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Implementation of Appropriate Site Development, Material Recycle, Indoor Health and Comfort in Shopping Buildings

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ABSTRACT

This study aims to examine the implementation of Appropriate Site Development, Material Recycle, Indoor Health and Comfort and its effect on the operational costs of property management.
This study used primary data obtained from questionnaires sent to the property managers. The data were then processed by using the content analysis and were validated by interviews with informants.
The results of the research showed that the managers of malls in Indonesia agree to implement green building standards due to cost and benefit considerations.
This proves that the Property Managers should not only pay attention to profits but must pay attention to the environmental aspects (planet) and the people around the company. Therefore, a property management company should begin to implement sustainable building management.
This study contributes to practical implications for property management to manage the building based on green building standards and building renovation into green building or retrofit.

Keywords: Green building, cost efficiency, sustainability

INTRODUCTION

It is possible for us to meet the needs of energy and other natural resources for future generations because they are limited (Halder et l., 2015). At the same time, the increase in population results in the increasing demand for electrical energy in Indonesia. The average increase in electrical energy is 6.9% per year or about 8.5 GW per year. So, Indonesia needs to make efforts to meet national electricity needs and to achieve national energy security (ESDM, 2019).

Buildings are quite a large energy users apart from transportation and. this is a problem we need to overcome (Hassan et al., 2014). Moreover, the problem is not only the fulfillment of energy needs but other natural resources such as clean water. Green Buildings have energy efficiency principles. The implementation of green buildings not only gives the values of ecological but also economic values because it can reduce building operational and maintenance costs. Green buildings contribute to both economic and non-economic aspects by increasing the corporate and brand images which result in increasing company sales, performance and property values so that the government also gains benefits from the tax payment (Raji et al., 2017).

Business Performance that can be measured from the implementation of green building is energy efficiency. Besides, the implementation of green building has an impact not only on the company's economic value but also on environmental sustainability, i.e. reducing CO_2 emissions (Ghaffarianhoseini et al. 2013).

Green Building does not only focus on cost efficiency for building operations but also climate changes (Larsen et al. 2011). During the rainy seasons, the air temperature becomes lower. Increasing the possibilities for bacteria and viruses to grow and breed. Therefore, it is necessary to keep the room clean and healthy by maximizing air circulation and natural lighting in houses, shops, and offices, so that productivity and immune system can be maintained optimally (Ajayi et al., 2016).

Global warming increasingly affects both daily life and economic activities. The lifestyle and business activity do not notice the surrounding environment so far, even they tend to damage the environment. Global warming increases in the average daily temperature which is very impactful on land. Based on the Paris Agreement, the temperature increase is limited to below 2^0 C or a maximum of 1.5^0 C (UNEP 2019)

According to the data from Green Building Council Indonesia, the impact of greenhouse gases is caused by buildings(48%), transportation (27%), and industry (25%) (UNEP 2007). Human activities in urban areas are quite high causing a serious impact on the environment and the greenhouse. Therefore, the need for green buildings in urban areas is prioritized. Green buildings can reduce the greenhouse effect by 2.7% (Environmental Protection Agency 2019).

This research is essential because:

1) There is still a small number of buildings implementing green building standards in Indonesia. When this research was conducted, approximately 40 buildings were certified as standardized Green Buildings by the Green Building Council Indonesia (GBCI). At the same time, there were approximately 2.000 green buildings in Singapore. The number of green buildings in Singapore is much more than the number in Indonesia.
2) Indonesia is a country is the 6th polluted country in the world, which is measured by the level of population or clean air quality. In Singapore dust or steam remain in the atmosphere for a long time at least 2.5 PM; while in Indonesia, it is 51.7 PM (IQAir 2019).
3) Many people still think that green buildings are more expensive than a conventional buildings. this is, due to a lack of knowledge in ideal designs, lack of experience, and lack of knowledge in materials (Collins et al., 2018).
4) Many companies and property developers do not apply the green building concept due to short-term business considerations, high investment value, the rate of return (payback period), and t lack of support and incentives from the Government (Wimala et al. 2017)

The category of green buildings is not only when the building is completely built and certified as green buildings, but the standards should be maintained sustainably.

Green buildings are built in the stages of planning, constructing, operating, and maintaining (C. Otegbulu 2011). Green Buildings also pay attention to some aspects that should be environmentally friendly and healthy. They should maintain the quality of indoor air and their occupants healthy (Shahrin et al. 2017)

The performance of malls is measured by the number of visitors and the building occupancy which affects sales benefits. In other words, they pay more attention to profits than to the efficiency of energy and other natural resources. Thus, the problems analyzed in this study include::

1) Do malls implement the indicator of Appropriate Site Development?
2) Do malls implement the indicator of Material Resource and Cycle?
3) Do malls implement the indicator of Indoor Health and Comfort?

The purpose of this study is to:

1) Implement 3 indicators green buildings are Appropriate Site Development, Material Resource, and Cycle, Indoor Health, and Comfort which affects Performance of mall managers are generally measured through occupancy rate and Earning Before Interest, Tax, and Depreciation (EBITDA).
2) Analyze the effect of green buildings on the operational costs of building management.

   The occupancy rate of malls has an impact on the level of acceptance of building managers. The higher the occupancy rate of the building the greater the use of electrical energy, clean water, maintenance, and cleaning costs of malls.

This research is expected to contribute to the government in the implementation of green buildings in Indonesia, to increasing the government's achievement, and informing the Mayor's Regulations (Perwal) and Governor Regulations (Pergub) about Green Buildings. The results of the study will also be implemented by other Regional and City Governments in Indonesia. Currently, there is only one Mayor Regulation of Bandung Number 1023 of 2016 and one Governor Regulation of Jakarta province Number 38 of 2012.

Besides, this research is expected to provide benefits for property managers with understanding about green buildings so that they can efficiently use electrical energy, clean water, and other resources which thereby affect firm performance and profits.

This research is useful for the government to prepare electrical energy needs and meet the needs for clean water and other resources efficiently by implementing green buildings in malls.

LITERATURE REVIEW

1. Triple Bottom Line

Green buildings are sustainable buildings. The implementation of green buildings supports business activities that will not only prioritize company profits but also care for the sustainability of the surrounding environments and the surrounding community.

The Triple Bottom Line concept is a pillar that measures the success value of a company by three criteria: people, planet/environment, and profit. In traditional financial reporting, companies usually only report the profits. However, the company does not pay attention to the costs of environmental damage (Elkington 1998).

The Tripple Bottom Line report can be considered a good step if it contains a reliable and audited social and environmental report showing the responsibility of sustainability on social, environmental, and financial issues (Milne and Patten 2002).

In this study, people are defined as visitors, tenants, and the managers of malls who understand green building standards. The planet is defined as the environment around green buildings and places where green buildings are built and should be preserved to remain natural and environmentally friendly. This can be done by green buildings in locations based on the needs and permission from the government in preparing areas for plants, green open spaces, and parking areas for bikes. Meanwhile, profits earned by the company are the results of reliable management. Furthermore, the profits earned by the company should not harm the environment and the surrounding community, so that green buildings, building occupants, building managers, and the environment are interrelated, mutually beneficial, and can develop sustainably.

2. Green Building

Green building is a sustainable building with due observance to the principles of resources, including the efficient use of electricity, clean water, and materials as well as paying attention to the environment. Green building is an environmentally-friendly building with more efficient cost than conventional buildings due to better planning, construction, or management and can reduce negative impacts on the climate and environment (MacNaughton et al. 2016). Besides, in providing profits for the company,

green buildings pay attention to natural resources (planet) and also building occupants (people) (Fan et al., 2018).

There are several criteria of a green building:

1) Saving the use of energy, water, and other resources
2) Using renewable energy such as solar energy.
3) Reducing waste and pollution as well as recycling.
4) having a room with good air circulation and environmental quality.
5) Using non-toxic and sustainable building materials.
6) Using an environmentally-friendly design, construction, and management.
7) Using the design, construction, and management by considering the health of occupants.
8) Having an adaptable design to changing environments.

(World Green Building Council, 2015)

Green Building could be measured by three indicators: Appropriate Site Development, Material Resources, and Cycle, Indoor Health and Comfort (Green Building Council Indonesia (GBCI) 2011)

1. Appropriate Site Development (ASD)

The growth rate of urban areas is getting expanded because the selection of development locations in Indonesia prioritizes land prices rather than environmental factors and sustainability. The perception that development using new land is more efficient than using locations with various public facility networks, which can cause urban sprawl so that the transformation of rural land to urban is inevitable. At the same time, the availability of open green space (RTH) that maintains harmony between the natural environment and the built environment is increasingly limited (Green Building Council Indonesia (GBCI) 2011)

Appropriate Site Development (ASD) is one of the six criteria to determine a green building. The criteria used in measuring Appropriate Site Development (ASD) include:

1. Basic green area
2. Site selection
3. Community accessibility
4. Public transportation

5. Bicycle facility
6. Site landscaping
7. Microclimate
8. Stormwater management

(Green Building Council Indonesia (GBCI) 2011)

2. Material Resources and Cycle (MRC)

The environmentally friendly building needs environmentally friendly materials as well. Material is an element of passive design that supports building performance efficiently and effectively to meet the needs of its users. This relates directly to the characteristics of the materials in response to environmentally-friendly issues in buildings (Green Building Council Indonesia (GBCI) 2011)

The criteria used in measuring the material resource and cycle (MRC) include:

1. Fundamental refrigerant
2. Reused building materials
3. Environmentally friendly material
4. Non-ODS (ozone-depleting substances)Usage
5. Certified wood
6. Prefab material
7. Regional material

(Green Building Council Indonesia (GBCI) 2011)

3. Indoor Health and Comfort (IHC)

Currently, the performance of buildings in Indonesia is still prioritizing efficiency in saving electrical energy, while considerations for the health and comfort of their users are still not a priority. One of the keys to the success of a company's performance depends on the quality of its workforce. Therefore, the environment for commercial buildings and institutional buildings conducive to work and activities for building users is one of the efficient efforts in running business competitions in Indonesia (Ormandy and Ezratty 2012).

The criteria used in measuring Indoor Health and Comfort (IHC) include:

1. Outdoor air introduction
2. Monitoring CO_2
3. Environmental tobacco smoke control
4. Chemical pollutants
5. Outside view
6. Visual comfort
7. Thermal comfort
8. Acoustic level

(Green Building Council Indonesia (GBCI) 2011)

METHODS

The population in this study comprises property management companies. The criteria of building in this study are malls.

The samples were selected by using a purposive sampling method which is a sampling method based on specific criteria (Sekaran and Bougie 2016). The criteria are the people who understand property management and the people who are trusted by company management such as Property Managers and Supervisors.

The Property Manager is responsible for building management benefits, building occupancy rate, building operational sustainability, visitor comfort, and visitor safety.

In addition, respondents should have at least a bachelor's degree and at least 5 years of working experience.

These criteria are set with the aim that the respondents understand the questions in the questionnaire so that they answer the questions consistently and reliably.

This study used primary data obtained through questionnaires and interviews with informants. The questionnaire collection target was 100 respondents. The number of malls in Jabodetabek was 564 buildings. Furthermore, the number of respondents was determined by the Slovin method, i.e.:

$$n = \frac{N}{1 + Ne^2}$$

n = sample size

N= population size

e = error margin, i.e. 10%

Therefore, the minimum sample in this study is:

$$n = \frac{564}{1 + (564 \times 0.1^2)}$$

$$= 85 \text{ respondents}$$

With 111 respondents. It means that we could continue the study.

Questionnaires were collected by using Google Forms. The analytical method used in this study was the content analysis that is analyzing the interview results by scoring (Sekaran & Bougie, 2015).

RESULTS

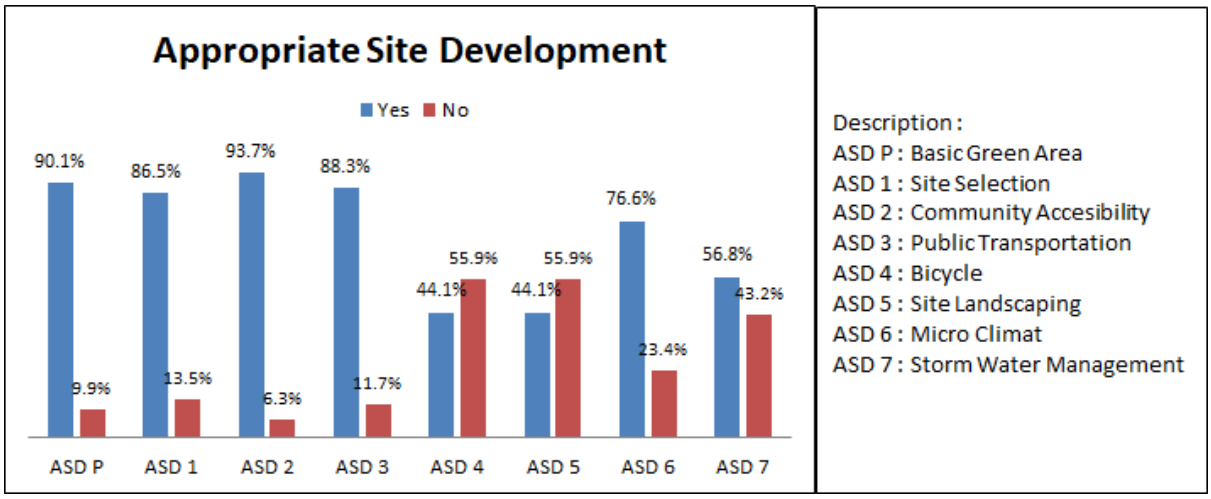
This study used primary data obtained by distributing questionnaires t to respondents from February 2019 to December 2019. The target was 100 respondents, but we obtained 111 respondents' data.

The survey was conducted on building property management in Indonesia and the buildings as the unit of analysis. In addition to using a questionnaire, we also conducted interviews with several informants to confirm and validate the results.

In this study, we used a purposive sampling method, i.e. the sampling method based on certain criteria (Tongco 2007). The criteria of respondents in this study were having 5-years of working experience and holding at least a bachelor's degree. The buildings which were analyzed were not only those certified as green buildings but also those that did not have certification so that the samples in this study did not seem homogenous. To achieve respondents, we sent questionnaires via email, WhatsApp, and in person.

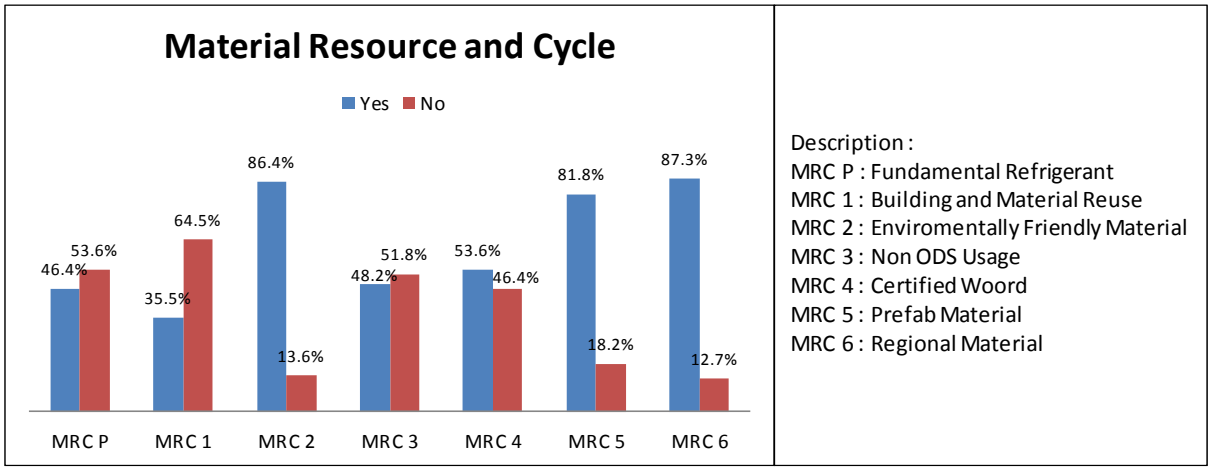
1. Most respondents agree about the implementation of Appropriate Site Development. This can be seen in table 2 that 6 of 8 indicators (75%) of Appropriate Site Development have a value of above 50% including Basic Green Area (90.1%), Site Selection (86.5%), Community Accessibility (93.7%), Public Transportation of (88.3%), Micro Climate (75.6%) and Storm Water Management (56.8%).

Table 1
Respondents' Answers Regarding Appropriate Site Development



2. Most respondents agree about the implementation of the Material Resource and Cycle. This can be seen in Table 6 below that 4 of 7 Material Resource and Cycle Indicators (57%) have a value of above (50%). They are Environmentally Friendly Material (86.4%), Certified Wood (53.6%), Prefab Material (81.8%), and Regional Material (87.3%).

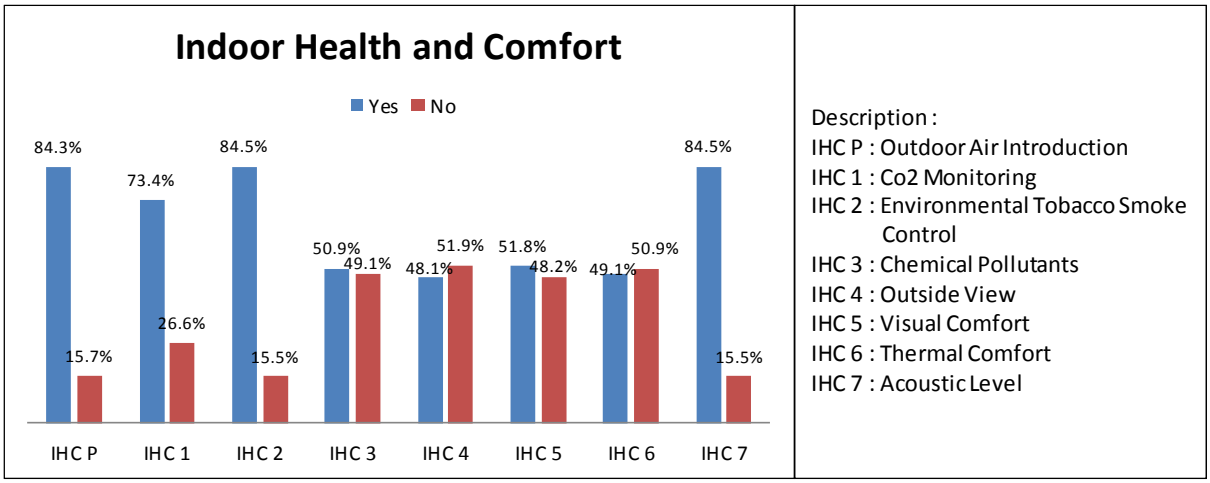
Table 2
Respondents' Answers Regarding Material Resources and Cycle



3. Most respondents in this study agree about the implementation of Indoor Health and Comfort. This can be seen in table 5 that 6 of 7 Indoor Health and Comfort Indicators (86%) have a value of above 50% including Outdoor Air Introduction (84.3%), $C0_2$

Monitoring (73.4%), Environmental Tobacco Smoke Control (84.5%), Chemical Pollutants (50.9%,) Visual Comfort (51.8%) and Acoustic Level (84.5%).

Table 3
Respondents' Answers Regarding Indoor Health and Comfort



DISCUSSION

Malls are measured by the number of visitors and the occupancy rate of a building. Location is very influential on the level of visits to shopping buildings, its strategic location makes it easy for visitors to reach it, supported by public transportation at an affordable cost, bicycle parking facilities, and adequate gardens make the building atmosphere cool and natural. Visitors and traders will feel comfortable when visiting a building built on appropriate land (Appropriate Site Development). This is in line with the results of this study that the value of Appropriate Site Development Dimension is 72 %.

To achieve optimum performance, the Property Manager must optimize the level of service, including the comfort of visitors which influences the level of sales and profits of traders.

It is good if the building uses environmentally friendly materials because people's awareness of healthy living is increasing over time. This is in line with the results of this study that the value of the Material resource and Cycle Dimension is 62 %. Environmentally friendly building materials in addition to helping the efficiency of

building maintenance costs, increasing visitor comfort because of the natural and natural atmosphere

Equally important, it is comfortable for visitors if the building is not noisy, the air in the building is clean and free from cigarette smoke because the visitors also want to enjoy a comfortable and healthy building. This is in line with this study that the value of the Indoor Health and Comfort Dimension is 65 %. The level of building visits is also supported by how the building manager makes visitors feel comfortable especially creating adequate air circulation and building lighting

CONCLUSION

The findings in this study indicate that property managers of malls in Indonesia agree to implement green building.

Besides, the findings of this study prove that the Property Manager should not only pay attention to profits but also the environmental aspects (planet) and the community (people). Thus, property management should have been carrying out sustainable building management.

The results of this study imply the practice of property management to implement green building standards and management standards for renovating old buildings or (retrofit).

The limitation in this study is the mall manager's understanding of green building principles. There are still mall managers who do not have a Greenship Professional certification

The recommendation for future study is that the respondents are mall managers who have a Greenship Professional Certificate. Besides, it is also reccommended to use primary and secondary data (mix method).

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