

Sustainable Interior Design Go - Green

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Abstract:

Interior design is similar to the sustainable design framework and approach. For a long time, interior design joined with fashion and luxury, ignoring the role of the environment, health, energy, and lifestyle.

Recent global pollution has sparked increased interest from both the public and governments. Clients have also recognized this responsibility, prompting the need to design buildings that account for uncertain and unpredictable future climate conditions, tailored to the region and lifestyle.

In this case study, we involve sustainable design and green design in environmentally responsible design by investigating society's perception of sustainable interior design. Exploring the components of sustainable interior design evidence, and investigating the strategy in sustainable design implementation.

This study employs quantitative analysis with a random sample of 150 individuals. A questionnaire was distributed to this group, and the collected data were analyzed using descriptive statistics with SPSS. The findings indicate that green awareness significantly impacts sustainable design. Despite the challenges of implementing green marketing practices, there is considerable consumer awareness regarding sustainable design.

Keywords: sustainable interior design, interior design, pollution, green marketing.

التصميم الداخلي المستدام - التحول إلى الأخضر

حمزة علي العوزي

مساعد محاضر في تقنيات التصميم

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المستخلص :

لقد أضحى تصميم الديكور ينهج التصميم المستدام والطويل الأجل، وليس كما كان في الماضي يرتبط التصميم الداخلي بالأزياء والفخامة فقط، متجاهلاً دور البيئة والصحة والطاقة ونمط الحياة المستدام، لان مظاهر التلوث العالمي مؤخراً أدت إلى زيادة الاهتمام من الناس والحكومات، وزادت المسؤولية على الجميع، مما يبرز الحاجة إلى تصميم المباني بحيث تأخذ في اعتبارها الظروف المناخية المستقبلية غير المؤكدة وغير القابلة للتنبؤ، بما يتناسب مع طبيعة المنطقة ونمط الحياة.

في هذه دراسة الحالة هذه يحاول الباحث دمج التصميم المستدام والتصميم الأخضر في التصميم البيئي المسؤول والواعي، من خلال دراسة تصور المجتمع للتصميم الداخلي المستدام، حيث سيتم استكشاف مكونات التصميم الداخلي المستدام وجمع الأدلة، والتحقق من الإستراتيجية المستخدمة في تنفيذ التصميم المستدام الذي يحافظ على البيئة، وتعتمد هذه الدراسة على التحليل الكمي لعينة عشوائية من 150 فرداً، تم توزيع استبيان على هذه المجموعة، وتم تحليل البيانات المجمعة باستخدام الحزمة الإحصاءات SPSS وتشير النتائج إلى أن الوعي البيئي يؤثر بشكل كبير على التصميم المستدام، على الرغم من التحديات المرتبطة بتطبيق ممارسات التسويق الأخضر، إلا أن هناك وعياً كبيراً لدى المستهلكين بشأن التصميم المستدام.

الكلمات المفتاحية: التصميم الداخلي المستدام، التصميم الداخلي، التلوث، التسويق الأخضر.

INTRODUCTION

Background of Research

Interior designers adopt a sustainable life cycle approach for interior environments, similar to how architects apply it to building components. In the realm of interior design, sustainability encompasses not only the planning but also the efficient and flexible allocation of space for users. Collaboratively, design professionals working on a project can significantly influence how a building impacts its occupants and the environment. Although substantial research has been conducted on sustainable building systems, the specific role of the interior designer in crafting an environmentally responsible interior remains underexplored.

Historically, the interior design field has been primarily focused on enhancing the aesthetics of interior spaces for clients, following a somewhat narrow approach (Cargo, 2013). Yang et al. (2011) characterized traditional interior design as outdated and conservative, with an emphasis on style and luxury in confined spaces, often overlooking energy efficiency, emissions reduction, and the negative impacts on both consumer health and the environment (Yang et al., 2011).

In contrast, recent years have witnessed a significant evolution in interior design practices, with a shift towards strategies that prioritize creating healthy and sustainable living, working, and recreational spaces (Bonda and Sosnowchick, 2007). There is growing awareness of the interdependence between buildings, occupants, and the broader community in fostering an eco-friendly built environment. Clients increasingly recognize their influence on the environment and seek interiors embodying principles of sustainable and environmentally responsible design (Mazarella et al., 2011; Cargo, 2013).

Problem Statement

The prevailing scientific consensus indicates that human-caused carbon emissions are driving changes in our climate. This shift compels us to design and construct environments that can adapt to increasingly unpredictable and uncertain climate conditions. The terms "sustainable design" and "green design" are frequently used

interchangeably. However, "green design" typically emphasizes the health, safety, and welfare of individuals, while "sustainable design" focuses more on the well-being of the planet. Both terms, however, share a central concern for the interconnectedness of design, human behavior, and environmental stewardship. In this case study, the term "environmentally responsible design" is employed to encompass both concepts.

Buildings significantly contribute to many of the environmental challenges society faces today. Approximately 10% of the global economy is tied to the construction, operation, and outfitting of buildings, consuming between 17% to 50% of the world's natural resources and causing significant environmental harm. Furthermore, the interiors of buildings can expose occupants to poor indoor air quality or adverse physical conditions that negatively impact their health, safety, well-being, and productivity. In response to these issues, numerous interior designers have embraced environmentally responsible design practices.

Interior designers committed to environmentally responsible design develop, specify, and implement interior solutions that prioritize both ecological sustainability and the quality of life of the occupants. Over the past two decades, growing environmental awareness has heightened recognition of the need to reduce the ecological footprint of the built environment. Surpassing basic requirements and striving for best-practice performance fosters innovation in design and can be achieved with current technologies and economies of scale.

Research Objectives

Subsequently, to cater to the research questions above, therefore the objectives of this study are:

1. To investigate society's perception towards sustainable interior design.

2. To explore the components of sustainable interior design materials.
3. To investigate the strategy in sustainable design implementation.

Significance of the study

The study aims to provide valuable contributions across both theoretical and practical domains. Theoretically, it is anticipated that this research will enrich the existing literature and expand the knowledge base on topics related to sustainable design. Practically, the study is expected to offer insights and applications that could be beneficial in real-world scenarios.

Research Framework

The concept of meaning in this research is explored through the development of a research framework, the specification of variables, and the formulation of hypotheses. The theoretical framework presented illustrates the connection between the independent and dependent variables. In this study, the dependent variable is the concept of sustainable design within green buildings, while the independent variables include product-related factors, campaign factors, individual message characteristics, and consumer-specific factors. Figure 1 outlines the research framework used in this study.

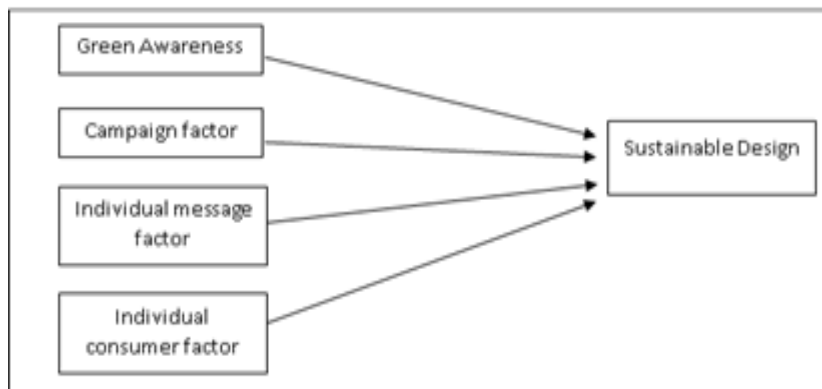


Figure 1: Research Framework

1.5. Variable Specification

As noted by Sekaran (2003), a variable is defined as any element that can assume different values. Specifying variables is a critical aspect of research, as it helps establish a clear and precise understanding of the research study.

1.6 Dependent Variable :

Sekaran (2003) also stated that the dependent variable is the variable of primary interest to the researcher. It remains the main variable that lends itself to investigation as a feasible factor. The dependent variable in this research is brand confusion.

1.7 Independent Variable:

An independent variable can impact the dependent variable, either positively or negatively. In this scenario, the presence of the independent variable alongside the dependent variable results in a direct influence on the latter.

1.8 Hypothesis Development:

A hypothesis is described as a logically inferred relationship between two or more variables, articulated in the form of a testable statement. In this study, the hypothesis can be formulated as follows.

Hypothesis 1 :

H0: There is no impact of green awareness on sustainable design

H1: There is an impact of green awareness on sustainable design

Hypothesis 2 :

H0: There is no impact of campaign factors on sustainable design

H1: There is an impact of campaign factors on sustainable design

Hypothesis 3 :

H0: There is no impact of individual message factors on sustainable design

H1: There is an impact of individual message factors on sustainable design

Hypothesis 4 :

H0: There is no impact of individual consumer factors on sustainable design

H1: There is an impact of individual consumer factors on sustainable design

2.1. Questionnaire Development

The questionnaire is divided into three primary sections. The first section gathers demographic information about the respondents, such as gender, age, ethnicity, occupation, and similar details. The second section addresses questions related to the four independent variables: product factors, campaign factors, individual message factors, and individual consumer factors. Finally, the third section concentrates on the dependent variable, which is sustainable design. In this study, two types of Likert scales have been utilized, as illustrated in Table 1.

Table 1: Likert Scale Table

Likert Scale				
1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

2.2. Population and Sampling`

The intended participants for this study are consumers in Malaysia. For data collection, approximately 150 respondents will be randomly

selected from Kuala Lumpur, using sources such as online news and other available means. Due to challenges in reaching and organizing all respondents without a sampling frame, a non-probability sampling method will be employed in this research.

2.4. Data Collection Method

For data collection, approximately 150 respondents will be randomly selected from Kuala Lumpur. Given that it is generally impractical to study each individual, the selection process ensures that every member of the population has an equal probability of being included in the sample. Every potential sample of a certain size has an equal chance of being chosen.

Data Analysis

For data analysis, the Statistical Package for Social Sciences (SPSS 20.0 for Windows Evaluation Version) will be used to enter the sample data. The researcher will perform frequency analysis, descriptive statistics, and reliability testing. The raw data will then be categorized based on the research questions.

2.5 ANALYSIS AND DISCUSSION :

Table. 2 below shows the frequencies of volatiles under the demographic section. There are 70 male respondents (approximately 46.7%) and 80 female respondents (approximately 53.3%) responding to this survey. The percentage of age group participants below 20 years old has 8 respondents (5%) from the total of 100% during the age group between 21 – 30 years old has 136 respondents (94.5%) remaining ranging from 31 – 40 years old (6 respondents, 0.5%) only. Among all the respondents, the highest number of races participating in this survey is Malay (71 respondents, 47.3%), followed by Chinese (0 respondents, 40%), Indian (19 respondents, 12.7%).

Table 2: Demographic Analysis

No	Variable		N	Frequency	Valid Percent %
1	Gender	Male	150	70	46.7
		Female		80	53.3
2	Age	20 and below	150	8	5
		21-30		136	94.5
		31-40		6	0.5
3	Race	Malay	150	71	47.3
		Chinese		60	40.0
		Indian		19	12.7
4	Marital Status	Single	150	122	81.3
		Married		28	18.7
5	Education Level	Diploma or Lower	150	29	19.3
		Degree		111	74
		Master		4	2.7
		PhD		6	4.0

In addition, 122 single respondents (81.3%) and 28 married respondents (18.7%) participated in this survey. Besides that, 29 respondents (19.3%) have a diploma or lower qualification, 111 respondents (74%) are degree holders, 4 respondents (2.7%) are masters and 6 respondents are PhD level.

2.6. Descriptive Analysis:

The first independent variable is green awareness. Table 3. and Figure. 2 below show that question 1 has the highest mean score of 4.25 proving the respondent's agreeability that a healthy environment is necessary for a healthy economy.

Table 3: Descriptive Analysis on Green Awareness

Variable	N	Mean	Standard Deviation
A thriving economy relies on a healthy environment.	150	4.25	.957
It is okay to sacrifice environmental quality for	150	4.06	.957

economic growth			
Environmental protection and economic development can indeed be complementary, with sustainable practices fostering long-term growth and resilience	150	3.79	.762
There is a lot I, as an individual, can do to protect the environment	150	3.78	.793

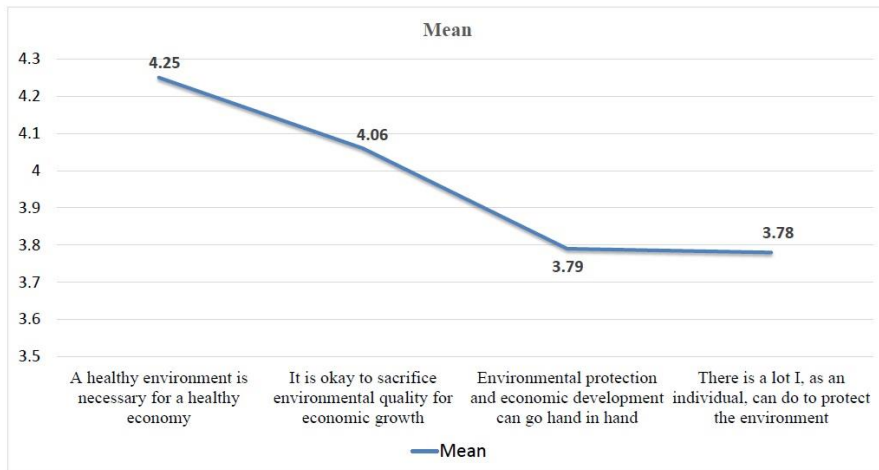


Figure. 1: Diagram of the descriptive analysis on green awareness

2.7. Campaign Factor:

The second independent variable is the campaign factor. As shown in Table 4, respondents favor using eco-friendly communication methods to promote products. Additionally, they believe that environmental campaigns should focus on educating customers about using products in an environmentally responsible way.

Table 4.: Descriptive Analysis of Campaign Factor

Variable	N	Mean	Standard Deviation
I believe in promoting products through eco-friendly modes of communication	150	3.00	.635
I agree with the idea of modifying products to make them environmentally friendly	150	3.04	.589
Campaign Environmental should be educating customers to use products in an environmentally friendly manner	150	3.60	.635
The green campaign is important to spread the message in manufacturing products through each friendly process	150	3.86	.556

2.8 Individual Message Factor :

The third independent variable is the individual message factor. Table 5. below shows that question 4 has the highest mean score of 3.87 hinting that respondents are involved in environmentalism. They believe that there is much that an individual can do in solving environmental problems. It is considered not to be the authority and business which should promote the environment.

Table 5: Descriptive Analysis of Cultural Value

Variable	N	Mean	Standard Deviation
I buy only green products. I spend time and effort in environmental activities such as recycling. I believe that an individual can do much to promote the environment.	150	3.80	.948
I am able to buy green products but I don't have the time and energy for environmental activities. I do not want to change my lifestyle to promote the environment	150	3.77	.942
I can buy green products from time to time but I am not involved in any environmental activities	150	3.83	.880

I am the most involved in environmentalism. I believe that there is much that an individual can do in solving environmental problems. It should not be the government and business which should promote the environment.	150	3.87	.849
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2.9 Individual Consumer Factor :

The fourth independent variable is individual consumer factor. Table 6. below shows that question 1 has the highest mean score of 3.78 indicates that respondents choose prefer green products over conventional products. In addition to that, the respondents also feel that green products are priced higher as compared to conventional products.

Table 6.: Descriptive Analysis on Gender Differences

Variable	N	Mean	Standard Deviation
I prefer green products over conventional products	150	3.78	.850
I feel that green products are priced higher as compared to conventional product	150	3.71	.965
I feel that the price of green products affects my purchase behavior.	150	3.73	.694
I consider the ill effects of manufacturing and consumption on the natural environment.	150	3.47	.692

3.1 .Reliability Analysis:

As outlined by Sekaran (2003), the purpose of this test is to assess the reliability of the independent and dependent variables used in this study. The results of this analysis are summarized in Table 7. The findings suggest that the instruments and questions utilized in this research are reliable.

Table 7.: Reliability Test

Variables	N	Cronbach's Alpha
Green Awareness	4	0.762
Campaign Factor	4	0.777
Individual Message Factor	4	0.809
Individual Consumer Factor	4	0.747

Based on the results presented, all variables exhibit a high level of reliability, as indicated by the strong Cronbach's alpha values for each variable. This suggests that the measurement instruments used are reliable and effectively capture the characteristics needed to meet the objectives of the current study.

3.2 Multiple Regression Analysis :

According to Sekaran (2003), multiple regression analysis helps determine the extent to which multiple independent variables collectively explain the variance in the dependent variable. It also assesses how effectively these independent variables predict the dependent variable. The details of this analysis are summarized in

Table 8: Model Summary.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.480 ^a	.230	.209	.51424
a. Predictors: (Constant)				

Table 8 presents the results of the regression analysis examining the impact of independent variables on career choice. The analysis reveals an R-squared value of 0.230, indicating that about 23% of the variation in the dependent variable is explained by the four independent variables: green awareness, campaign factors, individual message factors, and individual consumer factors.

Table 9.: ANOVA

ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11.472	4	2.868	10.845	.000 ^a
	Residual	38.344	145	.264		
	Total	49.816	149			
a. Predictors: (Constant)						
b. Dependent Variable: DV						

Table 9, based on the ANOVA results, indicates that the model is statistically significant with a p-value of 0.00. Additionally, Table 10 shows that all four independent variables are significantly influential in the context of sustainable design. Specifically, parental influences, peer influences, cultural values, and gender have significant effects on career choice, with p-values of 0.009, 0.042, 0.003, and 0.000, respectively.

Table 10. 1: Coefficient

Coefficients a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.867	.430		4.346	.000
	Green Awareness	-.239	.091	-.273	-2.636	.009
	Campaign factor	.215	.105	.158	2.053	.042
	Individual message factor	.262	.088	.302	2.989	.003
	Individual Consumer factor	.284	.058	.363	4.868	.000
a. Dependent Variable: DV						

3.3 Summary of Hypothesis Testing :

The Table 11. below shows the hypotheses outcome based on the results generated from the analysis.

Table 11.: Hypothesis Testing

Hypothesis	Decisions
H1: There is an impact of green awareness on sustainable design	Do Not Reject
H2: There is an impact of campaign factors on sustainable design	Do Not Reject
H3: There is an impact of individual message factor on sustainable design	Do Not Reject
H4: There is an impact of individual consumer factor on sustainable design	Do Not Reject

3.4 . Conclusions:

The study has important implications for both architects and consumers, highlighting the potential for a new era of green and sustainable design in Malaysia. Although the research is constrained by its focus on a specific geographical area, it offers valuable insights into consumer attitudes towards sustainable design. Future research could explore psychographic segmentation to better understand consumers' green values and preferences. Expanding the study to a larger scale could provide deeper insights into consumer behavior and further elucidate the green design phenomenon.

3.5 Limitations and Recommendations :

The primary aim of this study is to identify key factors in sustainable design. The initial findings were obtained through a questionnaire distributed to a randomly selected sample. However, due to time and financial constraints, the study was limited to a specific area, and a larger sample size could enhance the accuracy and precision of the results. Expanding the research to other regions in Malaysia is planned to achieve more comprehensive findings.

Future research could improve upon this study by ensuring a more uniform distribution of the sample. This could involve distributing the questionnaire more evenly across target respondents and including a balanced number of participants from various racial groups, reflecting Malaysia's diverse population.

Additionally, future studies should explore more aspects of sustainable design to identify additional independent variables that may impact sustainable design. This could provide further insights and implications. Researchers are also encouraged to utilize different statistical tests available in SPSS software, such as Chi-Square analysis and T-tests, as these may yield varied and potentially more accurate results.

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