

# Implementation of Eco-Interior Cafe Design in The New-Normal Era in Malang City

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**Abstract.** Cafe interior design that supports health protocols in new normal conditions will be essential to keep cafes safe to visit. In this new-normal era, the implementation of good circulation for public areas is critical and has become one of the main concerns of cafe visitors. Good circulation is one aspect of the eco-interior concept that existed before the pandemic. Eco-interior is an interior building concept that emphasizes sustainability and the reciprocal relationship between humans and the surrounding environment. This study aims to determine the considerations of visitors in choosing an indoor or outdoor café to be visited in the new-normal era. The case study that will be analyzed is a cafe in Malang City, which is still in demand by visitors in the new-normal period. The research method used is descriptive qualitative. Research data were obtained through field studies, interviews and questionnaires. As a result, most visitors choose to visit cafes with outdoor or semi-outdoor areas with smooth air circulation compared to cafes in indoor spaces. From the analysis results based on the eco interior parameters, the application of ventilation in the café is at the ideal stage, while the pollution control in the café area is a substantial effort.

## 1 Introduction

A café is one type of restaurant classification according to activities and the food and drinks served; a café is a place to eat and drink fast food and presents a relaxed or informal atmosphere [1]. Nowadays, cafes are places for all people to meet, do assignments, work, or buy food and drink [2]. However, since the COVID-19 pandemic, there has been a change in freedom of activity to suppress its spread [3]. These changes are marked by government regulations implementing health protocols, including maintaining distance, staying away from crowds, and limiting mobility and interaction [4].

In this new-normal era, there are many changes in various activities, including changes in the habits of visitors to the café [5, 6]. A café is a public place visited by many people. However, in the new-normal era, which must implement health protocols such as maintaining distance and anticipating crowds, cafes reduce the capacity of visitors. This change in habit will also lead to changes in needs in the café room [3, 5]. Limiting the number of visitors based on government regulations through the COVID-19 task force aims to implement social distancing to suppress the spread of the virus.

According to the Minister of Home Affairs Regulation No. 38 of 2021 regarding the latest rules for eating in public places during PPKM (Enforcement of Restrictions on Community Activities) levels 3 and 4, there are differences in policies on buying and selling

food. Restaurants, and cafes located in closed buildings/shops, both in separate locations and in shopping centres/malls, only accept delivery/take away and do not accept dine-in. In comparison, restaurants and cafes with service areas in open spaces are allowed to open with strict health protocols with a maximum capacity of between 25% - 50% of visitors. This is because cafes in open areas have better air circulation than cafes in closed spaces. Good circulation can suppress the spread and development of the virus [7].

In this new-normal era, building good housing circulation is very important, especially in public areas visited by many people [7]. Good circulation is one aspect of the eco-interior concept that existed before the pandemic. Good circulation in new normal conditions is needed to reduce the spread of the virus [5]. In eco-interior circulation is included in achieving ventilation and controlling indoor pollution for better human health as space occupants [8].

To meet the needs of cafe design at this time, eco-interiors can be a solution. Eco-interior, as a design approach that is oriented towards human reciprocity with the limited natural surroundings, will have consequences for harmony with the surrounding nature (microcosm) as the closest environment for human activities [9]. Therefore, by implementing an eco-interior in a café in the new-normal era, it is hoped to create harmony between the environment and humans in their activities.

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## 2 Literature Review

### 2.1 Café

Café is one of the classifications of restaurants, but the dishes served are not too heavy, such as coffee and non-coffee, cakes, snacks, and some main dishes that become typical foods. A café is a place that serves a variety of food and drinks that present a relaxed atmosphere and is suitable for building social life [2].

### 2.2 Indoor Air Quality According to Eco-Interior

The eco-interior design facilitates a reciprocal relationship between interior design and the external environment, namely interiors designed to support a sustainable environment and improve the health of its occupants [8]. One aspect of the eco-interior discussion as a reference for the process of applied analysis on the design object is the indoor air conditioning and pollution system [9]. The ventilation system is oriented towards energy conservation efforts by utilizing cross ventilation and a passive refreshment system so that the user's air temperature is within comfortable limits. Indoor pollution is oriented to efforts to minimize impact and anticipate the development of physical, chemical, and biological pollutants in space.

Eco-architecture and eco-interior can be distinguished by their scope, where the discussion of eco-interior is more directed at the interior space and occupants. However, sometimes it also discusses the structure of the building that affects the internal system [9] In the application of eco-interior, there is a hierarchy in the form [10, 9]:

- a. General Applied (D), which is an application that is generally done by people, without any special reason in the context of responding to environmental issues, other than because it is commonly used.
- b. Mild Efforts (C), which are applications that are indeed carried out on the grounds of responding to environmental issues, but do not become the focus and do not have a significant effect.
- c. Substantial Effort (B), which is an application that is indeed carried out on the grounds of responding to environmental issues, and is carried out intentionally and attentively, so that it can have a significant effect.
- d. Ideal Situation (A), which is an application that is indeed carried out with the reason of responding to environmental issues, and becomes a priority in the design process.

**Table 1.** Eco-interior Parameter

Aspect	D General Applied	C Light Effort	B Substantial Effort	A Ideal Site
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Air Conditioning	No space conditioning effort	Applying conventional air conditioners that have an impact on the ozone layer	Applied energy-saving and environmentally friendly air conditioners	Applied openings that optimize air circulation; minimize the use of air conditioning
Afternoon Use of energy-saving air conditioners	As is (depending on the condition of the building)	Use of conventional air conditioner	Maximizing air circulation in the morning and afternoon	Using air conditioning during the afternoon if necessary
Evening	As is (depending on the condition of the building)	Use of conventional air conditioner	Use of energy-saving air conditioners	Maximizing air circulation at night
Comfort	Without concern for user comfort	Temperature stabilization using artificial ventilation	Temperature stabilization using environmentally friendly artificial ventilation.	Temperature stabilization without the use of artificial ventilation.
Indoor Pollution	Lack of attention to the problem of indoor pollution	Understanding (minimum) of indoor pollution	Sufficient attention to the causes and effects of indoor pollution	The causes and effects of indoor pollution are a priority (Pearson, 1994)
Air and sound	Without specific efforts to control pollution	Minimize the use of household that causes pollution	Adequate ventilation for circulating air exchange inside and out	Special handling for spaces for polluting activities
Finishing	The use of chemical finishing materials, without attention to the impact	Minimize the use of chemical finishing materials that have an impact on pollution	Using chemical finishing materials that have a low pollution impact	Using only natural finishing materials and no pollution impact
Maintenance	Use of commercial and chemical cleaning agents	Minimize the use of chemical cleaning agents	Using natural cleaning agents	Using natural cleaning agents independently

In this hierarchy, the Ideal Site is the highest level because it is done with reasons and prioritizes environmental issues with buildings. To achieve this Ideal Site, here are some things to consider:

- a. Air conditioning system, Applied openings that optimize air circulation; minimize the use of air conditioning
- b. Indoor pollution the causes and impacts of indoor pollution are a priority.

### 3 Methods and Data Collection

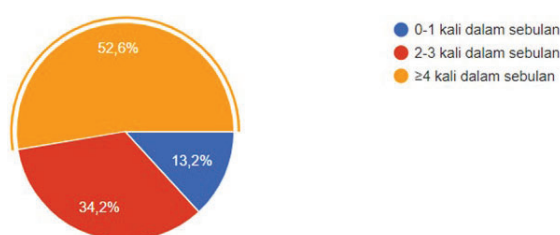
In this study, a method is needed to obtain data that is able to support the solution of the problem that is the topic. The method used in searching data to support this research is descriptive qualitative method. Qualitative research is a type of research whose findings are not obtained through statistical procedures or other forms of calculation [11]. Qualitative research refers to non-mathematical data analysis, which produces findings through data collected by various means, including interviews, observations, documents or archives, and tests [12].

The data obtained to support this research was obtained by studying literature, interviews and questionnaires from several sources to find new views about cafes in the era before and after the new normal. The number of respondents was 38 people who were taken randomly from those who often visited the café. The questionnaire results are described descriptively based on the percentage of respondents' answers. The café that will be used as a case study is a co-working space with the theme "garden house". From the theme raised by the café, it will be analyzed again regarding its relationship with the theory of applying eco-interiors which focuses on aspects of air conditioning and indoor pollution.

## 4 Results and Discussion

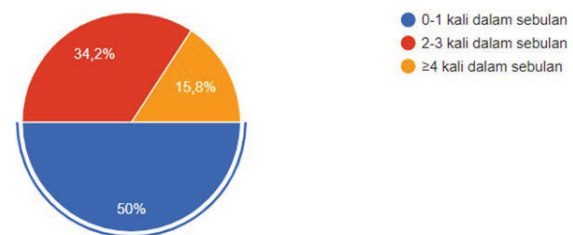
### 4.1 Questionnaire Result

A café is a public place to do various activities such as eating and drinking to socializing. Activities at a cafe will undoubtedly be different because of changes in the new norm era. Figures 1 and 2 show changes in the intensity of café visitors one month before and during the pandemic. The survey results that have been conducted show that for 52.6% of respondents in the pre-pandemic period, the intensity of people going to cafes could be more than four times a month.



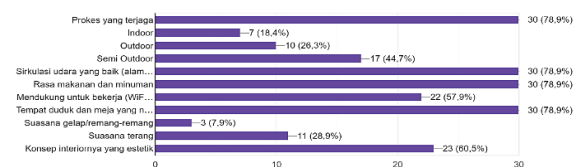
**Fig. 1.** Intensity diagram of respondents going to the cafe before the pandemic.

The activities carried out varied, from just refreshing, trying food and drinks, meeting relatives, and doing assignments. The cafe's cosy atmosphere and the quality of food and beverages are the main attraction of a cafe in the pre-pandemic period. In the new-normal era, the habits at the cafe have changed. The intensity of going to the cafe is lower, which is only 0-1 times a month with a percentage of 50% of respondents. Some of the activities carried out remain the same, namely refreshing, trying food and drinks, and taking care of work.



**Fig. 2.** Intensity diagram of respondents going to cafes in the new-normal era.

In this new-normal era, according to visitors, the comfort of a café is also judged by the health protocols applied. Based on Figure 3, a comfortable café maintains health protocols, good air circulation (natural and artificial), food and drink tastes, and comfortable seating. Nowadays, respondents also prefer to enjoy cafes that have semi-outdoor or outdoor places.



**Fig. 3.** Diagram of the convenience factor of a café in the new-normal era.

### 4.2 Indoor Air Quality Analysis According to Eco-interior

The case study in this research is a café and co-working space with the theme "garden house". This case study was taken because most of these cafes are semi-outdoor and outdoor areas. In this discussion, we will describe the level of application of eco-interiors in air conditioning and indoor air quality in this café. From this description, it is hoped that it can be an inspiration for café design in the current new-normal era.

This type of café room is divided into outdoor and semi-outdoor, as shown in Figure 4. The theme of the "garden house" itself is fulfilled because plants around it surround the outdoor and semi-outdoor parts. Visitors who come to this cafe can feel the garden atmosphere while enjoying a meal, doing assignments or working in a cafe which is also a co-working space.



**Fig. 4.** Café atmosphere in the outdoor area.

The material used at Gartenhaus is a minimal finishing material. The materials used tend to be natural materials such as wood, stone, iron, and plants. Preventive design—this handling process focuses on preventing or minimizing waste generation by maximizing the potential use of resources [13]. This makes the natural elements feel stronger. The minimal finishing of the material also has a good impact because it minimizes the use of chemicals.

According to the applied eco-interior theory, the following explains the application of ventilation to achieve indoor air quality according to the eco-interior parameters in table 1.

#### a. Ventilation System

The ventilation used in this café only uses natural air from morning to night. With so many open spaces in this café, it is no longer possible to use air conditioning. The temperature conditions in Malang City, which are relatively relaxed at 24°C, make the temperature in this café area comfortable. Moreover, the presence of plants makes the atmosphere felt by visitors can be more relaxed. In addition, the existence of a fishpond in the area inside the café (figure 5) can also reduce the surrounding temperature due to evaporation of the water. The semi-outdoor and outdoor cafe rooms make air circulation smooth, so if there is a virus in the area, it will be quickly swept away by the wind, and the air in the café area will be replaced with new air. The application of ventilation in this café greatly optimizes the application of the eco-interior at the ideal stage.



**Fig. 5.** Café atmosphere in a semi-outdoor area.

#### b. Indoor Pollution

The location of this cafe is not right in the middle of the city. This is already a good thing because it minimizes vehicle pollution entering the cafe area. In addition, most of the materials used are natural and have minimal finishing. The use of natural materials and the lack of finishing cause minimal chemicals in this café. In addition to air pollution by viruses, other pollution is visitors' cigarette smoke. Visitors' seats are spaced apart to deal with this problem, and some use plants as a barrier. In addition, the cafe owner distinguishes between smoking areas and non-smoking areas. The number of plants in this café can also be an antidote to air pollution in the vicinity.

Plants can absorb carbon dioxide gas and produce oxygen beneficial to humans. The number of open spaces makes air circulation smoothly.

The problem of pollution in the cafe area is that the humidity is relatively high because of the many plants and a pond. However, the presence of sunlight that can directly enter the cafe area can overcome this problem. There is no special effort to deal with pollution in the cafe area, so the application is classified as a substantial effort.

One of the special handling efforts for spaces for activities that cause pollution, such as cigarette smoke, the plants around it can be added to the type of sansevieria. Sansevieria is one of the unique plants that can absorb toxins in the air, including carbon monoxide, nicotine, benzene, formaldehyde, trichloroethylene and dioxins [14, 15].

## 5 Conclusion

In the new-normal era, cafe visitors consider things related to their health when choosing the cafe they want to visit. Visitors prefer to visit the café with an open or semi-open space with good air circulation. With the new needs in this new-normal era, the application of eco-interiors can be a solution to meet the needs of achieving good air quality in the room. With good and natural air circulation with the wind's help, viruses in the cafe area can quickly leave the room and be replaced with new air. In addition, the role of nature, such as plants, also plays a vital role as air filters and oxygen producers.

Therefore, during this pandemic, it is hoped that humans can get to know and feel a reciprocal relationship with the nature where they live, even though in a small scope, namely a café.

From the analysis results based on eco interior parameters, the application of ventilation in the café is at the ideal stage because it does not use artificial ventilation and maximizes air circulation in semi-outdoor and outdoor café areas. Meanwhile, preventing pollution in the café area is a substantial effort. With an eco-interior concept, this café has good air circulation, so it is suitable for visitors, energy-efficient and environmentally friendly.

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