

Millennials' Perception toward the Residence with Green Building Concept

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Abstract—The purpose of a green building is to make it environmentally responsible, economically beneficial, as well as to serve as a place to live and a healthy workplace. The essential factor in successfully applying this building concept is the consumers. Consumers as individuals have various factors influencing their behavior, which include determining how they perceive the green building concept as a fulfillment of their primary needs. A residential with green building concept supports the improvement of the sustainable development concept's three main pillars; they are the environmental, economic and social quality improvement. The purpose of this research is to find out and to explore the millennial generation consumers' perception toward residential with green building concept. The qualitative method with phenomenological approach is employed to explore deeper perceptions of millennial generation informants living in green-concept residential areas. The results reveal that their perception of a green building is that it has a comfortable and green environment, is economical but expensive and requires high-cost. This is because the millennials understand only a small portion of the overall green building concept. So in order to support the development of green building, the government and organizations need to educate the millennials in regards to the concept.

Keywords—Perception, Millennial Generation, Green Building, Qualitative Research.

I. INTRODUCTION

The building construction industry is one of the industries that consume a lot of land-use, energy and water resources; even most of construction raw materials are collected from the nature [1]. Therefore, it is necessary to apply the concept of sustainable development in the building construction industry. This application is then known as the Green Building concept. 'Green' has become the short term for sustainable development concept as applied to the building construction industry. Green buildings refer to the buildings expected to be environmentally responsible, economically beneficial, as well as to serve as a healthy place to live and work. Thus, green building aims at reducing and eliminating negative impacts on the environment by improving unsustainable building quality in terms of planning and implementing design, construction, and operational practices which ultimately result in green housing; which include residential, apartments, condominiums and offices [2].

In Indonesia, there are many housing and settlements that have exceeded the carrying capacity; this leads to offering the environmentally friendly housing construction to the community [3]. A residential with green building concept is a new trend nowadays as most Indonesian consumers have different perspectives when dealing with choices to consume environmentally friendly or green products. Some of them share the same awareness and purpose in saving the environment. However, some of them are influenced by the culture of only buying the best products [4]. In addition to that, some consumers are buying things with quite a number of considerations. So, some of them attend to the issue of sustainable development and have the motivation to change from the conventional to environmentally friendly practices.

The important elements for the housing market with green building concept to thrive are the consumers, industry and government. Nevertheless, consumers are indisputably the important factor contributing to the success of marketing and developing environmentally friendly housing. Consumers as individuals have various factors that influence their behavior, which include determining how they perceive the green building concept as a fulfillment of their primary needs. This is because the concept of green building residential have a positive impact on residents and the surrounding environment, that support the improvement of the three main pillars of the sustainable development concept: the environmental, economical and social quality improvement.

Schmeltz's research [5] points out that millennials seem to pay more attention, to preserve, and to have a positive attitude toward saving the environment as a result of their better knowledge of the environment than the previous generation, as it was taught since they were children [6]. Therefore, it is expected that in the future they will be able to contribute a better impact by bringing forth new rules that support sustainable development. On the other hand, a research conducted by Hume [7] asserts that although they have a positive attitude towards the environment, this does not lead them to buy environmentally friendly products.

Based on the previous explanation, this research focuses on millennial generation consumers. Millennial generation has great potential and is the majority of residential consumers with green building concept in the future. Therefore, it is important to find out and to study their perception of a residential with green building concept. This research is the first step in discovering the millennial consumers' perception toward green building as the basis of determining the residential development model for the millennial generation segments.

II. LITERATURE REVIEW

A. The Green Building Concept for Residential

Green building is a concept to design a building that employs an environmentally friendly architectural approach. Some factors in the green building concept are: life cycle assessment (the AMDAL test), structural design efficiency, and energy efficiency. To design a residential with a green building concept means minimizing the impact caused by the building, both during the execution and utilization [8]. The benefits of applying green building concept to a home design are: 1) The buildings are more durable and long lasting, with minimal maintenance, 2) The energy efficiency makes spending money more effective, 3) The buildings are more comfortable to live in, 4) Having a healthy life, 5) Participating in the environmental concern. Green architecture brings energy efficiency in buildings as an impact to the environment; this is a form people's response to the climate change. It is also a step in improving behavior as well as the technology towards residential as the place of human activities which can greatly contribute to overcoming the global warming.

B. The Millennial Generation Consumers

According to Kotler and Armstrong [9], millennial generations are groups of people born in between 1978-2000. However, different sources propose different definition; according to Kim et al. [10], millennial generations are groups of people born in between 1980-1997. Millennial generation is a group of potential consumers; thus, they attract the marketers because they are technologically intelligent, they can get any information about any products easily, and they are brave to take risks [11]. In particular, Indonesia's number of millennial generations constitutes one third of the nation's total population which is approximately 80 million people in 2015; they are truly a huge market potential.

Currently, the rapid technological development eminently influences the millennial generations to consume and purchase the desired products. Their typical characteristics influence their purchasing behavior [12]; therefore, the millennials are convinced that most of their activities negatively contribute to the global climate change, and this ultimately encourages them to buy the environmentally friendly products. The consumer market analysts even estimate that millennial generation has greater purchasing power than previous ones [10].

C. The Consumers' Perception

In a narrow sense, perception means how someone sees something, while in a broad sense, perception is a view or understanding of how someone perceives or interprets something. Perception is a process of using the acquired knowledge (which is stored in one's memory) to detect or to obtain and to interpret the stimuli received by the sensory apparatus. In précis, perception is a process of interpreting or construing information obtained through the human sensory system [13].

In terms of psychology, a person's behavior is a function of the way he perceives. In the perception process, the following are its three main components [14]:

1. Selection: the process of filtering the external stimuli by the senses, while the intensity and type can be in great or small number.
2. Interpretation: the process of organizing information so that it has meaning to someone. Interpretation is affected by diverse factors, such as one's past experience, the system of values that one adheres to, motivation, personality, and intelligence. Interpretation also depends on one's ability to carry out complex information categorization.
3. Interpretation and perception are then translated in the form of behavior as a reaction.

So, the process of perception is to select, interpret, and bring information together that is to be construed into behavior.

III. RESEARCH METHOD

This is a qualitative research [15] employing exploratory method [16]; in which it develops dynamically, is developed based on open-ended questions, text analysis and interpretation of themes or patterns. A qualitative research seeks to explore information in depth and is open to all opinions by asking the research subjects to express their responses and thoughts about the topic under study without guiding them in a great deal of directions.

In a qualitative research, collecting data does not prioritize the population size or sampling; in fact, the sampling can be very limited. If the collected data is sufficient to represent or explain the phenomenon under study, the researcher will not continue to search for more data. This is because a qualitative research focuses on the data's quality, not on their quantity [17].

The location of this study was in Malang city. It was conducted by purposively determining the respondents who were the residents of several housing in Malang city belonging to the main criteria as the millennial generation. Having the concept of environmentally friendly areas or using "green" as a regional identity is the criterion of the housing's location. Malang city was chosen since it is one of the Green City models from Indonesia in the Southeast Asia Region.

The subjects of this study are the informants who are trusted in providing an explanation of the topic being studied, are able to provide the reality, and do not deliver biased opinion; this is to consider that the informants' responses can be utilized for supporting the validity of a qualitative research. The criteria for the informant of this study are he/ she must be a resident of a housing in an environmentally friendly residential area in Malang city, he/ she has been living in the area for at least 1 year, and his/ her age is between 18-40 years old.

Interviews were carried out as the data collection technique. The aim of the interview is to obtain a more profound understanding of the topic by exploring the informants' opinions about people, events, organizations, feelings, motivation, guidance, concern, as well as reconstructing events that occurred in the past, and projecting the past events expected to happen in the future. Afterwards, the informant verified, altered and expanded the responses

which would later be improved by the researcher. In this study, structured interviews were applied by preparing the questions of which the composition was identical for each informant. It is possible to deepen each question depending on the informant's condition and the interviewer's skills. The purpose of the questioning is to avoid widening the topic and making mistakes in asking the questions. The data analysis in this study is based on Miles and Huberman's models of qualitative methods analysis. The steps are data reduction, categorization, synthesis, and working hypothesis arrangement.

In a qualitative research, the validity of data is also needed in order to make the collected data represent the phenomenon being studied with an acceptable degree of truth. Regarding the validity and reliability of the data, the researcher put the method of triangulation and comparing the data with references into use. Triangulation is a method of checking data validity by checking or looking for comparisons to that data. Whereas in this study, the triangulation of sources is used to compare and check the confidence level of a data obtained through different times and tools in a qualitative research. One of the methods is to compare the interview results of one informant to another [18].

In addition, the researcher also applied the method of comparing reference materials. Reference material is a supporting material to prove the data discovered. For example, the interview data needs to be supported by records/transcripts of the interviews, photographs or authentic documents to support the data credibility. This method is also performed by comparing the results of previous studies.

IV. ANALYSIS AND DISCUSSION

The in-depth interview results, supporting data analysis, and literature studies were processed using qualitative data processing methods. As previously explained in the research method, the data was encoded to find similarities which were then summarized in the sub-theme; and three major themes related to the millennial generation's perception of residential with green building concept were finally found. The three millennial generation's perceptions are discussed below.

A. Residential with Convenient and Green Environment

Millennial generation's perceptions of green building are interpreted as the understanding that residential have a convenient environment. All informants shared a common concept regarding to this. In their view, a green building is highlighted on the environmental matters. They still assume that the green concept concerns about the residential, for example: having shady plants, having green and wide gardens, and having wide roads. Their views are exemplified by an informant named SC saying as follows:

"Green building, in my opinion, is a building that is within a beautiful environment with a large garden, a lot of greenery and trees, with decent playing areas; maybe it can be described as a villa in a large area with beautiful flowers and plants."

The informant described a concept of a building within an environment dominated with green areas. This demonstrates

that the informant's understanding of green building has not come to the building itself. Notwithstanding, other six informants shared the common view of the building environment. The dissimilarity is in terms of the "green" concept that has come into the building itself; for instance, an informant suggests that green buildings are not all covered by concrete but they have open areas that can be furnished with plants or flowers placed in floor or hanged pots. This is illustrated by the statement of an informant named EV as follows:

"Green building is a building in which there are living plants functioning as a room freshener, whether they are placed in pots on the terrace, or in a room; or is a building that has an indoor garden for ornamental plants or grass. Now in fact, just like the latest trends, there are multi-storey buildings of which each floor has a garden. But the important thing is that the building environment has shady trees so that the surrounding looks green; so it is not green inside but barren outside."

Such perception is not entirely mistaken because the informants have limited knowledge about green building, and there is inadequate availability in literature that is easy for them to read and to find out. Moreover, the way they perceive the concept becomes understandable when looking at their environmental background, since they rarely or even never discuss green building. The informants only hear or read pieces of information from the electronic or printed media. This can be seen from their interviews as most of them demonstrated misunderstanding when asked about their experiences in seeing or encountering green buildings in their lives. Their statements are only a reflection of their thoughts based on the words of 'green building'.

The informants of this study are not the only ones understanding the concept of green building associated with the environment; some experts assert the same thing, such as Holmgreen et al. [19] and Wimala et al. [20]. Millennial generation's understanding of green building associated with the surrounding environment supports the results of a research conducted by Wijyaningtyas [21]; thus, the respondents of Wijyaningtyas' research are not different from the informants of this study.

B. Economical

Another millenials' perception of a green building is related to the cost factor. The costs as they refer to are still limited to electricity related to the use air conditioning. Since the residential has gardens, the plants will chill the room. The plants can function as the room cooler which will significantly reduce the use of air conditioning. In their understanding, it will potentially reduce the electricity consumption greatly by doing so. This is what the informants understand about the concept of a green building: a green residential will certainly be more economical than an ordinary house.



Fig. 1. The Advantages of Residential with Green Building Concept [2]

This view is still too narrow when compared to green building theories according to Elias et al. [2] stating that green building supports the three pillars of sustainable development with a number of advantages as displayed in Figure 1. This is what makes the millennial generation's view different; they only perceive from the narrow scope which is reducing the use of air conditioning, while experts have broader evidence and understanding which include the retrenchment in lights and water use. When viewed from the previous findings, this understanding is quite reasonable since their view of a green building is still limited to the green area around the building.

C. Expensive Price and High-cost

The millennials also hold a perception that even though the green building concept is economical and advantageous, they cannot afford a green residential because it is more expensive than a conventional one if it is related to their purchasing ability. Most of the informants stated that developers sell residential with green building concept at high prices and it is difficult for them to buy a residential that exceeds their purchasing ability. This is based on an interview with an informant named DN stating that he was able to buy a residential below 250 million rupiahs; while in average, the price of a residential with green building concept offered by the developer is above the number. Their perception can be seen from interviews with an informant named FD as follows:

"I am personally very interested in possessing a green building concept residential because there are certainly a lot of advantages for both my family and me; but considering my purchasing ability, I cannot afford the prices offered by the developer."

There was also a perception of an informant named EV stating that even though he could afford purchasing a residential with green building concept, he felt reluctant because he was worried that he would not be able to care for

and maintain the residential's facilities in the future. This is illustrated by the following statement:

"I want to have a residential with green building concept, but I have a concern... whether in the future I can maintain and care for a residential with a green building concept. In the future, it is possible that I will pay a lot of money if I keep maintaining the green building concept so that it costs me more expensively than an ordinary house. "

The informants' perceptions stating that residential with green building concept are expensive and high-cost are not at fault. The reason has been pointed out in the discussion of theme 1 asserting that some of them have not fully understood the concept of green building and its application. At the time of the interview, they stated that based on the information they read, many expensive features are used in residential with green building concept. Not to mention that from the housing exhibition they visited, the developers gave expensive prices on the average; and the offer of a residential with green building concept was not compatible with the informants' purchasing ability.

This condition is similar to the research conducted by Zainoordin in Malaysia [22], which is also a developing country in the Southeast Asia region, and having almost the same citizens' characteristics. The results of the study revealed that more than 85% of the respondents were not ready and could not afford to buy a residential with green building concept due to financial shortcoming.

The informants' perception related to financing can be perceived as their initial understanding of residential with green building concept that still do not go in line with the research conducted in the United States. The research proves that green building can save operational costs up to 15%. Therefore, all stakeholders are expected to work together to be able to provide understanding and to actualize the concept of green building to the millennial generation at their best effort.

V. CONCLUSION

From the results of the discussion, it can be concluded that the millennial generation's understanding of a green building is still depthless. The concept of green building is limitedly understood to matters relating to plants or green areas around and inside the residential. Their understanding is far from the concept of green building at the present. Experts have discussed green building more than just a green environment; it also includes land use, energy saving, water conservation, material recycling, indoor health and convenience, and the management of building's environment. According to this conclusion, one should educate the millennial generations before offering the concept of green building. Their lack of understanding will make the offering process difficult. Therefore, educating the prospective consumers about the concept of green building has become essential.

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