

Aesthetic Evaluation of Interiorscaped Buildings

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ABSTRACT

Aesthetic appeal has emerged as a decisive quality of contemporary indoor environments, closely linked with occupants' visual comfort, emotional well-being and place satisfaction. Interiorscaping – the deliberate integration of live plants into interior design – is one of the most powerful biophilic instruments for improving the perceived visual quality of buildings. The present study evaluated the aesthetic quality of twenty residential and twenty commercial interiorscaped buildings selected from Haryana and Delhi. A panel of ten experts (five faculty members and five doctoral scholars) evaluated standardised photographs and videos of each building on five parameters – visual appeal and harmony, plant health and maintenance, spatial integration and functionality, emotional and psychological impact, and creativity and uniqueness – using a five-point Likert scale. Independent-sample t-tests were applied to compare Haryana and Delhi buildings. Every parameter differed significantly at $p < 0.05$, with spatial integration and functionality showing the largest gap ($t = 5.259$). In commercial buildings, Haryana again recorded higher mean scores across all five parameters.

Keywords: Aesthetic Evaluation, Interiorscaping, Visual Appeal, Expert Panel, Likert Scale, Haryana, Delhi

INTRODUCTION

The quality of indoor environments has become a major concern in recent decades due to rapid urbanization, changing lifestyles and the increasing amount of time people spend inside residential and commercial buildings. Modern buildings are expected not only to provide functional comfort but also to promote occupants' physical, psychological and emotional well-being. Consequently, the aesthetic quality of interior spaces has emerged as an important component of sustainable and human-centred design. Among the various strategies adopted to enhance indoor environments, interiorscaping—the deliberate integration of live plants into interior spaces—has gained considerable attention because of its ability to improve visual appeal while simultaneously contributing to environmental and psychological benefits (Evans, 2003; Kellert and Calabrese, 2015; Nieuwenhuis *et al.*, 2014).

Interiorscaping is an important application of the biophilic design concept, which emphasizes strengthening the human–nature connection within built environments. Indoor plants introduce natural colours, textures and forms that improve the visual character of interior spaces and create more pleasant, welcoming and restorative environments. Beyond their ornamental value, indoor plants have been associated with reduced stress, improved mood, greater attention restoration and increased satisfaction with indoor settings (Ulrich, 1984; Kaplan, 1995; Dijkstra *et al.*, 2008; Toyoda *et al.*, 2020). Research has further demonstrated that green interior environments positively influence occupants' perception of comfort, productivity and overall environmental quality, making interiorscaping an increasingly important element of contemporary residential and commercial design (Nieuwenhuis *et al.*, 2014).

The aesthetic effectiveness of interiorscaping depends not merely on the presence of plants but also on

their appropriate selection, health, maintenance, spatial arrangement and integration with the overall interior design. Well-maintained plants that complement architectural elements enhance visual harmony, improve spatial balance and strengthen the identity of interior spaces. Conversely, poorly maintained or improperly positioned plants may reduce the aesthetic quality of interiors and fail to achieve the intended psychological and visual benefits. Therefore, aesthetic evaluation of interiorscaped environments should consider multiple dimensions, including visual appeal and harmony, plant health and maintenance, spatial integration and functionality, emotional and psychological impact, and creativity and uniqueness (Kellert and Calabrese, 2015).

Previous studies have largely focused on the influence of indoor plants on stress reduction, environmental perception, workplace satisfaction and psychological well-being (Dijkstra *et al.*, 2008; Nieuwenhuis *et al.*, 2014; Toyoda *et al.*, 2020). Although these investigations provide valuable evidence regarding the benefits of indoor vegetation, comparatively few studies have systematically evaluated the overall aesthetic quality of interiorscaped buildings using structured expert assessment. Furthermore, studies comparing aesthetic performance across different geographic regions within India remain limited. Differences in climatic conditions, maintenance practices, plant selection, cultural preferences and interior design approaches may influence the aesthetic outcomes of interiorscaping, highlighting the need for region-specific investigations.

Considering this research gap, the present study was undertaken to evaluate the aesthetic quality of interiorscaped residential and commercial buildings in Haryana and Delhi through a structured expert assessment. Five key parameters—visual appeal and harmony, plant health and maintenance, spatial integration and functionality, emotional and psychological impact, and creativity and uniqueness—were assessed using a standardized five-point Likert scale. The study further compared the aesthetic performance of interiorscaped buildings between the two regions using appropriate statistical analysis. The findings are expected to provide useful evidence for architects, interior designers, landscape professionals and researchers in developing aesthetically pleasing, psychologically supportive and sustainable indoor environments.

METHODOLOGY

Study sites and sample

Forty interiorscaped buildings – twenty residential and twenty commercial – were selected using snowball sampling across Gurugram and Sonipat in Haryana, and Dwarka, Chanakyapuri and Malka Ganj in Delhi. Each region contributed ten residential and ten commercial buildings, ensuring balanced representation.

Expert panel and evaluation instrument

A structured expert assessment schedule developed by the researcher was used. Standardised photographs and short walkthrough videos and photos of each building were captured under uniform lighting and viewing angles to minimise perceptual bias. Ten experts (five faculty members and five doctoral scholars from the Department of Resource Management and Consumer Science, CCS HAU, Hisar) independently rated every building on five parameters: (i) Visual appeal and harmony, (ii) Plant health and maintenance, (iii) Spatial integration and functionality, (iv) Emotional and psychological impact and (v) Creativity and uniqueness. Each parameter was scored on a five-point Likert scale (5 = strongly agree; 1 = strongly disagree).

Scoring and statistical analysis

Scores awarded by the ten experts were averaged for every parameter and building, and combined to form an overall aesthetic score. Buildings were subsequently classified into low, medium and high categories using equal class intervals. Independent-sample t-tests were used to test the significance of the difference in aesthetic scores between Haryana and Delhi. All statistical tests were carried out at the 5 % level of significance.

RESULTS AND DISCUSSION

Levels of aesthetic parameters – residential buildings

Table 1 presents the distribution of aesthetic evaluation scores for residential buildings in Haryana (n = 10), Delhi (n = 10), and the total sample (N = 20). For visual appeal and harmony, 40.00% of the houses in Haryana were categorized under both the medium and high levels, whereas 50.00% of the Delhi houses each fell under the low and medium categories. Overall, the majority of the houses (45.00%) were classified under

Table 1 : Levels of aesthetic parameters

Category	Haryana F (%) (n = 10)	Delhi F (%) (n = 10)	Total F (%) (n= 20)
Visual appeal and harmony			
Low (136–149)	2 (20.00)	5 (50.00)	7 (35.00)
Medium (150–163)	4 (40.00)	5 (50.00)	9 (45.00)
High (164–176)	4 (40.00)	0 (0.00)	4 (20.00)
Plant health and maintenance			
Low (144–156)	0 (0.00)	5 (50.00)	5 (25.00)
Medium (157–168)	5 (50.00)	5 (50.00)	10 (50.00)
High (169–181)	5 (50.00)	0 (0.00)	5 (25.00)
Spatial integration and functionality			
Low (144–156)	0 (0.00)	5 (50.00)	5 (25.00)
Medium (157–168)	5 (50.00)	5 (50.00)	10 (50.00)
High (169–180)	5 (50.00)	0 (0.00)	5 (25.00)
Emotional and psychological impact			
Low (146–158)	0 (0.00)	6 (60.00)	6 (30.00)
Medium (159–170)	5 (50.00)	4 (40.00)	9 (45.00)
High (171–182)	5 (50.00)	0 (0.00)	5 (25.00)
Creativity and uniqueness			
Low (143–155)	0 (0.00)	5 (50.00)	5 (25.00)
Medium (156–167)	5 (50.00)	5 (50.00)	10 (50.00)
High (168–180)	5 (50.00)	0 (0.00)	5 (25.00)

the medium category. For plant health and maintenance, spatial integration and functionality, and creativity and uniqueness, Haryana recorded an equal distribution (50.00%) in the medium and high categories, while Delhi showed an equal distribution (50.00%) between the low and medium categories. Overall, 50.00% of the residential buildings were classified under the medium category for all three parameters. Regarding emotional and psychological impact, 50.00% of the Haryana buildings were distributed equally between the medium and high categories, whereas 60.00% of the Delhi buildings fell under the low category. Overall, 45.00% of the houses recorded medium scores, followed by 30.00% low and 25.00% high scores.

Overall, the findings indicate that medium aesthetic evaluation scores predominated across all five parameters, suggesting a moderate level of interiorscaping

quality in the residential buildings studied.

Overall aesthetic evaluation scores of the selected residential houses in Haryana and Delhi

Table 2 presents the overall aesthetic scores of the selected residential houses in Haryana and Delhi. The findings indicated that emotional and psychological impact obtained the highest average score in both Haryana (17.08) and Delhi (15.57). In Haryana, it was followed by creativity and uniqueness (16.87), plant health and maintenance (16.85) and spatial integration and functionality (16.83). In Delhi, plant health and maintenance (15.46) recorded the second highest average score, followed by spatial integration and functionality (15.44) and creativity and uniqueness (15.36). Visual appeal and harmony obtained the lowest average score in both Haryana (16.03) and Delhi (14.82). Overall, the

Table 2 : Overall aesthetic evaluation scores of the selected residential houses in Haryana and Delhi

Sr. No.	Category	Haryana		Delhi	
		Average	Rank	Average	Rank
1.	Visual appeal and harmony	16.03	V	14.82	V
2.	Plant health and maintenance	16.85	III	15.46	II
3.	Spatial integration and functionality	16.83	IV	15.44	III
4.	Emotional and psychological impact	17.08	I	15.57	I
5.	Creativity and uniqueness	16.87	II	15.36	IV

selected residential houses in Haryana recorded comparatively higher average aesthetic scores across all parameters than those in Delhi.

Comparative evaluation of aesthetic appeal parameters of residential buildings in Haryana and Delhi

Table 3 presents the difference between aesthetic parameters of residential houses in Haryana and Delhi. The findings revealed that all aesthetic parameters showed significant differences between the two regions at the 5 % level of significance. Haryana houses recorded higher mean scores than Delhi for visual appeal and harmony, plant health and maintenance, spatial integration and functionality, emotional and psychological impact, and creativity and uniqueness. The highest difference was observed for spatial integration and functionality

($t=5.259$), followed by emotional and psychological impact ($t=5.204$) and creativity and uniqueness ($t=5.201$). Overall, the results indicate that residential houses in Haryana exhibited significantly better aesthetic characteristics compared to Delhi houses.

Levels of aesthetic parameters – commercial buildings

Table 4 presents the distribution of aesthetic evaluation scores for commercial buildings in Haryana ($n = 10$), Delhi ($n = 10$), and the total sample ($N = 20$). For visual appeal and harmony, the majority of buildings in Haryana (60.00%) were categorized under the low level, whereas 50.00% of the Delhi buildings were in the medium category. Overall, 40.00% of the buildings fell under the low category. For plant health and maintenance, the highest proportion of buildings in both Haryana

Table 3 : Comparative evaluation of aesthetic appeal parameters of residential buildings in Haryana and Delhi

Parameters	Haryana (Mean $\pm$ SD)	Delhi (Mean $\pm$ SD)	t-values
Visual appeal and harmony	16.0300 $\pm$ 0.99337	14.8200 $\pm$ 0.77287	3.040*
Plant health and maintenance	16.8500 $\pm$ 0.73220	15.4600 $\pm$ 0.65013	4.489*
Spatial integration and functionality	16.9300 $\pm$ 0.63953	15.4400 $\pm$ 0.62752	5.259*
Emotional and psychological impact	17.0800 $\pm$ 0.67462	15.5700 $\pm$ 0.62191	5.204*
Creativity and uniqueness	16.8700 $\pm$ 0.67007	15.3600 $\pm$ 0.62752	5.201*

*Significant at 5%

Table 4 : Levels of aesthetic parameters levels

Category	Haryana F (%) (n = 10)	Delhi F (%) (n = 10)	Total F (%) (n = 20)
Visual appeal and harmony			
Low (139–145)	6 (60.00)	2 (20.00)	8 (40.00)
Medium (146–151)	2 (20.00)	5 (50.00)	7 (35.00)
High (152–157)	2 (20.00)	3 (30.00)	5 (25.00)
Plant health and maintenance			
Low (147–152)	3 (30.00)	2 (20.00)	5 (25.00)
Medium (153–158)	3 (30.00)	3 (30.00)	6 (30.00)
High (159–164)	4 (40.00)	5 (50.00)	9 (45.00)
Spatial integration and functionality			
Low (148–154)	2 (20.00)	4 (40.00)	6 (30.00)
Medium (155–161)	5 (50.00)	3 (30.00)	8 (40.00)
High (162–168)	3 (30.00)	3 (30.00)	6 (30.00)
Emotional and psychological impact			
Low (145–150)	2 (20.00)	4 (40.00)	6 (30.00)
Medium (151–156)	4 (40.00)	5 (50.00)	9 (45.00)
High (157–161)	4 (40.00)	1 (10.00)	5 (25.00)
Creativity and uniqueness			
Low (147–152)	2 (20.00)	3 (30.00)	5 (25.00)
Medium (153–158)	3 (30.00)	4 (40.00)	7 (35.00)
High (159–165)	5 (50.00)	3 (30.00)	8 (40.00)

(40.00%) and Delhi (50.00%) were classified under the high category. Overall, 45.00% of the commercial buildings recorded high scores.

For spatial integration and functionality, 50.00% of the Haryana buildings and 30.00% of the Delhi buildings were categorized under the medium level. Overall, the majority of the buildings (40.00%) fell under the medium category. Regarding emotional and psychological impact, medium scores predominated in both Haryana (40.00%) and Delhi (50.00%). Similarly, the combined data showed that 45.00% of the buildings were classified under the medium category. For creativity and uniqueness, half of the Haryana buildings (50.00%) were categorized under the high level, while 40.00% of the Delhi buildings were in the medium category. Overall, 40.00% of the commercial buildings recorded high scores. Overall, the findings indicate that commercial buildings demonstrated comparatively higher scores for plant health and maintenance and creativity and uniqueness, while medium scores predominated for spatial integration and functionality and emotional and psychological impact. Visual appeal and harmony was mainly observed at the low level in the overall sample.

Overall aesthetic score of Haryana and Delhi

Table 5 presents the overall aesthetic scores of the selected commercial buildings in Haryana and Delhi. The findings revealed that spatial integration and functionality obtained the highest average score in both Haryana (16.16, Rank I) and Delhi (15.15, Rank I), indicating that indoor plants were effectively integrated with the

functional layout of commercial interiors. In Haryana, creativity and uniqueness secured the second rank with an average score of 16.01, followed by plant health and maintenance (15.91, Rank III). Emotional and psychological impact ranked fourth with an average score of 15.71, while visual appeal and harmony recorded the lowest average score (15.06, Rank V). Similarly, in Delhi, plant health and maintenance and creativity and uniqueness shared the second rank, each with an average score of 15.11. Emotional and psychological impact ranked fourth (14.97), whereas visual appeal and harmony received the lowest average score (14.27, Rank V).

Comparative evaluation of aesthetic appeal parameters of commercial buildings in Haryana and Delhi

Table 6 presents the difference between the aesthetic parameters of selected commercial buildings in Haryana and Delhi. The findings revealed that all the aesthetic parameters differed significantly between the two regions at the 5 % level of significance. Commercial buildings in Haryana recorded higher mean scores than those in Delhi for visual appeal and harmony, plant health and maintenance, spatial integration and functionality, emotional and psychological impact, and creativity and uniqueness. Among all the parameters, the highest significant difference was observed for creativity and uniqueness ($t = 8.596$), followed by plant health and maintenance ($t = 7.736$), emotional and psychological impact ($t = 7.633$), spatial integration and functionality ($t = 7.245$) and visual appeal and harmony ($t = 5.402$).

Table 5 : Overall aesthetic score of Haryana and Delhi

Sr. No.	Category	Haryana		Delhi	
		Average	Rank	Average	Rank
1.	Visual appeal and harmony	15.06	V	14.27	V
2.	Plant health and maintenance	15.91	III	15.11	II
3.	Spatial integration and functionality	16.16	I	15.15	I
4.	Emotional and psychological impact	15.71	IV	14.97	IV
5.	Creativity and uniqueness	16.01	II	15.11	II

Table 6 : Comparative evaluation of aesthetic appeal parameters of commercial buildings in Haryana and Delhi

Parameters	Haryana (Mean $\pm$ SD)	Delhi (Mean $\pm$ SD)	t-Values
Visual appeal and harmony	15.1600 $\pm$ 0.32042	14.3700 $\pm$ 0.33350	5.402*
Plant health and maintenance	16.0100 $\pm$ 0.26013	15.1100 $\pm$ 0.26013	7.736*
Spatial integration and functionality	16.2600 $\pm$ 0.32042	15.2500 $\pm$ 0.30277	7.245*
Emotional and psychological impact	15.7100 $\pm$ 0.26013	14.8700 $\pm$ 0.23118	7.633*
Creativity and uniqueness	16.1100 $\pm$ 0.26013	15.1100 $\pm$ 0.26013	8.596*

*Significant at 5%

Overall, the results indicate that commercial buildings in Haryana exhibited significantly better aesthetic quality than those in Delhi, reflecting superior integration, maintenance and visual presentation of interiorscaping elements.

The present study revealed significant regional differences in the aesthetic quality of interiorscaped residential and commercial buildings, with Haryana consistently outperforming Delhi across all evaluated parameters. In residential buildings, Haryana recorded significantly higher mean scores for visual appeal and harmony (16.03 ± 0.99), plant health and maintenance (16.85 ± 0.73), spatial integration and functionality (16.93 ± 0.64), emotional and psychological impact (17.08 ± 0.67), and creativity and uniqueness (16.87 ± 0.67) compared to Delhi, where the corresponding mean scores ranged from 14.82 to 15.57. Among these parameters, the greatest regional difference was observed for spatial integration and functionality ($t = 5.259$), followed by emotional and psychological impact ($t = 5.204$) and creativity and uniqueness ($t = 5.201$). Similarly, commercial buildings in Haryana also demonstrated significantly higher aesthetic scores than those in Delhi, with creativity and uniqueness exhibiting the highest statistical difference ($t = 8.596$), followed by plant health and maintenance ($t = 7.736$), emotional and psychological impact ($t = 7.633$), spatial integration and functionality ($t = 7.245$), and visual appeal and harmony ($t = 5.402$). These findings indicate that the aesthetic quality of interiorscaped environments is influenced not only by the presence of indoor plants but also by their maintenance, spatial organization and harmonious integration with interior design.

The distribution of aesthetic evaluation levels further supported these findings. In residential buildings, 50% of the Haryana houses were categorized under the high level for plant health and maintenance, spatial integration and functionality, emotional and psychological impact, and creativity and uniqueness, whereas none of the Delhi houses were classified under the high category for these parameters. Instead, 50–60% of the Delhi residences fell under the low aesthetic category, indicating comparatively weaker interiorscaping practices. Likewise, commercial buildings in Haryana exhibited higher proportions of buildings within the high aesthetic category, particularly for creativity and uniqueness (50%) and plant health and maintenance (40%), whereas Delhi buildings showed a predominance of medium-level scores.

These observations suggest that superior maintenance practices, healthier ornamental plants and more thoughtful integration of vegetation within the available interior space contributed to the better aesthetic performance observed in Haryana.

The present findings are in agreement with previous studies highlighting the positive influence of interiorscaping on the visual and psychological quality of indoor environments. Dijkstra *et al.* (2008) reported that the presence of indoor plants significantly improved the perceived attractiveness of indoor spaces, which subsequently reduced stress among occupants. Similarly, Nieuwenhuis *et al.* (2014) observed that employees working in green office environments demonstrated approximately 15% higher productivity and reported greater workplace satisfaction than those working in lean office spaces, emphasizing the importance of vegetation in enhancing indoor environmental quality.

Plant health and maintenance emerged as one of the most influential determinants of aesthetic quality in the present investigation. Residential buildings in Haryana obtained an average score of 16.85, compared with 15.46 in Delhi, while commercial buildings recorded average scores of 15.91 and 15.11, respectively. Healthy foliage, proper pruning, regular watering and appropriate plant care substantially improve the freshness, vibrancy and ornamental value of indoor environments. Conversely, neglected vegetation diminishes visual appeal and may negatively influence occupants' perception of interior quality. Bringslimark *et al.* (2009) concluded that the psychological and aesthetic benefits associated with indoor plants depend largely on their health and visual condition.

Spatial integration and functionality also exhibited significant regional differences, with Haryana obtaining the highest residential mean score (16.93) compared with Delhi (15.44). Effective interiorscaping extends beyond the placement of decorative plants; rather, it involves the strategic integration of vegetation with furniture layouts, circulation pathways, architectural features and lighting conditions to create balanced and functional indoor spaces. Kellert and Calabrese (2015) emphasized that successful implementation of biophilic design requires meaningful integration of natural elements within architectural spaces instead of simply introducing isolated decorative plants. Similarly, Yin *et al.* (2019) reported that appropriately integrated indoor greenery enhances occupants' perception of environmental quality, comfort and cognitive

performance, supporting the present observations.

Emotional and psychological impact received the highest average score among residential buildings, with Haryana recording 17.08 and Delhi 15.57, indicating that experts perceived interiorscaped spaces as emotionally restorative and visually comforting. Indoor plants introduce natural colours, textures and forms that create relaxing environments capable of reducing mental fatigue and promoting positive emotional responses. Toyoda *et al.* (2020) demonstrated that even a single desk plant significantly reduced physiological and psychological stress among office workers. Earlier, Ulrich (1984) reported that exposure to natural elements accelerated psychological recovery from stress, while Kaplan (1995) explained that interaction with natural environments restores directed attention and reduces cognitive fatigue. These findings reinforce the present results by highlighting the important psychological contribution of interiorscaping beyond its decorative function.

Creativity and uniqueness showed the greatest regional difference among commercial buildings ($t = 8.596$), suggesting that innovative plant arrangements, diversified species selection and creative design concepts substantially enhance the identity and distinctiveness of indoor spaces. Contemporary commercial interiors increasingly employ interiorscaping as an experiential design strategy that strengthens brand image, improves customer experience and creates memorable interior environments.

Overall, the findings of the present investigation confirm that interiorscaping is an effective strategy for improving the aesthetic quality of both residential and commercial indoor environments. Buildings characterized by healthy and well-maintained plants, thoughtful spatial integration and creative landscape design consistently achieved significantly higher aesthetic evaluations than buildings with comparatively limited interiorscaping quality. The results support the growing body of evidence demonstrating that indoor vegetation simultaneously enhances visual appeal, psychological well-being and overall environmental quality. Consequently, architects, interior designers, landscape professionals and building managers should consider interiorscaping as an essential component of sustainable interior design rather than merely a decorative addition.

Conclusion

The present investigation confirms that interiorscaping is a significant contributor to the aesthetic quality of residential and commercial buildings. Buildings in Haryana consistently outperformed those in Delhi on every aesthetic parameter, and the differences were statistically significant. Architects, interior designers and building managers are encouraged to place indoor plants deliberately along visually dominant circulation paths, invest in scheduled maintenance and species diversification, and treat interiorscaping as a first-order design element rather than an incidental accessory.

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