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SUSTAINABILITY MEETS AFFORDABILITY: UNDERSTANDING THE DRIVERS OF GREEN INTERIOR DESIGN ADOPTION IN PAKISTAN'S EMERGING ECONOMY

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ABSTRACT

Green interior design has become increasingly important for promoting environmental sustainability in the built environment. However, financial constraints, limited awareness, and practical adoption challenges still limit its implementation in emerging economies. This study examined the factors influencing green interior design adoption in Pakistan, focusing on environmental awareness, perceived economic benefits, perceived affordability, and perceived adoption barriers. Drawing on the Theory of Planned Behavior, the study employed a quantitative, cross-sectional research design and collected data through a structured questionnaire administered to professionals associated with interior design, architecture, construction, and property development. The collected responses were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) in SmartPLS 4. The findings indicated that environmental awareness, perceived economic benefits, and perceived affordability positively influenced green interior design adoption, whereas perceived adoption barriers demonstrated a significant negative relationship. Among the examined factors, perceived affordability emerged as the strongest predictor, highlighting the importance of making sustainable interior solutions financially accessible. The findings emphasize that promoting green interior design requires more than environmental awareness; it also involves demonstrating long-term economic advantages, improving access to affordable sustainable materials, and addressing financial and professional implementation constraints. This study contributes to the understanding of sustainable design adoption in an emerging-economy context and offers practical insights for interior designers, construction professionals, developers, and policymakers seeking to strengthen sustainable practices in Pakistan.

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Introduction

Sustainability practices are becoming a priority in the built environment, especially as the environment is facing greater challenges due to resource depletion, energy use, and environmental degradation. Buildings account for a significant amount of energy use and material consumption, and sustainability is an integral part of modern architecture and interior design (UNEP, 2023). In the interior, the choices made in selecting materials, lighting, ventilation, furniture, flooring, and finishes all impact resource efficiency, environmental performance, and the health of the occupants. As a result, green interior design has become a significant aspect of incorporating environmental responsibility, conservation of resources, and economic efficiency in interior spaces (Ashour et al., 2021; Kibert, 2016).

The use of environmentally friendly materials is not the only aspect of green interior design. It includes energy-efficient lighting, sustainable furniture, waste reduction, quality of materials, responsible use of resources, and enhanced indoor environmental quality. These practices have both environmental and economic benefits and also provide functional benefits. But their use is still difficult due to the higher cost of sustainable materials and technologies, their limited availability in the market, and a lack of professional awareness. Ashour et al. (2021) found that the economic, technological, educational, and institutional factors are important obstacles for sustainable interior architecture and design. In the same vein, Ashour et al. (2022) pointed to the role of technical knowledge, regulatory support, and barriers related to clients in sustainable interior renovation.

One of the key factors in emerging economies is financial feasibility. Sustainable materials and energy-efficient technologies have a higher initial cost, but also save energy, maintenance costs, and material replacement costs in the long run. The research on green buildings has highlighted the economic performance, the efficiency of resources, and the responsibility towards the environment as three interrelated aspects of sustainable development (Darko et al., 2017; Zhang et al., 2018). Thus, green interior design implementation should not only be based on the monetary investment but also on the expected monetary benefits.

Sustainable design implementation is especially pertinent in Pakistan, where the construction and property industry is beset by economic and institutional problems. Financial constraints, lack of awareness, technical issues, and lack of government support are some of the key barriers that have been identified in previous studies for the adoption of green building technology (Hussain et al., 2023). These challenges also impact interior design choices, as designers work to balance environmental concerns with budget restrictions, client wants and needs, and the availability of materials. However, sustainable interior design has not been explored much in built-environment research in Pakistan, especially concerning economic aspects that affect the decision-making process of interior design professionals.

Environmental awareness is one of the factors that influence sustainable decision-making because people who are aware of environmental degradation, depletion of resources, and material-related impacts are more willing to support environmentally responsible alternatives. There is a linkage between environmental knowledge, environmental awareness, sustainable consumption, and pro-

environmental behavior (Kollmuss & Agyeman, 2002; Bamberg & Möser, 2007). In the field of interior design, knowledge of the sustainability of materials, energy conservation, waste reduction, and IEQ leads to the use of greener options in the design process. But just raising awareness is not enough when there are financial and practical issues to be cleared up.

Another consideration is the perceived economic benefits. The financial benefits of sustainable interior solutions include energy savings, long-lasting materials, low maintenance, and resource efficiency. The acceptance of these benefits reinforces the economic rationale for taking environmentally responsible alternatives. Davis (1989) demonstrated that perceived usefulness affects the decision-making process, and Ajzen (1991) explained how positive behavioral evaluations affect decision-making. In turn, professionals and clients are inclined to think about green interior solutions as investments, rather than costs, because of the perceived economic benefits.

Perceived affordability is closely related to economic benefits and refers to the financial accessibility of sustainable materials, technologies, and design practices. Even if environmental benefits are acknowledged, initial costs are a disincentive to implementation, especially in price-sensitive markets. Investment costs and financial accessibility have also been found to be significant factors affecting sustainability decisions in the field of green building adoption (Darko et al., 2017; Hussain et al., 2023). On the other hand, perceived adoption barriers include low material availability, lack of technical expertise, lack of client demand, financial constraints, and low institutional support. These restrictions hinder the implementation of positive environmental attitudes into sustainable actions (Ashour et al., 2021; Kineber et al., 2023).

This study is based on the Theory of Planned Behavior (TPB) by Ajzen (1991). The theory is used to explain the decisions people make about behaviour in terms of attitudes, subjective norms, and perceived behavioural control. Perceived economic benefits and environmental awareness are factors that help to form positive perceptions of green interior design, while perceived affordability indicates the feasibility of the financial aspect. Conversely, adoption barriers limit the perceived behavioral control, as they create economic, technological, and institutional issues. TPB, therefore, offers a behavioral perspective on the understanding of how environmental and economic factors work together to affect the adoption of sustainable interior design.

Although green buildings and sustainable interior architecture have gained more and more interest in the academic field, there is not much research that has combined the concept of environmental awareness, perceived economic benefits, perceived affordability, and adoption barriers in a single framework, especially in emerging economies. Previous research has focused on green building technologies or barriers to sustainable interior practices, but not on the interaction between these factors and adoption behavior. To fill this gap, the present study examines the effect of these four factors on green interior design adoption in Pakistan. The study combines environmental and financial aspects, and the findings help to understand sustainable design decision-making in an emerging economy, providing insight for interior designers, architects,

developers, and policy makers who want to design interior environments that are both environmentally responsible and cost-effective.

Literature Review

The Adoption of Green Interior Design.

Green Interior Design is a sustainable method of creating interior environments with the use of sustainable materials, energy efficiency, resource conservation, waste minimisation, and enhanced IEQ. Sustainable design is not about the look and the short-term cost of the project as in traditional interior design, but rather about the performance of the building's environment and how it will use resources in the long run (Kibert, 2016). Factors such as environmental awareness, economic considerations, professional capabilities, and market conditions all have an impact on its adoption. Ashour et al. (2021) have found that there are a number of economic, technological, educational, and institutional barriers to sustainable interior architecture and design. In the same way, Kineber et al. (2023) highlighted the need to address implementation challenges to enhance sustainable interior design practices. The results confirm that adoption is not only about environmental preferences, but also about the perceived feasibility and financial viability of sustainable alternatives.

Environmental Awareness and Green Interior Design Adoption

Environmental awareness is the awareness of people of environmental issues and the impact of using resources. In interior design, knowledge of the toxicity of materials, energy use, waste production, and indoor environmental quality leads designers to use sustainable materials in their designs. Kollmuss and Agyeman (2002) have suggested that environmental knowledge and awareness are factors in pro-environmental behavior, but that practical and psychological barriers limit the ability of people to act on environmental awareness. Likewise, Bamberg and Möser (2007) found that environmental attitudes and perceived behavioral factors are factors that influence environmentally responsible behavior. In the field of sustainable design, increased awareness fosters further appreciation of the ecological benefits of using renewable resources, energy-efficient lighting, and sustainable practices in resource management (Ashour et al., 2021). Therefore, it is expected that environmental awareness will lead to the adoption of green interior design.

H2: Environmental awareness positively influences the green interior design adoption.

Perceived Economic Benefits and Green Interior Design Adoption

Perceived economic benefits are the economic benefits that are perceived by people when they decide to use sustainable interior solutions. Some of these benefits involve lower energy usage, maintenance costs, material durability, and the utilization of resources. While green materials and technologies are more expensive, their economic value over time makes for a more appealing sustainable project. Davis (1989) found that perceived usefulness has an impact on acceptance decisions; that is, people are more likely to accept alternatives when they see their practical value.

In the same way, Darko et al. (2017) found that economic factors were one of the key factors that influenced the implementation of green building technology. In an interior setting, interior designers and developers are aware of operational savings and long-term financial benefits, which promote the use of sustainable alternatives. Hence, green interior design is expected to be more adopted if there are perceived economic benefits.

H2: The economic benefits perceived positively affect the adoption of green interior design.

Perceived Affordability and Green Interior Design Adoption

Perceived affordability is how financially accessible sustainable materials, technologies, and design solutions are perceived. While perceived economic benefits are about the financial viability of a project over the long term, affordability is about the financial viability at the time of implementation. The initial costs are high, and there are not enough sustainable products made locally, or project budgets are not large enough, to encourage the choice of sustainable alternatives. Financial concern was identified by Darko et al. (2017) as one of the important factors that affect the technology adoption of green buildings. Likewise, Ashour et al. (2021) pointed out that economic constraints are one of the significant barriers to sustainable interior design practices. The concept of affordability is especially important in emerging economies where professionals have to consider the environment alongside their clients' budgets and project budgets. The availability of affordable sustainable materials and technologies thus enables the shift to sustainable interior environments.

H3: The perceived affordability is positively related to the adoption of green interior design.

Perceived Adoption Barriers and Green Interior Design Adoption

Perceived adoption barriers include the economic, technological, information, professional, and institutional challenges that hinder the adoption of sustainable interior solutions. There is a lack of access to environmentally certified materials, technical expertise, awareness among clients, and uncertainty over product performance, which deters sustainable design decisions. Barriers to sustainable interior architecture and renovation practices were explored by Ashour et al. (2022), and they highlighted the need to address professional, technical, and institutional barriers. Kineber et al. (2023) also studied the challenges of implementing sustainable interior design. Moreover, Hussain et al. (2023) found several obstacles in the path of the adoption of green building technology for the stakeholders in Pakistan. The barriers indicate that, despite the environmental and economic benefits, implementation is not possible. Therefore, it is crucial to decrease perceived barriers in order to reinforce sustainable interior design practices.

H4: The perceived adoption barriers negatively affect the adoption of green interior design.

Theoretical Foundation: Theory of Planned Behaviour

This study is based on the Theory of Planned Behaviour (TPB) proposed by Ajzen (1991) that describes the factors affecting behavioural intentions and behaviours such as attitudes, subjective

norms, and perceived behavioural control. The theory offers a helpful basis for analysing decisions about sustainability, as it takes two forms of evaluation—favourable and ability—to take action on specific practices to be environmentally responsible. Environmental awareness and perceived economic benefits are factors in favourable assessment of sustainable alternatives in the context of green interior design. Perceived affordability is one of the important aspects of behavioural control, which means that the solutions that can be financially accessed are more feasible to implement. On the other hand, adoption barriers minimize perceived control due to financial, technological, and institutional factors. The importance of attitudes and perceived control for the prediction of pro-environmental decisions has also been shown in previous environmental behaviour studies (Bamberg & Möser, 2007). Therefore, TPB offers a behavioural explanation as to how environmental and financial determinants can be incorporated into the current research framework.

Previous studies have analysed the obstacles to sustainable interior design, the adoption of green building technologies, environmental awareness, and the economic aspects of sustainable development. These research streams, however, are still rather disjointed. The studies conducted by Ashour et al. (2021, 2022) and Kineber et al. (2023) mainly discuss sustainable interior design practices and the constraints that hinder their implementation, while Darko et al. (2017) and Hussain et al. (2023) discuss the adoption of green building. There is scant empirical research that has focused on the study of environmental awareness, perceived economic benefits, perceived affordability, and perceived adoption barriers together for the context of green interior design in Pakistan. To bridge this gap, the present study makes an effort to combine all four determinants into a single framework to explain the adoption of green interior design in an emerging economy.

Methodology

The study was quantitative and cross-sectional in nature, and aimed to explore the factors influencing the adoption of green interior design in Pakistan. Primary data were gathered from professionals involved in the interior design and built environment by using a structured questionnaire. The target group included interior designers, architects, construction professionals, property developers, and owners/managers of interior design firms'/construction firms. These respondents were chosen due to their professional engagement with materials selection, project budgeting, sustainable design, and implementation. A purposive sampling technique was used to obtain persons who have knowledge and experience in the industry. Sample size recommendations for SEM and the present study were based on 384 valid responses, which is a reasonable sample size for the estimation of relationships, subject to statistical power considerations (Hair et al., 2021).

The data were gathered using a structured questionnaire adapted from the literature based on the various measurement models used. The constructs were measured on a five-point Likert scale (1 = strongly disagree and 5 = strongly agree). Environmental awareness was assessed by questions related to their awareness of environmental degradation, resource conservation, sustainable materials, and the environmental consequences of conventional interior practice. The measurement was based on the literature of environmental awareness and pro-environmental behaviour

(Kollmuss & Agyeman, 2002; Bamberg & Möser, 2007). The perceived economic benefits were evaluated using statements related to long-term cost savings, energy efficiency, material durability, and reduced maintenance costs, which were based on the perceived usefulness approach of Davis (1989) and the green building adoption literature (Darko et al., 2017). The perceived affordability was assessed using questions related to the financial accessibility of sustainable materials, technologies, and interior design solutions, based on the economic barriers found in sustainable construction and interior design studies (Ashour et al., 2021; Darko et al., 2017). The adoption barriers were measured using statements regarding high initial costs, limited availability of materials, lack of technical knowledge, lack of client awareness, and institutional barriers, as adapted from Ashour et al. (2022) and Kineber et al. (2023). The adoption of green interior design was assessed by questions related to the use of sustainable materials, energy-efficient solutions, resource conservation, waste reduction, and environmentally responsible interior design. The measurement domains were based on the sustainable interior design literature (Ashour et al., 2021; Kibert, 2016). The items in the questionnaire were pre-tested for appropriateness and clarity.

Partial least squares structural equation modeling (PLS-SEM) was used to analyse the collected data by application of SmartPLS 4. This technique was chosen because it allows for the evaluation of measurement quality and hypothesized structural relationships in a single process (Hair et al., 2021). The indicator loadings, Cronbach's alpha, composite reliability, and average variance extracted (AVE) were used to assess the measurement model. The convergent validity was tested with factor loadings and AVE, and the discriminant validity was tested by the heterotrait–monotrait ratio (HTMT) (Henseler et al., 2015). The structural model was evaluated by using the correlation coefficient (R^2), the effect size (f^2), t-statistics, p-values, and bootstrapping with 5,000 resamples. Variance inflation factors (VIF) were used to check for collinearity. A 5% significance level was used to evaluate the hypotheses, and a p-value < .05 was considered statistically significant.

Results and Discussion

Measurement Model Assessment

The measurement model was tested to validate the indicators in terms of reliability, internal consistency, convergent and discriminant validity. The following outer loadings, Cronbach's alpha, composite reliability (CR), and average variance extracted (AVE) were evaluated. The reliability coefficients of 0.70 and higher, and the AVE values of 0.50 and above are generally considered acceptable for good measurement quality, as stated by Hair et al. (2021).

Table 1. Reliability and Convergent Validity

Constructs	Alpha	CR	AVE
Environmental Awareness (EA)	.851	.901	.696
Perceived Economic Benefits (PEB)	.834	.889	.667
Perceived Affordability (PA)	.862	.906	.707

Perceived Adoption Barriers (PAB)	.821	.883	.654
Green Interior Design Adoption (GIDA)	.858	.904	.703

Table 1 shows that the results of the internal consistency and convergent validity of all five constructs are satisfactory. The Cronbach's alpha values range from 0.821 to 0.862 and the composite reliability values range from 0.883 to 0.906, which are above the recommended minimum of 0.70. In addition, the AVE scores vary between 0.654 and 0.707, which means that the AVE scores for each construct are greater than 50%. The outer loading ranges are also above the minimum recommended. Overall, these results indicate good measurement reliability and convergent validity (Hair et al., 2021).

Discriminant Validity

The heterotrait–monotrait ratio (HTMT) was used to test the discriminant validity. Henseler et al. (2015) suggest that HTMT is a better method to determine if theoretically different constructs are empirically distinguishable. Any value below 0.85 can be considered a conservative estimate of discriminant validity.

Table 2. Heterotrait–Monotrait Ratio (HTMT)

Constructs	EA	PEB	PA	PAB	GIDA
EA	—				
PEB	.724	—			
PA	.681	.824	—		
PAB	.713	.768	.746	—	
GIDA	.781	.793	.816	.762	—

All of the construct relationships are below the conservative level of 0.85 as shown in the HTMT results. The highest value is found between perceived economic benefits and perceived affordability (.824), indicating that these constructs are related, but empirically separable. Thus, the measurement model has good discriminant validity (Henseler et al., 2015).

Structural Model Assessment

The structural model was then analysed after the quality of measurements was confirmed to test the hypothesized relationships. Collinearity diagnostics, path coefficients, bootstrapping, explanatory power (R^2), and effect sizes (f^2) were included in the assessment. A bootstrapping procedure with 5,000 resamples was used to assess the statistical significance of the relationships. In order to assess the explanatory and predictive performance of PLS-SEM models, Hair et al. (2021) suggest studying these indicators.

Table 3. Collinearity Assessment

Predictor	VIF
Environmental Awareness	1.842

Perceived Economic Benefits	2.164
Perceived Affordability	2.287
Perceived Adoption Barriers	1.936

The VIF values range from 1.842 to 2.287, remaining below the commonly recommended threshold of 3.0. These results suggest that multicollinearity does not present a serious concern among the independent variables (Hair et al., 2021).

Table 4. Structural Path Coefficients and Hypothesis Testing

Hypothesis	Relationship	β	SE	t-value	p-value	Decision
H1	EA → GIDA	.264	.052	5.077	.000	Supported
H2	PEB → GIDA	.231	.057	4.053	.000	Supported
H3	PA → GIDA	.318	.055	5.782	.000	Supported
H4	PAB → GIDA	−.196	.048	4.083	.000	Supported

The structural results indicate that all four hypothesized relationships are statistically significant. Environmental awareness positively influences green interior design adoption ($\beta = .264$, $t = 5.077$, $p < .001$), supporting H1. Perceived economic benefits also demonstrate a positive relationship with adoption ($\beta = .231$, $t = 4.053$, $p < .001$), supporting H2. Similarly, perceived affordability exhibits the strongest positive influence ($\beta = .318$, $t = 5.782$, $p < .001$), supporting H3. Conversely, perceived adoption barriers negatively influence green interior design adoption ($\beta = -.196$, $t = 4.083$, $p < .001$), supporting H4.

Table 5. Explanatory Power and Effect Sizes

Predictor	f^2	Effect size
Environmental Awareness	.112	Small
Perceived Economic Benefits	.086	Small
Perceived Affordability	.174	Medium
Perceived Adoption Barriers	.071	Small
R^2 (GIDA)	.624	62.4%
Adjusted R^2	.620	62.0%
Q^2predict	.382	Positive predictive relevance

The coefficient of determination (R^2) shows that the four independent variables together account for 62.4% of the variance in the adoption of green interior design. The adjusted R^2 of .620 also suggests that the explanatory power is not significantly affected by the number of predictors. The perceived affordability is the largest contributor to explaining adoption, with an effect size ($f^2 = .174$) in the medium range. The effects of environmental awareness, perceived economic benefits, and perceived adoption barriers are comparatively small. In summary, the results indicate good explanatory ability.

Discussion

The results give a comprehensive insight into the environmental and economic factors of green interior design adoption in Pakistan. The findings emphasize the significance of affordability, environmental awareness, perceived economic benefits, and implementation barriers for sustainable design decisions.

Adoption of Environmental Awareness and Green Interior Design.

The findings indicate that there is a positive correlation between environmental awareness and the acceptance of green interior design, which implies that interior design professionals with high levels of environmental awareness are more likely to adopt green design. The recognition of the need for resources to be used in a sustainable manner, the use of materials in a sustainable way, energy use, and indoor environmental quality further reinforce the importance of environmentally responsible design. This interpretation is in line with the idea of Kollmuss and Agyeman (2002), who explained the relationship between environmental knowledge and pro-environmental behavior. Bamberg and Möser (2007) have also found that environmental attitudes are factors in environmentally responsible behaviors. The results of this study highlight the need for professional education and environmental awareness in promoting sustainable material choice and resource use in interior design.

Perceived economic benefits and green interior design adoption

The positive effects of perceived economic benefits suggest that sustainable interior solutions are more likely to be adopted when there are perceived financial benefits. The economic benefits of environmentally responsible options are enhanced by lower energy use, increased material life, and decreased maintenance needs. This is in line with Davis (1989) technology acceptance model that considers perceived usefulness as a key factor in the decision to adopt. It is also similar to Darko et al. (2017), who stated that economic factors were significant factors influencing the implementation of green building technology. The results show that sustainable interior design is more likely to be accepted by professionals when it has tangible long-term financial benefits, and the environmental benefits are also clear.

Perceived Affordability and Green Interior Design Adoption

Perceived affordability has the highest positive correlation with green interior design adoption. This discovery underscores the need to make finance accessible to make sustainability preferences a reality in design. Although professionals understand the benefits of sustainable materials in the environment and economy, the upfront costs stop them from using them. Therefore, the use of locally available, cost-effective materials, price-competitive products, and sustainable technologies is an important factor that boost adoption. This is in line with the economic constraints mentioned by Ashour et al. (2021) and the drivers for green building implementation by Darko et al. (2017). The outcome also offers a valuable insight into sustainable design in Pakistan, where cost is a key consideration in the professional and client's decision-making process.

Perceived Adoption Barriers and Green Interior Design Adoption

The negative correlation between the adoption barriers and the perceived adoption barriers suggests that there are institutional and practical barriers that hinder the implementation of green interior design. The professionals' reluctance to choose environmentally friendly alternatives is due to the high initial costs, lack of technical knowledge, lack of access to green materials, and lack of client awareness. This is in line with Ashour et al. (2022), who investigated the barriers to sustainable interior architecture and renovation practices. Kineber et al. (2023) also highlighted the need to tackle the implementation issues in sustainable interior design. Studies on the construction sector in Pakistan have also revealed factors that pose challenges for the implementation of green building technology (Hussain et al., 2023). These results highlight the importance of professional training, the availability of sustainable materials, policies, and market awareness.

The findings of the overall results prove that together the environmental and financial factors can facilitate understanding of green interior design adoption. Perceived affordability is found to be the most significant predictor, followed by environmental awareness and perceived economic benefits. In the meantime, adoption barriers have a negative impact on sustainable design implementation. The results of this study support the importance of considering the economic feasibility along with the environmental responsibility in the context of sustainable interior design in emerging economies.

Conclusion and Recommendations

Conclusion

The current study investigated the factors that influence the adoption of green interior design in Pakistan by combining the three factors: environmental awareness, perceived economic benefits, perceived affordability, and perceived adoption barriers as a single concept. The research emphasizes the significance of environmental issues and financial viability on sustainable design decisions, based on the Theory of Planned Behavior (Ajzen, 1991). The results of the study show that all four factors are significantly related to green interior design adoption, and the most positive relationship is shown between perceived affordability and green interior design adoption. Positive effect of environmental awareness: It is important to consider environmental degradation, resource conservation, sustainable materials, and indoor environmental quality issues in the interior design process. In the same way, perceived economic benefits confirm that sustainable alternatives are more attractive in the long term, as they offer long-term financial benefits such as material durability, reduced maintenance costs, and lower energy consumption. The significant weight attached to perceived affordability, however, suggests that an appreciation of environmental and economic benefits is not enough if there are still high upfront investment costs. In addition, the negative impact of perceived adoption barriers indicates the challenges of availability of materials, lack of technical skills, financial constraints, and lack of market awareness. The challenges are especially significant in the context of the emerging economy of Pakistan, where sustainable design decisions should be made considering environmental concerns, financial

considerations, and practicality. Overall, the study helps to enrich the literature of sustainable interior design by linking environmental awareness with the economic feasibility and implementation constraints. It highlights that the uptake of green interior design will not happen without materials, technologies, professional skills, and institutional arrangements that are easily available and accessible, and cost-effective. The results offer a basis to understand the way sustainability can be a financially viable factor in interior design in developing countries.

Recommendations

The study's results lead to a number of recommendations.

1. Facilitating access to low-cost sustainable materials: Interior design companies and suppliers need to do more to promote access to locally available and environmentally responsible materials. Competitive pricing and local production lower initial investment needs.

2. Improving environmental awareness: Professional associations, universities, and design institutions should improve the organization of environmental awareness workshops, training sessions, and education on material selection, energy saving, waste reduction, and indoor environment.

3. Emphasizing long-term economic benefits: Interior designers emphasize the economic benefits of sustainable solutions, such as energy savings, durability of materials, and lower maintenance costs, to further promote client acceptance.

4. Promoting institutional incentives: Policy makers should consider financial incentives, tax incentives, and supportive regulations to promote the use of sustainable interior materials and technologies.

5. Professional skills: Interior design companies need to focus on technical training and professional development to enhance their knowledge and skills in sustainable materials, resource-saving technologies, and environmentally friendly design principles.

6 The study is limited in scope and scope, and further study is required.

This study is cross-sectional, which makes it difficult to draw causal conclusions. The professional respondent base and geographical representation limit the generalizability of results throughout Pakistan. A longitudinal study, incorporation of residential consumers and commercial clients, and comparison of adoption trends across Pakistani cities are some of the areas that could be explored in the future. The potential mediators of environmental attitudes and perceived behavioural control and the effect of government incentives and organizational support could also be explored in further studies.

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