

## **ANALYSIS OF BUILDING MATERIALS FOR SIMPLE BUILDING FLOOR COVERINGS**

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### **Abstract**

This study aims to analyze the variation of building materials used as floor coverings in simple buildings. Through a quantitative approach, this study examined three types of floor covering materials that are often used: ceramic, vinyl, and cement. The sample was taken from five simple buildings in urban areas and five in rural areas. The variables assessed include cost, durability, comfort, and ease of installation. The data were analyzed using descriptive and inferential statistics to compare the effectiveness of each material. The results showed that ceramics, although more expensive, offered better durability and aesthetics, while vinyl stood out for its comfort and ease of installation. Cement floor coverings, meanwhile, are an economical option but lack in durability and comfort. The study recommends the use of ceramics for high-traffic areas and vinyl for areas that require comfort at a lower cost. This finding is expected to provide guidance for builders and homeowners in choosing floor covering materials that suit their needs and economic conditions.

**Keywords:** Building Materials; Building Floor; Building

### **Introduction**

The floor is defined as one of several elements that make up the architecture of a building, its existence is absolute, essential so that it will form the identity and character of a house or building. Structurally, the floor is generally composed of floor slab reinforcement (pedestal and field) and combined with a concrete mixture. Similar to other structural elements such as foundations, columns and beams, the material that makes up the floor is generally a reinforced concrete structure. The identity and character of a building, in this case a residential house, is generally determined by the type of floor covering finishing material.

In general, the floor covering materials that are widely available on the market can be divided into 2 categories, namely: natural floor covering and artificial floor covering. Solid wood (teak, merbau, lime, iron, etc.), plywood, wood powder, and various rocks sourced from nature such as marble, granite, natural stone/pasted brick, and limestone are natural types of floor covering. Meanwhile, cement, ceramics, mosaics, tiles, MDF, tarakota, terrazzo, and vinyl are categorized as artificial floor coverings.

Natural materials, with superior aesthetics and durability, are often the top choice for giving a luxurious and natural impression to the interior of a building.

Solid wood, for example, offers a distinctive warmth and beauty, while marble and granite give it an elegant and luxurious feel. However, these natural ingredients usually require special care to maintain their quality and appearance.

On the other hand, artificial materials such as ceramics and vinyl offer advantages in terms of ease of maintenance and more economical costs. Ceramics, for example, are resistant to scratches and easy to clean, making them a practical choice for many types of spaces. Vinyl, with a variety of designs and patterns available, allows for flexibility in interior design without having to sacrifice aesthetics.

In the selection of floor covering materials, there are several problems that are often faced by builders and homeowners. Some of them are as follows: Durability and durability are the main factors in choosing a floor covering material. The floor must be able to withstand loads, resistance to scratches, and withstand daily wear and tear. Natural materials such as marble and granite are known to have good durability, but they require special care. Meanwhile, artificial materials such as ceramics and vinyl are more resistant to scratches and do not require intensive maintenance.

Aesthetics is an important consideration in the selection of floor covering materials. Natural materials such as solid wood and marble give it an elegant and luxurious look, and it gives it a natural and warm feel. However, inconsistent color variations and patterns on natural materials can be challenging. In contrast, artificial materials such as ceramics and vinyl are available in a variety of uniform designs and colors, allowing for flexibility in interior design.

Ease of maintenance is another factor that is an important consideration. Floor covering materials that require intensive maintenance can be an additional burden for homeowners. Natural materials such as solid wood and marble require special care to maintain their beauty, while artificial materials such as ceramics and vinyl are easier to care for and clean.

Cost is a determining factor in the selection of floor covering materials. Natural materials such as marble and solid wood tend to be more expensive in terms of both purchase and installation. In addition, the cost of maintaining natural materials is also higher than artificial materials. Artificial materials such as ceramics and vinyl offer a more economical alternative with more affordable prices and low maintenance costs.

In an era of increasing environmental awareness, the environmental impact of floor covering materials is also an important consideration. Natural materials, although they appear to be more environmentally friendly because they come from natural resources, can have a negative impact if not managed properly. Illegal logging and unsustainable extraction of natural stones can damage the environment. Artificial materials, on the other hand, are often made from chemicals and production processes that can pollute the environment, although some types such as ceramics and terrazzo can be made from recycled materials and are more environmentally friendly.

This study aims to find out the best floor covering materials to use, both from the natural and artificial categories. In addition, this study will also evaluate the types of materials that have advantages in terms of durability, aesthetics, ease

of maintenance, cost, and environmental impact. Thus, the results of this study are expected to provide a comprehensive guide for architects, interior designers, and homeowners in choosing floor covering materials that suit their needs and preferences.

## **Research Methods**

This study aims to evaluate the best floor covering materials to be used from the perspective of builders and homeowners who have direct experience in the installation and use of various types of floor coverings. The research method will include data collection techniques through questionnaires and interviews, as well as systematic data analysis techniques to obtain comprehensive and in-depth results.

### **1. Research Subject**

The subjects of the study are builders and homeowners who have experience and practical knowledge in the installation and use of various types of floor coverings. A total of 30 participants will be selected purposively to ensure that they have relevant and significant experience in this field.

### **2. Data Collection Techniques**

The data collection technique will include two main methods: questionnaires and in-depth interviews.

#### **1. Questionnaire**

The questionnaire will be distributed to builders and homeowners who are selected as respondents. This questionnaire will be designed to collect information related to their experiences, perceptions, and preferences for different types of floor coverings. The questions in the questionnaire will cover aspects such as ease of installation, durability, maintenance, cost, and material efficiency. This questionnaire will allow researchers to collect quantitative data that can be analyzed statistically.

#### **2. In-Depth Interviews**

In-depth interviews will be conducted with a number of builders and homeowners who are selected on a purely basis to gain a deeper understanding of practical considerations, functional needs, economic aspects, and sustainability in the selection of floor coverings. These interviews will provide an opportunity to explore individual perspectives and experiences in detail, as well as allow researchers to ask additional questions or gain clarification on the answers provided.

### **3. Data Analysis Techniques**

The data collected through the questionnaire will be statistically analyzed to identify patterns and trends in the preferences and perceptions of builders and homeowners towards different types of floor covering materials. Statistical analysis will include the use of descriptive methods such as averages, medians, and frequency distributions to describe the characteristics of respondents and their answers.

The data collected through in-depth interviews will be analyzed qualitatively using thematic analysis methods. Researchers will identify the key themes that emerge from the interview transcripts, as well as categorize and

interpret the data to understand the individual's perspectives and experiences more deeply.

## Result and Discussion

This study used a questionnaire with a rating range of 1-4 to evaluate the preferences and perceptions of builders and homeowners towards natural and artificial floor coverings. The results of the 30 respondents showed the average assessment as follows:

### Analisis Bahan Bangunan

Lapisan penutup lantai alami							
No	Aspek	Kayu Solid	Parket Lapis	Parket laminate d/HDF	Marmer	Granit	Batu Kapur/Limestone
1	Standar SII/SNI	2	3	4	2	3	3
2	Mutu	4	3	3	4	4	3
3	Kekuatan	4	3	3	4	4	3
4	Ekonomis	2	2	2	1	1	2
5	Daya Tahan	4	3	3	4	4	3
6	Mudah dikerjakan	4	4	4	1	1	3
7	Mudah didapatkan	3	2	1	1	2	1
8	Ramah Lingkungan	3	3	3	3	3	3
9	Keuntungan	4	4	2	4	4	4
10	Kelemahan	2	2	2	5	3	2

### Analisis Bahan Bangunan

Lapisan penutup lantai Buatan									
No	Aspek	Keramik	Vinyl	Parket Sintesis	Karpet	Mozaik	Tegel	Terakota	Teraso
1	Standar SII/SNI	4	4	4	2	3	4	3	3
2	Mutu	4	3	3	3	3	3	3	3
3	Kekuatan	4	3	3	3	2	3	3	3
4	Ekonomis	4	2	2	1	1	2	3	2
5	Daya Tahan	4	3	3	2	2	3	3	2
6	Mudah dikerjakan	4	4	3	4	1	4	4	4
7	Mudah didapatkan	4	2	1	2	2	2	2	2
8	Ramah Lingkungan	4	4	4	4	4	3	3	3
9	Keuntungan	4	3	2	3	3	3	3	3
10	Kelemahan	1	3	3	2	2	2	2	2

1. Natural Ingredients: Average score 2.88
2. Artificial Materials: Average score of 2.87

Although the average score of natural and artificial ingredients is very close, natural ingredients are slightly higher with a score of 2.88 compared to artificial ingredients which get a score of 2.87. This shows that overall, craftsmen

and homeowners give almost equal ratings between the two types of materials, but slightly prefer natural materials.

With a rating range of 1-4 to evaluate the preferences and perceptions of builders towards the type of material, the highest average results were:

3. Natural Materials with solid wood type: score 3.2 with good category
4. Artificial Materials with ceramic type: score 3.7 with good category

## **Conclusion**

This study aims to evaluate the best floor covering materials to be used from the perspective of builders. The results showed that natural and artificial ingredients had almost equal assessments, with an average score of 2.88 and 2.87, respectively, both in the category of quite good. Nonetheless, natural materials are a little preferred by craftsmen and homeowners.

Further research shows that: Natural materials with solid wood types are most in demand by craftsmen and homeowners, mainly because of their aesthetics and durability. Artificial materials with ceramic types are considered very effective because of their ease of installation, economical cost, and good durability.

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