The impact of green building approach to office property value

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Abstract. A real estate development often produces negative impacts towards the environment such as the reduction of the ecological capacity in the site and its surroundings, energy exploitation, and excessive pollutant emission. To overcome these issues, the green building concept or approach has been adapted by several real estate businesses in Indonesia especially in the office sector. According to the data provided by GBCI in 2017, there are 17 buildings listed as a certified green building office in various levels. As what has been known, the green building approach results in the increase of price in the planning, construction and the building’s maintenance. This paper will discuss about the research results regarding the effect of the green building approach towards the property value of office buildings especially in Jakarta. The research will be executed through the comparison method, which is the process of comparing office building that have already adapted the green building concept with the one that have not, or in other words, the conventional office buildings. Data gathering is done through observation and interviews with developers and building managers. The research results show that by adapting the green building approach for office buildings in Jakarta, the property value regarding the utility, scarcity, effective demands, and transferability aspect can increase.

Keywords: real estate, green building approach, office, property value

1. Introduction

A real estate development activity that proceeds excessive construction can harm the environment. The building sector are the biggest energy consumer and primary contributor of gas emission in global warming [1]. Human activities that dominantly contribute in terms of the main energy consumption happen in the building sector [2]. To lessen buildings’ negative impact towards the environment, a certain approach has been developed to improve environmental awareness, which is also known as the green building concept.

Green building constructions are more costly compared to those conventional buildings, especially its soft-cost expenses due to the addition of design, analysis, technical, efficiency calculation, and green building certification cost [3]. As quoted by [4] according to CalRecycle, green building approach might need a bigger capital expenditure, but by applying its purposed concept, green buildings can save operational costs [4]. Therefore, an important question rose: will the amount of capital expenditure due to the application of green building concept on a certain real estate development project be proportional with the kind of benefits green buildings can provide so that it can increase the value of a property, in this case office buildings.
Green Building Council Indonesia [5] explained how the green living or green building approach is an innovation towards creating a residential area that fulfils its performance in terms of land use, build to save water and energy, having facilities that lessen waste, and maintain the air quality inside a room. According to [3], the green building approach is a technological innovation. This approach is not new to the real estate development. Woodson [6] explained that this approach began to be adapted and developed in several countries around the world since the 1980s [6].

Research regarding the green building approach towards property value has been conducted in several countries. Yudelson [3] explained that the benefits obtained from applying the green building concept on a building is: lessen operational costs; lessen maintenance costs; increases productivity of users; management risks and relationship between stakeholder; environment management; increases property value; and produces a product that is more competitive in the market where the green building has a lower operational cost and possess a better environmental quality will overshadow conventional buildings [3].

Quoted by Kubba [4], studies by “Landmark International” (2008) showed that the green building approach can increase value (can be seen from the increased sales and leases, increased occupancy, and decreased changes of ownership) [4]. According to Fachrudin [13], based on the research by “Research of Institute for Building Efficiency” (2010), it is explained that the green building approach has advantages such as the increase of occupancy rate, sale and leasing value, decrease of capitalization, and the increase of productivity [13]. Popescu [1] also confirmed that green buildings can decrease operational costs, increase reputation and image, decrease negative impacts towards the environment, and decrease the use of natural resources [1].

A real estate development is defined as an activity that develops a project through building parcels on a land with the goal of increasing its real estate value in order to gain profit. According to [11] property’s product can be classified into four categories which are residential, commercial, agricultural and special purpose. Shilling [11] stated that office buildings are considered as a sub component of a commercial property. Shilling [11] explained that residential and commercial properties are the primary type of developments that are being exchanged due to the high value. According to Schmitz & Brett [10], office buildings can be differentiated through several factors, which are: class which that covers age, location, quality, building’s system, available facilities, rent price, and renters’ profile; location; size and flexibility; function and ownership; along with its features and facilities [10].

A real estate development’s nature is an activity that creates and increases the property value. [9] stated that a property value has four aspects, which are: (1) Utility, which is the function or utility of a property in fulfilling the user’s needs; (2) Scarcity, the property’s level of availability; (3) Effective demand, the level of needs and purchasing power; (4) Transferability, its ability to transfer ownership [9]. According to Arnold [9], a property’s value is determined by those four aspects. A property is said to have value if it contains those four aspects.

2. Methods
A comparison was operated towards the property value of an office buildings who adapted the green building concept with one that does not (conventional office building). Its purpose is to determine the effect of the green building approach towards its property value. This research used the mixed method approach. According to [12] a mixed method is the combination of qualitative and quantitative method in where the analysis is in the form of text (qualitative analysis) and numeric data (quantitative analysis). To measure the value of an office building, the researcher has designed an instrument in the form of property value table assessment that covers four aspects which are utility, scarcity, effective demand, and transferability.

This assessment instrument was designed by conducting a theoretical review that relates to the quality aspects of an office building and aspects that relate to the green building approach. The assessment instrument was designed though incorporating valuation aspects from [7] research results which identified several factors that become indicators which affects the quality and utility of a general office building. Ho, Newell & Walker’s [7] research results produced 27 indicators to assess
quality and utility of a general office building. The indicators are classified into six categories which are functionality, services, access and circulation, presentation, management, and amenities.

The six assessment indicators are then modified with the addition of green building’s assessment indicators. The researcher has included assessments from the green building approach according to worldwide institutions who have released a rating system such as GREENSHIP Indonesia, BREEAM, GBTool Canada, IISBE, LEED, EcoProfile, CASBEE Japan, Green Star, Green Globes, and BCA Green Mark Singapore. The resulted indicators from each assessment system has been processed by the researcher and is adapted with [7] assessment. The green building approach assessment indicator in this research consists of 29 indicators. In the designed assessment instrument, the researcher has found 5 indicators that consists of general conventional office buildings and green office buildings aspect which is called mixed aspects.

Yudelson [3] explained that the benefits of a green building are classified into two, which are measurable benefits and non-measurable benefits (which covers its own prestige). Therefore, the researcher has added 5 indicators as an assessment tool which relates to the level of prestige that is generated due to the application of the green building concept which refers to [3] opinion, brand image, public relations, enhanced marketing capability, market positioning, and “doing the right thing”.

Assessment aspects were processed so that it can be used as assessment tools which can determine the value of an office building. The assessment instrument used 69 indicators to provide valuation towards an office building. The indicators that are used for the assessment instrument are classified into three general office aspects, which are general aspect indicators, green aspect indicators, and mixed aspect indicators. The applied assessment system for each indicator is presented through scoring with the range 1 (lowest) to 5 (highest). Each research object was valuated based on the assessment criteria that was previously determined by the researcher.

The total score that can be obtained from each research object will be transformed into a value that relates with four aspects which are utility, scarcity, effective demand, and transferability, in where these aspects contribute evenly in determining property value. In assessing a research object, the total score will be divided by the total score received from each indicator from every aspect and multiplied by twenty-five (the amount of value for each aspect will add to a hundred).

There will be two research objects. The first is an office building that has already applied the green building approach and is certified as a gold rated by GBCI, the Alamanda Tower green office. The second building is a conventional office building, the Talavera Office. The two buildings are located in Jl. TB Simatupang, South Jakarta. These buildings were chosen because both possess the same qualifications: both are office grade A, located alongside each other, more or less the same size, and possess an identical function.

Data gatherings was done in several steps which are, interviews with developers and direct observation to give out an assessment regarding its level of utility. To gather data for its scarcity, the researcher has collected data on the amount of office buildings that are located in the previously determined area. The amount of office types that were analyzed was then compared to the amount of office buildings located in the designated area. This was done to receive a scarcity ratio on the researched office building. The lesser the ratio received, the lower the scarcity of the office becomes. In gathering data for effective demand, the researcher collected data on the occupancy level of each research object. By doing so, the researcher can determine how much the office is demanded by the market. The bigger the level of needs, the bigger the value of the office becomes. To determine its transferability level, the researcher conducted interviews towards the development party. Through it, the mechanism of the ownership transferability can be determined. The more various the mechanisms are, the bigger the value becomes.

3. Discussion

Based on the assessment results on the two researched office buildings, it can be seen that the green office (Alamanda Tower) has a total score of 90.5, which is far greater than the conventional building (Talavera Office) with a total score of 47, for all assessment aspects which are utility, scarcity, effective demand, and transferability.
Based on the total points of the four aspects and the transformation in the form of value, the value that is received by the green office is bigger compared to the conventional office. According to analyzed research data, the green office’s value on utility is bigger than the conventional building. From 66 indicators in the research instrument it is stated that the green office is more superior than the conventional building. This means that green elements in the green building approach is able to increase property value in terms of utility.

Table 1. Research Result Data

| Personal documentation |

| Scarcity | Utility | Effective Demand | Transferability |
|-----------|---------|------------------|-----------------|
| Alamanda Tower | 20.5 | 25 | 25 | 90.5 |
| Talavera Office | 17 | 5 | 20 | 47 |

In assessing the scarcity aspect, a scarcity ratio is needed from each research object which is the green office (an office building that inherits the green building concept) and the conventional office. In order to determine the scarcity ratio of the research object, the researcher has collected data on office buildings in the TB Simatupang area. Based on the office building list in TB Simatupang area, it was obtained that in the TB Simatupang area, office buildings that applied the green building concept (green office) and is already certified GREENSHIP from GBCI (Green Building Council Indonesia) is only covered by one building only, which is the researched building, Alamanda Tower (green office). Office buildings with grade A (Talavera Office, which is also the research object, is a grade A conventional office building) is covered by 8 buildings where in the same area is covered by 35 buildings. To determine the scarcity ratio of the research object, the researcher has applied this formula:

\[
\text{Scarcity of Alamanda Tower} = \frac{\text{Total amount of green office in TB Simatupang area}}{\text{Total amount of office in TB Simatupang area}}
\]

\[
\text{Scarcity of Talavera Office} = \frac{\text{Total amount of grade A office in TB Simatupang area}}{\text{Total office in TB Simatupang area}}
\]

Scarcity ration of the research object is obtained by knowing the total amount of office types, in where if the calculation result is lessening (closer to zero), then that specific office type has a greater scarcity value. If a specific office building type is rarer, then its property value is higher. By using this formula, thus the result regarding the scarcity aspect of the two research object are as follow:

\[
\text{Scarcity of Alamanda Tower} = \frac{1}{35} = 0.03
\]
Scarcity of Talavera Office = \frac{8}{35} = 0.23

Based on the research analysis, green office is rarer than conventional office. This means that the green aspect that green offices inherit causes the building to be unique. This is caused by the lack of green office supply compared to the conventional office buildings.

To determine the property value of the effective demand aspect, the researcher has gathered data regarding the level of occupancy of each research object which is obtained by interviews with its developers. Based on the interview result, the level of occupancy of the green office is 95% while it is 90% for the conventional office. This means that for effective demand aspect, the green factor is not a big determinant for its property value, it can be seen from the level of occupancy of both research object (green office and conventional office building) that are relatively similar.

Transferability aspect relates with the type and form of ownership of the office space. The more types of offered ownership, the higher the property value will become. Based on the interview result from both the green office and the conventional office, it is proven that the transferability of both buildings have differences in where the green building offers two types of ownership of its office space, which is leased or strata titled. In contrary, the conventional building only has one type of ownership through leasing.

The analysis result of the office’s property value stated that the application of green building approach can increase the property value of offices regarding the utility, scarcity, effective demand, and transferability. Based on the research result of the performed case studies, the researcher discovered that the application of the green building approach provides an influence on the property value related to utility and scarcity, but regarding the effective demand and transferability, the green building approach has not yet created a significant impact or influence on its property value.

This fact is similar to the statement of [3] about how the application of green building approach creates a product that is more competitive in the market with all its utilities and ability to create a better environmental quality. This relates to the utility aspect assessment in where the application of green buildings can increase its utility value.

The research result regarding the scarcity proves that office buildings that inherit the green building concept is rarer compared to those who do not (conventional office building), thus the value received on its scarcity is bigger than conventional office buildings. This is in line with [8] opinion on the awareness of the society on an environmental friendly construction thus increasing the need or demand of green labeled properties. The imbalance of high demand on green buildings and its lack of supply causes an increase in property value.

Regarding to its effective demand, according to the study by “Landmark International” (2008) and “Research of Institute for Building Efficiency” (2010), the application of green building concept can increase the occupancy rate. However, based on the research result of the study cases, the level of demand that is portrayed by the occupancy rate between the green office and the conventional one is relatively the same, thus the green building approach does not really affect the effective demand aspect for a property’s value.

As for its transferability which is based on the offered ownership of office spaces, the green office provided more varieties of ownerships compared to the conventional one. However, it was not influenced by the green concept of the office.

4. Conclusion
The obtained research results that were operated to prove the hypothesis that “green building approach can increase the property value of office types” was confirmed by the comparison of two types of properties (office buildings who inherit the green building approach and conventional offices) case study, in where the green aspect in the green building approach is able to increase the property value of green offices. The green building approach can influence the property value of office buildings through the relation of its utility and scarcity. However, green buildings do not significantly impact property values regarding its effective demand and transferability aspect.
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