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Research Article

Factors Influencing Coffee Shop Visitors' Non-Verbal Communication Experience Based on the Choice of Colour and Interior Design Elements

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This study aims to identify factors that influence visitors' perceptions of color selection and interior design elements in coffee shops and their impact on non-verbal communication experiences and social interaction. A quantitative approach was employed, involving 135 randomly selected respondents, who were then analyzed through Exploratory Factor Analysis (EFA) to categorize variables related to visitors' perceptions of interior design. The instrument used was a questionnaire with a Likert scale, covering dimensions of comfort, visual appeal, social warmth, and spatial flexibility for activities. The analysis results reveal three main factors affecting visitors' non-verbal communication experience. The first factor, Individual and Visual Comfort, includes variables such as theme suitability, aesthetics, and lighting, with an eigenvalue of 1.691, explaining 24.16% of the variance. The second factor, Familiarity and Emotional Attachment, encompasses social warmth and spatial tranquility, with an eigenvalue of 1.476, accounting for 21.09% of the variance. The third factor, Flexibility and Social Activity, relates to spaces that support social engagement and productivity, with an eigenvalue of 1.129, explaining 16.13% of the variance. Together, these three factors account for 61.38% of the variance in visitor perception.

Background

Interior design had evolved into a field that not only focused on aesthetic aspects but also played a significant role in communication science, particularly in public spaces that served as hubs for social interaction, such as coffee shops. Coffee shops were no longer merely places to enjoy coffee but had become multifunctional spaces catering to social needs, work activities, and the personalization of visitors' lifestyles. Therefore, strategic interior design could help create an environment conducive to these activities, especially through the appropriate use of color[1][2].

In the context of public spaces such as coffee shops, color was one of the most defining design elements. The right choice of colors could create an atmosphere that supported comfort, relaxation, or even productivity, depending on the primary purpose of the space. Warm colors like brown, orange, and terracotta were often used to convey a warm and welcoming impression, making visitors feel more comfortable and engaged in conversations or social interactions. Conversely, cool colors such as blue and green could provide a sense of calm and enhance focus, making them suitable for visitors who came to work or study[3].

From the perspective of communication science, color in interior design also functioned as a form of non-verbal communication that could convey the identity and image of a space. For instance, coffee shops designed with warm colors and cozy decorations tended to convey a "homely" impression, inviting visitors to stay longer. On

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the other hand, coffee shops utilizing minimalist and neutral colors could create a modern and professional impression, appealing to individuals seeking a productive work atmosphere. The use of color that considered visitors' perceptions and experiences demonstrated that interior design was not merely about aesthetics but also a form of communication[4][5].

In addition to creating an atmosphere, color also had the ability to influence emotions and behavior. Research showed that certain colors could stimulate positive or negative emotions, which in turn affected the overall experience of visitors in the public space[6]. The color red, for instance, was known to increase heart rate and energy, while blue tended to have a calming effect and conveyed a sense of stability[7]. In spaces like coffee shops, an understanding of the psychological effects of color could help designers create an optimal experience for visitors, tailored to the activities being performed.

Coffee shops designed with attention to color psychology could create a unique and personal impression for visitors. In the digital era, a strong visual experience also provided added value for coffee shops in terms of marketing and appeal, both directly on-site and through social media. A strong visual identity achieved through consistent and appealing color choices often became a key attraction for customers eager to share their experiences, thereby supporting marketing communication strategies through interior design.

The choice of colors in coffee shop interior design could also influence the pace of visits and the time visitors spent at the establishment. Bright colors tended to encourage visitors to complete their visits more quickly, while darker and warmer colors could slow the pace and make people feel comfortable staying longer. This demonstrated that color could be used as a subtle tool to influence visitor behavior, supporting the business goals of coffee shops—whether to maximize seating turnover or to create a more personal experience[8].

In addition to color, other elements in interior design, such as lighting, materials, and layout, also played a crucial role in supporting communication and social interaction. However, color remained the dominant element that was most quickly perceived and influenced visitors' first impressions of a space[9]. With the combination of these elements, coffee shops could function not only as spaces for gathering and socializing but also as environments that supported productive and creative activities, which were among the needs of modern life.

The theory of non-verbal communication in the context of public spaces stated that visual elements, including color and texture, could function as symbols conveying specific messages and impressions without the need for words[5]. In coffee shops, these elements created a "design language" that reflected the identity of the space and influenced visitor behavior. For example, coffee shops with warm colors and soft lighting typically conveyed a cozy and welcoming atmosphere, inviting visitors to engage in calm conversations and relax.

The understanding of color psychology in interior design also opened opportunities for designers to integrate communication science with visual art to create spaces that were more functional and impactful. This interdisciplinary approach became increasingly significant as modern coffee shops served not only as places for consumption but also as social interaction spaces accommodating various activities, from relaxing to working. Thus, research on the impact of color and interior design elements on communication in public spaces was highly relevant to support the creation of spaces that were functional, aesthetic, and communicative[3][10].

Recognizing the importance of color and interior design in creating ambiance and supporting communication in public spaces such as coffee shops, this study was expected to provide theoretical and practical insights for various stakeholders, including communication science academics, interior designers, and coffee shop owners. With a deeper understanding of the relationship between interior design and communication science, coffee shops could become more inclusive and appealing public spaces for diverse audiences.

The aim of this study focused on identifying and categorizing the factors influencing visitors' perceptions of color choices and interior design in coffee shops, as well as their relationship with communication experiences and social interactions. The research objectives were outlined as follows: 1) To identify the key factors related to visitors' perceptions of color choices in coffee shop interior design. 2) To determine the groups of factors influencing visitors' non-verbal communication experiences in coffee shops based on color choices and other interior design elements. 3) To analyze the structure of factors associated with the ambiance and comfort created by color choices in coffee shops and their impact on visitors' willingness to engage in social interactions. 4) To explore the relationship between interior design factors and visitors' perceptions of the coffee shop's identity as a public space supporting social interaction and communication. 5) To determine the factors contributing to the creation of a conducive coffee shop atmosphere for various activities, such as socializing or working, through an exploratory analysis of visitors' perceptions.

Methods

Research Approach

This study employed a quantitative approach to analyze the factors influencing visitors' perceptions of color choices in coffee shop interior design. A quantitative approach was chosen because it provided measurable data and reliable statistical analysis, making it easier to understand the relationships between the variables studied[11]. In this context, the focus of the study was to identify and categorize the factors influencing visitors' perceptions using exploratory analysis techniques, specifically Exploratory Factor Analysis (EFA).

Population, Sample, and sampling technique

The population in this study consisted of the general public who enjoyed visiting coffee shops. This criterion was chosen to ensure that the respondents had relevant experience with the research topic, namely interior design and color selection in coffee shops. From this population, a total sample of 135 individuals was selected, divided into two groups: the first group of 55 respondents was asked to describe factors related to visitors' perceptions of color choices in coffee shop interior design, and the second group of 80 respondents was given a questionnaire based on the factors identified by the first group. Sampling was conducted using a random sampling technique to ensure that every individual in the population had an equal chance of being selected as a respondent. This approach aimed to enhance the representativeness of the sample and reduce bias in data collection.

Research Instruments

The instrument used to collect data in this study was a specially designed questionnaire. This questionnaire consists of several sections, including: 1) Respondent Demographics: Information about the respondents' background, such as age, gender, education, and frequency of visits to coffee shops. 2) Questions Related to Color Perception: A series of questions designed to measure respondents' perception of color selection in coffee shop interior design, which includes comfort, visual impression, and emotional influence. A Likert scale was used to measure the respondents' level of agreement or disagreement with the statements in the questionnaire, with a range from 1 (strongly disagree) to 5 (strongly agree). From the first group of samples, eight factors were obtained relating to visitors' perceptions of color selection in the interior design of coffee shops, including; 1) Appropriateness of theme and identity, 2) Individual and visual comfort, 3) Social warmth, 4) Impression of calmness and concentration, 5) Aesthetic appeal, 6) Familiarity and emotional attachment, 7) Light and color of the space, and 8) Flexibility for various activities. The second sample group was given a questionnaire containing items of factors influencing color selection in coffee shop interior design.

Data Analysis Technique

Once the data was collected, it was analyzed using exploratory statistical techniques, specifically Exploratory Factor Analysis (EFA). EFA was chosen because this technique allows researchers to identify the factor structure underlying the variables under study, as well as group variables that have a close relationship with each other[11][12]. The EFA process will include several steps, including: 1) Feasibility Test: Before conducting EFA, a feasibility test is conducted to ensure that the data obtained meets the requirements of factor analysis, including Kaiser-Meyer-Olkin (KMO) analysis and Bartlett's Test of Sphericity. 2) Factor Rotation: Once the factors are identified, rotation techniques such as Varimax will be used to facilitate interpretation of the factors. 3) Determination of Number of Factors: Determination of the number of factors to be extracted is done based on the criteria of eigenvalue above 1 and scree plot. 4) Interpretation of Results: The EFA results will be interpreted to identify the main factors that influence visitors' perceptions of color selection in coffee shop interior design. The entire data analysis process was carried out using SPSS for Windows software.

Validity and Relibility

To ensure the validity and reliability of the questionnaire instrument, validity tests were conducted using the exploratory factor analysis method. In addition, the reliability of the instrument will be tested using Cronbach's alpha value, where values above 0.70 are considered to indicate good reliability. With this approach and method, it is hoped that this research can provide a deep insight into the factors that influence visitors' perceptions of color selection in coffee shop interior design, as well as a broader contribution to the understanding of the interaction between interior design, color psychology, and communication in public spaces.

Result and Discussion

Result

1) Feasibility Test

The results of the SPSS output on the feasibility test can be seen from table 1. Kaiser-Meyer-Olkin (KMO) output and Bartlett's Test of Sphericity below.

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.551
Bartlett's Test of Sphericity	Approx. Chi-Square	47.427
	df	28
	Sig.	.012

Table 1. Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of Sphericity output before factor reduction

In table 1 above, the Kaiser-Meyer-Olkin measure of sampling adequacy score is 0.551 (> 0.05), meaning that all factors can be continued in exploratory factor analysis. The output table also produces a Sig. score of 0.012 (<0.05), meaning that there is a correlation between the factors analyzed and exploratory factor analysis can be continued.

Next is to identify which factors can still be predicted through exploratory factor analysis and which ones cannot, by looking at the "Anti-image Matrices" output table below

Anti-image Matrices

		Appropriateness of theme and identity	Individual and visual comfort	Social warmth	Impression of calmness and concentration	Aesthetic appeal	Familiarity and emotional attachment	Light and color of the space	Flexibility for various activities
Anti-image Covariance	Appropriateness of theme and identity	.954	-.019	.035	-.126	-.044	-.067	-.105	.075
	Individual and visual comfort	-.019	.813	-.164	-.171	-.217	-.015	-.045	-.128
	Social warmth	.035	-.164	.902	-.077	-.023	-.063	.078	.178
	Impression of calmness and concentration	-.126	-.171	-.077	.827	.000	.120	.156	-.131
	Aesthetic appeal	-.044	-.217	-.023	.000	.901	-.028	.060	-.085
	Familiarity and emotional attachment	-.067	-.015	-.063	.120	-.028	.825	-.275	-.027
	Light and color of the space	-.105	-.045	.078	.156	.060	-.275	.782	-.116
	Flexibility for various activities	.075	-.128	.178	-.131	-.085	-.027	-.116	.882
Anti-image Correlation	Appropriateness of theme and identity	.446[a]	-.021	.038	-.142	-.048	-.075	-.122	.082
	Individual and visual comfort	-.021	.571[a]	-.191	-.209	-.253	-.019	-.056	-.151
	Social warmth	.038	-.191	.495[a]	-.089	-.025	-.073	.092	.200
	Impression of calmness and concentration	-.142	-.209	-.089	.579[a]	.000	.145	.194	-.154
	Aesthetic appeal	-.048	-.253	-.025	.000	.599[a]	-.033	.071	-.095
	Familiarity and emotional attachment	-.075	-.019	-.073	.145	-.033	.572[a]	-.342	-.032
	Light and color of the space	-.122	-.056	.092	.194	.071	-.342	.551[a]	-.140
	Flexibility for various activities	.082	-.151	.200	-.154	-.095	-.032	-.140	.488[a]

a. Measures of Sampling Adequacy(MSA)

Table 2. Anti-image Matrices before factor reduction

In table 2 above, the anti-image correlation column can be seen the diagonal score of each factor analyzed. If there is a factor with a score smaller than 0.5, it means that the factor cannot be included in the exploratory factor analysis and must be excluded and then the re-analysis process is carried out without that factor. For factors with a score above 0.5, these factors can be included in further analysis.

In the output above, it can be seen that there are factors with scores below 0.5, namely factors; 1) Appropriateness of theme and identity (0.446), 2) Social warmth (0.495), 3) Flexibility for various activities (0.488). Of these three factors, the researcher chose one of the smallest factors to be excluded and re-analyzed. In this case, what needs to be excluded from the analysis is the theme congruence and identity factor, and then the researcher re-analyzes it.

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KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.562
Bartlett's Test of Sphericity	Approx. Chi-Square	44.053
	df	21
	Sig.	.002

Table 3. Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of Sphericity output after factor reduction

A new KMO and Bartlet's Test output was obtained where there was an increase in the Kaiser-Meyer-Olkin Measure of Sampling Adequacy score to 0.562 and the Sig. score to 0.002

Anti-image Matrices

		Individual and visual comfort	Social warmth	Impression of calmness and concentration	Aesthetic appeal	Familiarity and emotional attachment	Light and color of the space	Flexibility for various activities
Anti-image Covariance	Individual and visual comfort	.813	-.163	-.177	-.218	-.017	-.048	-.127
	Social warmth	-.163	.904	-.074	-.021	-.061	.083	.177
	Impression of calmness and concentration	-.177	-.074	.844	-.006	.114	.147	-.125
	Aesthetic appeal	-.218	-.021	-.006	.903	-.032	.056	-.082
	Familiarity and emotional attachment	-.017	-.061	.114	-.032	.830	-.288	-.022
	Light and color of the space	-.048	.083	.147	.056	-.288	.794	-.111
	Flexibility for various activities	-.127	.177	-.125	-.082	-.022	-.111	.888
Anti-image Correlation	Individual and visual comfort	.564[a]	-.191	-.214	-.254	-.020	-.059	-.150
	Social warmth	-.191	.501[a]	-.084	-.024	-.070	.098	.197
	Impression of calmness and concentration	-.214	-.084	.618[a]	-.007	.136	.180	-.144
	Aesthetic appeal	-.254	-.024	-.007	.602[a]	-.037	.066	-.092
	Familiarity and emotional attachment	-.020	-.070	.136	-.037	.559[a]	-.355	-.026
	Light and color of the space	-.059	.098	.180	.066	-.355	.552[a]	-.132
	Flexibility for various activities	-.150	.197	-.144	-.092	-.026	-.132	.517[a]

a. Measures of Sampling Adequacy(MSA)

Table 4. Anti-image Matrices after factor reduction

In addition, the scores in the Anti-image Matrices table have also changed and all factors have scores above 0.5, so that all factors can be continued in the exploratory factor analysis.

Communalities output results determine whether there is a relationship between factors/variables with the following test criteria; If the Extraction score> 0.50 then the communalities requirement is met which means that all factors/variables used have a strong relationship and can be declared capable of explaining the factors formed. If the Extraction score <0.05 then the communalities requirement is not met which means that all factors/variables used do not have a strong relationship and are not able to explain the factors formed.

Communalities

	Initial	Extraction
Individual and visual comfort	1.000	.635
Social warmth	1.000	.737
Impression of calmness and concentration	1.000	.514
Aesthetic appeal	1.000	.398
Familiarity and emotional attachment	1.000	.667
Light and color of the space	1.000	.652
Flexibility for various activities	1.000	.693

Extraction Method: Principal Component Analysis.

Tabel 5. Communalities and score extraction

Based on table 5 Communalities above, it can be seen that almost all factors have a strong relationship. Only one factor has no relationship, namely the "Aesthetic Appeal" factor with an **extraction score of 0.398 (<0.50).**

2) Determination number of factors

To determine how many new factors can be formed, it can be seen from the Total Variance Explained output. In the Total Variance Explained table, the following data is obtained;

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Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.691	24.159	24.159	1.691	24.159	24.159	1.582	22.596	22.596
2	1.476	21.089	45.248	1.476	21.089	45.248	1.531	21.867	44.463
3	1.129	16.131	61.378	1.129	16.131	61.378	1.184	16.915	61.378
4	.859	12.264	73.643						
5	.649	9.266	82.908						
6	.637	9.094	92.002						
7	.560	7.998	100.000						

Extraction Method: Principal Component Analysis.

Tabel 6. Total variance explained and Eigenvalues scores

In table 6 column initial eigenvalues, there are three components that have eigenvalues of more than 1 (> 1), it means that there are three new factors formed from the 7 factors analyzed.

Factor 1 has eigenvalues of 1,691 and can explain 24.159% of the variation.
Factor 2 has eigenvalues of 1,476 and is able to explain 21,089% of the variation.
Factor 3 has eigenvalues of 1,129 and is able to explain 16,131% of the variation.

Of the three factors formed are able to explain 61.378. % variation.

3) Factors Rotation

Factor rotation can be seen from the Rotated Component Matrix output below;

Assessment criteria; if the factor loading score> 0.60 (N = 80) and clustered in one factor, it can be concluded that the variance analyzed will become a new factor.

Rotated Component Matrix[a]

	Component		
	1	2	3
Individual and visual comfort	.794		
Social warmth			-.785
Impression of calmness and concentration			
Aesthetic appeal	.630		
Familiarity and emotional attachment		.808	
Light and color of the space		.778	
Flexibility for various activities			.712

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

Tabel 7. Rotated Component Matrix and factor grouping based on its components

The conclusions that can be drawn from table 7 Rotated component matrix above are as follows;

Individual and Visual comfort factors and aesthetic appeal have a factor loading score> 0.60 and are clustered in one particular factor (Component 1), it can be concluded that these two factors become factor 1.

The factor of familiarity and emotional attachment and Light and color space has a factor loading score> 0.60 and clusters in one particular factor (Component 2), so it can be concluded that the two factors become factor 2

The factors of social warmth and flexibility for various activities have a factor loading score> 0.60 and cluster in one particular factor (Component 3), so it can be concluded that these two factors become factor 3.

Determination of the value of 0.60 comes from the number of samples referring to table 8 factor loading guidelines based on the number of samples below.

Factor Loading	Number of Sample
0.30	350
0.35	250
0.40	200
0.45	150
0.50	120
0.55	100
0.60	85
0.65	70
0.70	60
0.75	50

Tabel 8. factor loading guidance

4) Result Interpretation

For the interpretation of the results, it can be seen from the output component transformation matrix below;

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Component Transformation Matrix

Component	1	2	3
1	.718	-.677	-.165
2	.686	.645	.338
3	.122	.356	-.927

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Tabel 9. Component Transformation Matrix

The conclusions that can be drawn from table 8 of the component transformation matrix above are;

Component 1 has a correlation of 0.718
In component 2 has a correlation of 0.645
In component 2 has a correlation of -0.927

The three component correlations are greater than 0.60, it can be concluded that the three factors formed are able to explain the 7 variables analyzed.

The results of the EFA indicate the formation of three main factors that influence visitors' non-verbal communication experiences:

1. **Individual and Visual Comfort.** This factor includes variables such as theme suitability, aesthetic appeal, and lighting, with an eigenvalue of 1.691, explaining 24.16% of the variance. This factor emphasizes that interior design elements that support visual comfort can enhance individual comfort and space aesthetics, creating a visually appealing environment for visitors.
2. **Familiarity and Emotional Attachment.** This second factor includes the variables of social warmth and space tranquility, with an eigenvalue of 1.476, explaining 21.09% of the variance. These variables indicate the importance of familiarity and emotional attachment created by interior design, which gives a welcoming feel and supports intimate social interactions.
3. **Flexibility and Social Activity.** The third factor, with an eigenvalue of 1.129 and explaining 16.13% of the variance, is related to elements that support social activities and productivity. This variable includes spatial flexibility that allows visitors to work or socialize comfortably.

Taken together, these three factors explain 61.38% of the total variance, suggesting that interior design that considers aspects of visual comfort, emotional intimacy and spatial flexibility can significantly influence visitors' non-verbal communication experience in coffee shops.

Discussion

The discovery of key factors in this study confirms the importance of interior design in creating an optimal experience in public spaces such as coffee shops. The Individual and Visual Comfort factors support the theory that color and lighting play an important role in creating a conducive atmosphere for visitors. Warm colors, such as brown and brick red, create a cozy and pleasant atmosphere that can directly increase visitors' desire to socialize[13]. The choice of colors in the interior design of this coffee shop is not only aesthetic but also affects the emotions of visitors, where certain colors can relieve tension or increase energy, depending on the shades used[14].

The second factor, Familiarity and Emotional Attachment, suggests that the familiar atmosphere created by design elements can increase visitors' emotional attachment. This finding is in line with environmental psychology theory which emphasizes that a warm and comfortable interior design can strengthen visitors' emotional bond with the venue, thus making them more likely to return or recommend the venue to others. This aspect of familiarity and emotional attachment shows how certain design elements can indirectly create a "sense of belonging" for visitors, which can be an important element in building customer image and loyalty[15][16].

The third factor, Flexibility and Social Activities, shows that coffee shops with flexible designs tend to be more supportive of productivity, especially for visitors who are looking for a place to work or conduct other productive

activities. This finding supports the need for multifunctional spaces that can adapt to the diverse needs of modern visitors, both as social and productivity spaces. Flexible and functional spatial arrangements allow patrons to easily change seating areas as needed, for example for individual work or group discussions[17]. In addition, this flexibility is also important for coffee shops that want to appeal to different market segments, such as students, freelancers, and families, who have diverse space requirements[18][19].

From a non-verbal communication point of view, interior design that considers these factors of comfort, intimacy, and flexibility has a direct effect on the patterns of social interaction that occur within the coffee shop. For example, the right layout and color selection can encourage more intense interactions between patrons, especially in an atmosphere that invites conversation such as a space with soft lighting and warm colors. This suggests that interior design has a role in shaping the experience of non-verbal communication through the way patrons respond to the ambience and sense of well-being created by the visual elements[20].

This research also provides evidence that interior design factors play a strategic role in managing ambience and interaction in coffee shops. Elements such as color and lighting, which act as a form of non-verbal communication, not only enhance aesthetics but also create a psychological context that can encourage certain behaviors. For example, calm blues and cool lighting can make patrons more focused and comfortable to work, while brighter reds or yellows can bring out an energetic vibe suitable for socializing areas[21][22].

These findings are relevant for coffee shop owners who want to create an immersive experience for their visitors. Interior design elements designed with visitors' perceptions and preferences for color and layout in mind can improve the quality of the customer experience, thereby encouraging customer retention. In addition, these positive experiences can have an impact on indirect marketing through social media, where coffee shops with attractive designs and a cozy atmosphere are more likely to be shared by customers through positive photos or reviews[8][23].

Analysis of Implications and Limitations

This research shows that aspects of interior design can be a powerful communication element in creating a unique coffee shop brand image. However, there are some limitations to consider. The limited sample size may affect the generalizability of the results, so further research with a larger and more diverse sample may provide greater understanding. In addition, this study focused more on the aspects of color and lighting; future research could consider other elements such as music, aroma, and furniture, which also have a role in creating ambience and influencing patron behavior.

Overall, this research provides useful insights for interior designers and coffee shop owners to pay more attention to design elements that have a direct impact on the non-verbal and social experience of visitors. With a holistic design approach, coffee shops can become spaces that not only function for consumption but also strengthen social bonds and provide a productive environment for the diverse needs of customers.

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