile sensitivity towards the actual condition need to be increased in the energy efficiency especially for promoting responsive design to the climate in order to minimize the energy use, and the structure sensitivity to the nature's threat in a specific area.

Furthermore, this study also brings value by bridging the modern certification frameworks with traditional sustainability wisdom. Recognizing how traditional practices showed in vernacular architecture makes us realize how sustainability is not always technical, but also cultural; the recognizing of culture can contribute to better modern sustainability practice. This might not show if green building rating system only being discussed with the rating system developed in Western-context as a benchmark. Even though this study not proposing for new certification system, it opens a pathway for how vernacular practices could be interpreted and elaborated into green building assessment criteria. Sustainable vernacularism can become a new topic to be discussed to promotes how sustainability practice can walk together with what the ancestors have developed.

Therefore, integration potential between Greenship or other green rating system criteria as a benchmark in scoring the sustainability of a building and the local wisdom, further hybrid model study is suggested. Moreover, studies in testing the effectiveness of vernacular strategies could be adapted to modern buildings and exploring experts' interview to reveals their perspective regarding the topic are recommended. For the purpose that the discussion of the alignment between traditional and modern practice do not stop in the theoretical level. Bridging Greenship with vernacular traditions is not just an academic discussion, but a pathway towards an authentic and locally rooted sustainable feature.

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