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## An Investigation of Decision Making Practice upon Sustainable Property Investment in Medan City, Indonesia

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### Abstract

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Property investment is done by developers. The property is then sold to the consumers to get a return. Sustainable property has not been well developed in Medan City, Indonesia. This research is conducted to find out and analyze the investment consideration on sustainable property made by the developers. The study involved 40 active members of the real estate association in Medan, which chosen at random from their list name. This research is quantitatively conducted along with an in-depth interview. The research findings indicate that the correlation of return of sustainable property and risk is negative and insignificant within alpha5%. Sustainable property development is related to the responsibility towards the environment and capability but not related with trend. Yet, it is not related to government's policy and accepted reward. The study can contribute to the development of policies and rewards by Medan City Authorities to encourage sustainable property development.

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**Keywords:** Sustainable Property, Property investment, Risk and return, Responsibility.

### 1. Introduction

Investment in the real estate sector has a great risk; therefore a developer needs to do investment analysis before making the decision (Anastasia, et al., 2001). Investors of property include investors /

landlord, owner / user, spec developer, tenant, and lenders. Decision type includes build, buy, operate, lease, and finance (Muldavin, 2010)

Investment analysis is the systematic evaluation of the capital outlays in relation to the expected income stream for the purpose of rendering an investment decision (Phyrr, 1989). Risk is uncertainty or variability that returns from an investment will be greater or less than forecast. Diversification of investments provides some protection against risk. Capital budgeting is the best way to make investment analysis.

David (2011) stated that real estate investment decision-making process starts from preparing phase consisting of envisioning stage and planning stage. In this case, the main consideration is the risk and return. The next step is transaction phase consisting of dealing stage and executing stage. The last step is observing phase consisting of watching phase and optimizing stage.

Real estate decision making process are: setting strategy, establishing risk / returning objectives, forecasting expected costs and returns, assessing investment risk, making risk-adjusted evaluation of forecasted costs and returns, implementing accepted proposals and post-auditing the performance of the operating investments (Sah, 2009).

Muldavin (2010) said that the failure by property investors to appropriately incorporate revenue and risk consideration into sustainable investment decisions has led into underinvestment in sustainability. But, the increasing government regulations and incentives and rapidly growing tenant's and investors' interest in sustainability, failure to properly incorporate value considerations beyond cost savings will increasingly result in sub-optimal financial results for investors.

There are three levels of decision; the strategic, tactical, and property-specific decisions (Muldavin, 2010). Strategic decisions are responsible for setting policy and allocating resources. The focus of this decision is risk. This decision assesses cost and benefit. The questions are, should we be in sustainable buildings? Which properties? Which attributes? Tactical decisions are about sustainable status, measurement of sustainability going forward, how fast the move is, the level of energy efficiency or sustainability, property type emphasis, and the phasing of the implementation. Property-specific decisions are about specification of property type, investment type, and geography. The questions are what is the property's value? Are benefits (return) sufficient to compensate for the risks taken?

Responsible investment property is a holistic approach for investment and sustainable property management which considers the risk and opportunities related to the sustainability of social, environment, and financial return aspects (Nalewaik, & Venters, 2009).

Sustainable development is an interesting topic in the construction industry in the last decade. Cajias and Piazzolo (2013) said that the concept of sustainability plays an important role for the government, the public, and especially for the real estate sector. It reflects not only the potential of the building to highly contribute to global change, but also the action and initiatives to reduce the negative impact on the environment. Sustainable property is usually realized in the form of green building with

eco-friendly design (Nalewaik, & Venters, 2009). Sustainable building is intelligently built: the holistic quality concept of environmental-friendly conserving resources and making its users comfortable and healthy (Nalewaik, & Venters: 2009)

Sustainable property is very useful. The owner of green building will have their savings from the lifecycle building and the cost of its maintenance. Inhabitants of the building will experience the increase in the quality of life. Experiencing good feeling is a social value. Green building also shows the value of the corporate responsibility (Nalewaik, & Venters: 2009). Cajias and Piazzolo (2013) added that in the context of energy conservation, the effect is in the reduction of greenhouse gas emission, the improvement of public health and community's welfare. In the context of finance, saving energy means optimizing the operational costs and reducing the cost of depreciation.

In Singapore, there are abundant green properties. It is very much different from Indonesia. This is supported by the effort of the government through the Building and Construction Authority which has introduced the funding ranging from \$ 250-million for the Construction Productivity and Capability Fund program to help improving the productivity and reinforcement capability in the construction industry (Ristonogreen, 2016). In Jakarta and Surabaya, there have been several regional regulations on the green building and also the provision of green building awards. The developers have also thoroughly applied the green concept. But in Medan, there haven't been many green buildings existed, neither have the developers who thoroughly apply the green concept.

This is possibly related to the financial problems. In Nigeria, A (2015) found that the major barrier in the development of sustainable property was finance. In Malaysia, the constraints is the lack of credit resources to cover the starting cost, investment risk, and the lack of demand for the price is getting high (Samari et al., 2013).

The advantage of sustainable designed building compared to the traditionally designed building was that the water use average was three percent less than usual, the energy consumption average was 29% better than the National average for office building, the average maintenance cost for sustainable buildings was 13% less than the average baseline costs, waste generation and recycling were below the baseline for the waste costs per occupant per year, occupant satisfaction of these buildings reviews scored 22% better than average, and the commute distance traveled and emissions from the identified transportation modes resulted in lower emissions than the average of the office worker's commute (Fowler and Rauch, 2008 in Muldavin, 2010: 63). Cajias, & Piazzolo (2013) also found that the efficiency of the building energy was up to 3.15% than the inefficient building.

According to Nalewaik, & Venters (2009) on their presentation in America, the material cost of green building has now been cheaper; the consultant cost is also cheaper due to the decreased learning curve.

The new strategy of investment can be known if the barriers can be eliminated. There are several barriers in developing a sustainable property such as regulation, incentives, investment costs,

investment risk, the expensive final sale price, lack of credit to cover the initial investment, lack of awareness, lack of demand, lack of strategy to promote green building, the lack of design and construction team, lack of expertise, lack of professional knowledge, lack of database and information about green building case studies, lack of technology, lack of government support (Samari et al., 2013). Government support can be in the form of financial incentives, in particular the property tax assessment incentives which have been widely adopted by several Commonwealth countries around the globe including Spain, Romania, Italy, Bulgaria, the United States, Canada, Malaysia and India (Shazmin et al., 2016).

One more important thing in investment decisions making is the value. The increase in the value of investment instruments shows the performance of these investments. Institute for Market Transformation and Appraisal Institute (2013) said that the value of green building will be greater than conventional building because the green building has higher rents, lower vacancy vs market, operational savings such as lower utility bills, maintenance, and reserves, and market recognition at sale.

The risk and return of the sustainable property are important to be studied because if there is no trade off between them, the development of sustainable property will not be done. Increasing property value is part of the return, therefore correlation between value and the development of sustainable property is important to be studied.

The responsibility towards environment and capability also presumably related with sustainable development property because usually they are factors driving people to act. From the initial interview with several developers, it is obtained an information that sustainable property is just a trend. This study want to test it.

The barriers in developing a sustainable property other than financial problems are government support and reward. This study want to test the relationship between them with the development of the sustainable property.

Many developers in the Medan City develop housing nowadays. But they have not yet fully implemented the sustainability concept. It is important to know whether this is due consideration of finance, capability, value, or the absence of a sense of responsibility towards the environment. There is no studies examine the association between risk and return in sustainable property investment and between the development of sustainable property with risk, return, value, responsibility toward the environment, trend, capability, government support, and reward. This study want to do that.

The research questions are : Is there any relationship between risk and return in a sustainable property performed in Medan? Do developers consider the risk and return, value, responsibility toward the environment, trends, capability, role of government, or accepted reward? This needs to be investigated in order to formulate a new strategy to increase the investment in sustainable property so as to create a sustainable environment for future generations.

The purpose of this study is to determine the relationship between risk and return in developing the sustainable property run by the developers performed in Medan. The other purposes are to investigate and analyze the correlation between the decision to develop a sustainable property with risk and return, value, responsibility toward the environment, trends, capability, role of government, and the accepted reward.

## 2. Research Methods

This research was conducted by correlational analysis to find the correlation between the variables of the study. The population of this research is 65 developers who are active members of association of real estate in Indonesia who live in Medan. Based on Slovin's formula, the sample size of 40 members was obtained. Sampling is done by simple random sampling based on their list name. The closed questionnaire with the interval scale was given to the respondents followed up with an in-depth interview. The response scale for the questionnaire items is as follows: 1 represents strongly disagree and 5 represents strongly agree.

The questionnaires administered were based on a pilot questionnaire whose validity and reliability had been tested on 30 developers who do not belong to the association. The invalid questions were discarded.

To sharpen this research, a short discussion with property experts and the Green Building Council of Indonesia in Jakarta was also conducted.

The variables used in this research were: Risk (A), Return (B), Value (C), Responsibility toward the Environment (D), Trend (E), Capability (F), Government Support (G), Reward (H), Development (I)

In the beginning, all of these variables were latent. But, when the validity and reliability analysis was conducted, some of them cannot be regarded as latent variables as they were invalid, that is Value (C), Government Support (G), and Reward (H). Table Validity and Reliability Results is in Appendix 1.

## 3. Findings

**Table 1.** Presents the result of descriptive statistics of the indicators in this research.

Descriptive Statistics			
No	Statement	Mean	Std. Deviation
A2	Investment in sustainable property is not profitable	2.35	1.231
A3	Return and risk in sustainable property investment are balanced	2.425	1.238
B4	Return from sustainable properties is higher than interest rate	2.625	1.212
B5	Sustainable properties have short payback period than conventional property	3.45	0.749
C4	Sustainable property has high appreciated value	3.8	0.823

D1	Sustainable property is urgent to be realized	3.95	1.218
D2	Responsibility towards environment is important	4.475	1.085
D3	I will develop sustainable property	3.875	1.113
D4	Building with sustainable concept may safe energy efficiency	3.825	1.106
D5	Developer has a responsibility on environment	4.25	0.898
E2	Sustainable property is only a trend	2.95	1.085
E3	Sustainable property is suitable to be applied in high class housing	2.775	1.310
E4	Sustainability property is suitable to be applied in commercial building	3.35	1.350
F1	My team can develop sustainable property with efficient cost	3.65	1.098
F2	Developer team can develop sustainable property with good design	4.025	1.049
F4	I have experience in developing sustainable property	3.625	1.005
G1	The government policy supports sustainable property development	3.425	1.298
H3	There is an appreciation in the form of reward for developers that apply the sustainability concept	3.325	1.639
I1	I have developed sustainable property	3.125	1.471
I2	I have developed housing with water efficiency	3.425	1.238
I3	I put up green space in my property project	3.725	1.281
I4	I use the eco-friendly material	3.725	1.154
I6	Developer has developed quick access path	4.175	0.957

Based on Table 1, the three lowest scores are A2, A3 and B4 which means on the development of sustainable property, trade off between risk and return is less balanced although return is still obtained. The three highest scores are in D2, D5, and I6, which means the developers' responsibility to the environment is good and they developed quick access path as a form of development of sustainable property. According to the Green Building Council Indonesia, community accessibility is part of greenship assessment to the Appropriate Site Development sector. Quick access path can save the cost of gasoline and it is in accordance with the sustainability concept.

The greenship assessment points for building certification by Green Building Council Indonesia are: energy efficiency and conservation, water conservation, indoor health and comfort, building environment management, appropriate site development, and material resources and cycle (Green building Council Indonesia, 2013). Energy efficiency and conservation focus on electrical sub metering, OOTV calculation, energy efficiency measures, natural lighting, ventilation, climate change impact, and on-site renewable energy. Water conservation concerns on water metering, water calculation, water use reduction, water fixtures, water recycling, alternative water sources, rainwater harvesting, and water efficiency landscaping. Indoor health and comfort pay attention to things related to outdoor introduction, CO<sub>2</sub> monitoring, environmental tobacco smoke control, chemical pollutants, outside view, visual comfort, and acoustic level. Building environment management pays attention to things related to the basic waste facility, GP As a member of the design team, pollution of construction activity, advance waste management, proper commissioning, fit out agreement, and occupant survey. Material resources and cycle pay attention to the building and material reuse, fundamental refrigerant, environmentally processed product, non-ODS usage, certified wood, modular design, and regional

material. Appropriate site development focuses on the basic green area, site selection, community accessibility, public transportation, site landscaping, micro climate, and storm water management.

Risk and return on sustainable investment are less covered. In fact, risk is the focus in strategic decision about sustainability property (Muldavin, 2010). Five major risk categories as being the most significant in construction industry are financial, standard of care / legal, performance, consultants / sub consultants and subcontractors, and regulatory (Muldavin, 2010). This research found that there was financial risk in sustainable property investment.

Muldavin (2010) said developers as an investors are concerned about their short holding period and getting paid for investments, but equity investors are concerned about risk, return, and payback period. In Medan, the developers consider all these things, namely short holding period, getting paid for investments, risk, return, and also payback period.

**Table 2.** Correlation between risk and return ( $\rho$  Value in parentheses)

	Risk
Return	-0.091 (0.575)

The coefficient of correlation between risk and return is -0.091 with  $\rho$  value 0.575 that means there is a negative and insignificant correlation between them. The higher the risk, the lower the return, but it doesn't always exist in each of the observation. This result does not conform with the notion of high risk high return in investment management theory. Cajias, & Piazzolo (2013) stated that investment done regarding to the energy saving should have covered by the financial advantage

**Table 3.** Coefficient of Correlation among Development and Other Variables in this Research ( $\rho$  Value in parentheses)

	Develop (I)
Risk (A)	-0.536 (0.000)
Return (B)	-0.431 (0.006)
Value (C)	0.493 (0.001)
Responsibility (D)	0.503 (0.001)
Trend (E)	0.009 (0.955)
Capability (F)	0.717 (0.000)
Government Support (G)	0.285 (0.074)
Reward (H)	-0.204 (0.207)

The correlation between sustainable property development and responsibility towards the environment is moderate but significant at 5% alpha. The developers develop sustainable property when they have responsibility towards the environment. The developers also develop based on their

capability. But, the correlation with the trend is positive and insignificant at 5% alpha. That means the developers develop the sustainability property without being influenced by the trend. They did it solely on responsibility and capability even though they knew that he had low return. It can be seen from the coefficient of correlation between sustainable property development and returns, namely -0.431 with  $\rho$  value 0.006.

The variables of government's policy and accepted reward cannot be considered latent since they are not valid and reliable. So, these variables leave only one question, each of them is the government policy which is currently supporting the development of sustainable property, and there is a reward to developers who develop sustainable property. These two variables are positive and insignificant with 5% alpha. The coefficient of correlation between sustainable property development and government support is 0.285 with  $\rho$  value 0.074. The coefficient of correlation between sustainable property development and reward is -0.204 with  $\rho$  value 0.207. (I 12346 and H3). That means, there is still lack of government's support and reward.

Correlation between sustainable property development with sustainable value of property is positive and significant. That means, the developers invest by knowing that the appreciation of property values would be high. Asses benefit is an important part of strategic decision (Muldavin, 2010). Muldavin (2010) said that investors must be able to evaluate the financial implications of sustainable property investment, regardless of whether an appreciation has been achieved.

In this research, it was found that the developers know that sustainable properties are urgent, but do not fully apply them. According to property experts in Jakarta, market just seeks the property with low cost in the beginning. Sustainable property need higher cost in the beginning but low cost when they operate. In Medan most consumers did not think in that way, they prefer cheap in the beginning despite having awareness of the environmental as well. It is same with the selection of fuel, even though they know there is an environmentally friendly fuel that can make the vehicle performs better in the long term, but the consumers still look for the cheap one. If consumers are conscious and willing, the developer will surely follow the market demand.

#### **4. Conclusions and Implications**

Developers in Medan City have taken the decision to invest in sustainable property at a rudimentary level. They provide the open green space, create a design with lots of openings which save electricity, and build quick access path. Water efficiency and the use of environmentally friendly materials have been made but this is not yet at the perfect stage. This is done because of the responsibility, capability, and the belief that property values will increase. They get a small return but face a big risk. Besides, government policy and the reward for such projects are still lacking. That is why the level of green investment made is still low.

However, homeowners who have bought houses from developers will usually grow their own trees to have more green spaces, and some even add their own solar panels if they want. With the increase in energy prices and the subsequent change in attitudes, consumers will consider greenish in their home buying process and development.

The trade off between risk and return of sustainable properties may be experienced in the long term. Learning curve will show the development of sustainable property construction and operational cost savings in the long term. If this is realized by the developers and consumers, the return obtained will be increased and the risk will be reduced. Returns obtained are in the form of tangible and intangible. Health for all for the present and future generations is also a sustainable return of the property. Raising awareness through dissemination of sustainable property needs to be done.

In addition, the Ministry of Public Works and Housing can coordinate with the Ministry of Finance in order to provide property tax discounts to developers who develop sustainable property and do not build housing on peat or swamps. They can make another policy and regulation to enhance the sustainable development of the property. Then, the ministry can also cooperate with the Ministry of Energy to provide incentives for the use of diesel fuel for developers who implement integrated waste management system.

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**Appendix 1. Validity and Reliability Results**

Variable	Indicator	Validity		Reliability	
		Corrected Item -Total Correlation	Meaning*	Cronbach's Alpha	Meaning
Risk (A)	A1 Risk in sustainable property greater than conventional property	-0.684	Not valid		
	A2 Unprofitable investment	0.935	Valid	0.953	Reliable
	A3 Return and Risk balancing	0.950	Valid		
	A4 Sustainable property cost is expensive	0.822	Valid		
A5 Sustainable property is done to get profit	0.140	Not Valid			
Return (B)	B6 Sustainable property is opportunity to be captured	-0.343	Not Valid	0.856	Reliable
	B2 Sustainable cost property is not expensive	0.659	Valid		
	B3 Net present value will be positive	0.974	Valid		
	B4 Return is greater than interest rate	0.784	Valid		
	B5 Payback period is faster than conventional Property	0.467	Valid		
Value (C)	C1 Facilities that support sustainability will increase the value of the developer's company	0.253	Not valid	0.772	Reliable
	C2 Sustainable property has greater value	0.346	Not Valid		
	C3 Sustainable property has greater rent income	0.649	Valid**		
	C4 Sustainable property has high Appreciated value	0.811	Valid		
	C5 High efficiency of sustainable property will increasing property value c5	0.836	Valid**		
Responsibility (D)	D1 Sustainable property is urgent to realized	0.845	Valid	0.914	Reliable
	D2 Responsibility towards environment is important	0.748	Valid		
	D3 Willingness to build sustainable property	0.895	Valid		
	D4 Sustainable building may save energy efficiency	0.749	Valid		
	D5 Developer has responsibility on environment	0.694	Valid		
Trend (E)	E1 Sustainability property is in demand	-0.456	Not Valid	0.815	Reliable
	E2 Sustainable property is only a trend	0.631	Valid		
	E3 Sustainable property is suitable to be applied in high class housing	0.635	Valid		
	E4 Sustainable property is suitable to be applied in commercial building	0.796	Valid		
Capability (F)	F3 Sustainable property design has had efficient electricity	-0.158	Not Valid	0.951	Reliable
	F1 Can develop sustainable property with efficient cost	0.949	Valid		
	F2 Can develop sustainable property with good design	0.829	Valid		
	F4 Have experience	0.918	Valid		
Government Support (G)	G1 The government policy supports sustainable property development	0.026	Not Valid	0.051	Not Reliable
	G2 The Government give fiscal stimulus	0.026	Not Valid		
Reward (H)	H1 Appreciation in the form funding facility	0.313	Not Valid	0.580	Not Reliable
	H2 Appreciation in the form indirect financial inventives	0.616	Valid***		
	H3 Appreciation in the form reward	0.317	Not Valid		

## Appendix 1 - Continued

Variable	Indicator	Validity		Reliability	
		Corrected Item -Total Correlation	Meaning*	Cronbach's Alpha	Meaning
Development (I)	I1 Develop sustainable property	0.428	Valid	0.860	Reliable
	I2 Develop housing with water efficiency	0.840	Valid		
	I3 Put up green space in property project	0.806	Valid		
	I4 Use the eco-friendly material	0.697	Valid		
	I5 Develop sustainable property if there is coercive rules	0.651	Valid**		
	I6 Develop quick access path	0.615	Valid		

\* If corrected item – total correlation value greater than r-table value as 0.361 (n=30, alpha=5%) the variable is valid

\*\* Valid but discarded because respondents find it difficult to answer

\*\*\* Valid but the variable not a latent variable because just have one indicator