



ANALYZING THE INFLUENCE OF PHYSICAL SETTING ON STUDENT PLACE ATTACHMENT IN MINIMARKET-CAFÉS (CASE STUDY: FAMILY MART RUNGKUT)

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Abstract

The increasing use of third places as informal learning environments has led to the adaptation of retail spaces, such as minimarket-café, for academic activities among university students. This study examines the influence of physical setting aspects on place attachment at Family Mart Retail Store Rungkut, a space originally intended for grocery shopping but now widely used as an alternative study area. A mixed-method approach was employed, combining field observations, objective measurements, and questionnaire surveys. Data were analyzed using Spearman correlation tests in Jamovi 2.3.12 to investigate how physical settings support studying activities, identify the most influential features, and explore their role in shaping users' sense of belonging. The findings indicate that the physical setting supports studying through an adequate spatial layout, ergonomic seating (chair height: 40 cm; table height: 75 cm), appropriate lighting (580 lux), and comfortable temperature conditions (23–24°C). Although ambient noise reached 60 dB(A), the dynamic soundscape—comprising music, conversations, and food preparation was perceived as engaging rather than disruptive. Notably, soundscape exhibited the strongest correlation with place attachment ($p = 0.73$), followed by seating comfort and lighting. These findings suggest that well-designed physical environments can foster both comfort and social vibrancy, enhancing users' emotional connection to space and supporting multifunctional third-place experiences.

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INTRODUCTION

In recent years, younger generations particularly university students, have demonstrated a shift in their study habits, increasingly seeking out third places to support their academic activities. This change was accelerated by the COVID-19 pandemic, which led to the closure of traditional study spaces such as libraries and campus facilities. As a result, students were prompted to explore alternative environments that foster both productivity and social interaction (Hendershott, 2007). The concept of third place refers to public spaces that function outside of the home and workplace. These settings have increasingly become the focus of a growing trend in academic and social behavior. Cafés, co-working spaces, and even convenience stores are now adapting their environments to accommodate the needs of mobile learners (Rosenbaum & Massiah, 2011).



Figure 1: The cafe area of Family Mart Rungkut
Source (W. Nabila, W. Nadhila., 2024)

One emerging phenomenon worth noting is the development of minimarket-based establishments that integrate café areas or communal spaces within their retail environments. An example of this hybrid model is Family Mart Retail, located in Rungkut Madya, Surabaya, East Java. This type of space functions as an informal gathering place for a wide range of users, particularly university students. Minimarket cafés of this kind have seen a rise in popularity, with preliminary observations indicating that approximately 60% of visitors are students who utilize the space for studying.

Unlike formal co-working spaces that are specifically designed to support productivity, minimarket cafés offer more limited physical facilities and design features. Nevertheless, these

spaces continue to attract a significant number of university students. This trend is likely driven by the convenience of accessing both study areas and everyday retail needs within a single, integrated location (Fox et al., 2004). Interestingly, preliminary data from the initial study indicate that the average duration spent by individuals studying or working in minimarket-based cafés is approximately 55 minutes. This is notably longer when compared to the average time typically spent shopping for daily necessities, which generally ranges between 11 and 20 minutes (Fox et al., 2004). This striking contrast in time spent suggests the presence of a strong sense of place attachment within the minimarket café environment, despite its lack of the ideal environmental characteristics typically found in purpose-built co-working spaces (Scannell & Gifford, 2010).

Place attachment, which refers to the emotional and psychological bond formed by individuals toward a particular environment, has become a key focus in various studies exploring how spatial settings influence user loyalty and the tendency to remain in a place for extended periods (Johnstone & Conroy, 2008). According to Line and Hanks (2015), place attachment encompasses three key dimensions: person, process, and place. In the context of Family Mart Rungkut, physical setting factors such as seating arrangement, lighting, and spatial layout are likely to contribute to the development of this attachment, even though the space was originally designed to serve retail purposes (Line et al., 2015). These environmental characteristics, although modest, have the potential to create a sense of comfort and functionality for students. In turn, they enhance the overall user experience and contribute to strengthening attachment to the space.

This study aims to explore how a space originally designed for daily retail activities has transformed into a third place where students not only engage in academic work but also develop a sense of attachment to the environment. Previous research indicates that the average duration of shopping for daily necessities is significantly shorter compared to study sessions, which often last nearly an hour in minimarket cafés. This suggests a shift in how younger generations perceive and utilize such spaces (Fox et al., 2004). The informal atmosphere and ease of access offered by such hybrid spaces appear to encourage the development of place attachment. Various studies have shown that this attachment tends to increase when a space successfully fulfills users' basic needs

for comfort, a sense of belonging, and functionality (Rosenbaum & Massiah, 2011).

A key aspect of this study is the examination of physical setting factors that influence place attachment within minimarket cafés. Previous research has demonstrated that environmental elements such as furniture layout, lighting quality, and overall ambiance play a significant role in shaping how individuals perceive and interact with a space (Lewicka, 2011). According to Lewicka (2011), physical setting aspects play a critical role in shaping user experience, which directly influences whether individuals develop a sense of belonging and attachment to a place (Manzo & Devine-Wright, 2013). This study focuses on how physical setting aspects within the Family Mart Rungkut store, particularly in the café area, contribute to the place attachment experienced by its users, especially university students.

By exploring the factors that contribute to place attachment in minimarket cafés, this study offers insights into the evolving character of third places within contemporary urban environments. The findings may have broader implications for the future design and functionality of retail spaces, particularly as they continue to transform into multifunctional environments that accommodate both consumption and social interaction.

While previous studies on third places have primarily emphasized their social and cultural roles, and research on place attachment has largely focused on psychological and behavioral dimensions, limited attention has been given to the operational relationship between specific physical setting elements and users' attachment in hybrid retail environments such as minimarket-café. Moreover, existing studies tend to focus on purpose-built spaces such as cafés or co-working environments, leaving informal and adaptive spaces underexplored, particularly in the Indonesian context. Therefore, this study contributes by examining the correlation between measurable physical setting variables and dimensions of place attachment using a mixed-method approach, positioning minimarket-café as emerging third places that accommodate both consumption and informal learning activities.

METHODS

This research was conducted in three main stages: data collection through observation and documentation, distribution of questionnaires, and data analysis using both qualitative and quantitative methods. A mixed-methods approach

was employed to comprehensively examine the physical characteristics of interior design and their correlation with users' place attachment at Family Mart Rungkut, which has been increasingly utilized by students as a study space. Each stage of the research is described in the following sections.

Observation And Objective Measurement

The first stage of data collection involved in-depth observation and documentation of the interior design and physical environment at Family Mart Rungkut. Since place attachment is closely linked to environmental factors such as design, spatial layout, and atmosphere, detailed documentation of these elements was considered essential to the study (Hernández et al., 2007). At this stage, key aspects of the store's physical environment, including flooring materials, ceiling design, wall treatments, air circulation, lighting, and acoustics, were thoroughly documented. These elements play a crucial role in creating an atmosphere that supports working or studying activities, which in turn may influence users' emotional attachment to the space (Lewicka, 2011).

Objective measurements were also conducted using tools such as a lux meter and a decibel meter to quantify environmental factors including lighting levels and noise intensity. The importance of lighting quality in creating a positive learning environment has been emphasized in various studies, including one by Boyce (2014). The study indicates that appropriate lighting levels, typically ranging between 300 and 500 lux for reading or study areas, can enhance both user satisfaction and productivity (Lewicka, 2011). Similarly, noise levels were measured using a decibel meter, as sound control plays a vital role in ensuring comfort and maintaining focus in workspaces. This has been supported by numerous studies conducted in the context of office environments (Kang & Zhang, 2010). This method of objective measurement complements the subjective data collected, resulting in a more comprehensive understanding of the physical environment as a whole.

Questionnaire Model

A Likert-scale questionnaire was designed to measure user satisfaction with various physical setting aspects of the interior design, in accordance with recommendations by Carmona regarding the evaluation of user satisfaction in public spaces (Carmona, 2021). The questionnaire assessed elements such as seating comfort, lighting quality, air circulation, and noise levels using a five-point

Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). This scale was employed to capture a wide range of user perceptions regarding the physical environment in a more comprehensive manner (Brown & Raymond, 2007). The respondents are users of the space, aged 18 to 27, both male and female, who were present in the observation area engaging in activities such as discussions, studying, and working. The data was collected over a period of seven days, from Monday to Sunday.

The second questionnaire measured users' sense of place attachment using items based on established models of place attachment research (Scannell & Gifford, 2010). This questionnaire assessed dimensions such as place identity (e.g., emotional significance of the place), place dependence (e.g., how well the space supports study activities), and social bonding (e.g., connections formed with others in the space). The Likert scale was similarly used for these items, which allowed for the quantitative analysis of psychological attachment to the space, a method supported by studies like (Williams & Vaske, 2003). A key reason for using this dual questionnaire approach was to link the subjective user experience of the physical setting with their emotional attachment, creating a comprehensive understanding of how the environment influences behavior (Raymond et al., 2010).

Table 1. Questionnaire model on the Place Attachment descriptors (W. Nabila, W. Nadhila., 2024)

Directions: Respondents will rate how suitable they find the following aspects of the space on a scale of 1 to 5, where 1 is Strongly Inappropriate, and 5 is Strongly Appropriate.		
Place Attachment Dimensions	Objectives	Descriptors
Place Identity	How the place contributes to users' sense of self or belonging.	(1) I feel that this place is a part of who I am (2) This place reflects my personality and preferences (3) I feel a strong sense of belonging when I am in this place
Place Dependence	Functional attachment, or how the	(4) The environment of this place is

	place supports activities.	important for my ability to focus and be productive (5) I feel that this place provides all the facilities I need for my study/work activities (6) It would be difficult for me to find another space that suits my needs as well as this place
Social Bonding	Connection fostered by interactions with others in the place.	(7) I enjoy meeting or studying with friends in this place (8) This place allows me to socialize with people who share similar interests (9) I prefer this café because of the community of people it attracts
Continuity and Time Spent	The frequency of visits and how it builds attachment.	(10) I have been coming to this café for a long time (11) The longer I spend time in this café, the more I become attached to it (12) I prefer to come to this café more often than other place or study spaces

Validity and reliability evaluation of the questionnaire were employed using Cronbach Alpha analysis. It is operated using Jamovi 2.3.21 program on the data processing stage. The alpha values for each of the physical setting aspect and the place attachment questionnaires were 0.891 and 0.874 which were declared reliable, so the model obtained could be used for the data analysis stage.

Data Analysis

The final phase of the research involved analyzing the data collected from both observations and the questionnaires. Qualitative data from the observation phase, including notes on the physical features of the space and user behavior, were

analyzed through comparison with findings from past studies on environmental psychology. This method is supported by mix methods approaches, it highlights the importance of contextualizing observations within the broader body of research to understand environmental influences on behavior (Mackiewicz, 2018). These qualitative insights provided a descriptive context for interpreting the results from the questionnaire surveys.

For the quantitative analysis, the questionnaire data were processed using Jamovi 2.3.21 program, a statistical analysis tool that is effective for conducting correlation analyses (Junior & Borges, 2024). Before employing the correlation analysis, the normality test that were done. The results of the Shapiro-Wilk test for normality indicate that all variables are ($p < 0.001$ for all variables). This non-normality can be attributed to the nature of the data, as Likert-scale questionnaires often produce ordinal data that may result in skewed distributions, especially when respondents tend to cluster their ratings at the higher or lower ends of the scale, as noted by Jamieson in the analysis of Likert scales in social sciences (Jamieson, 2004). Given that the data does not meet the assumption of normality, Spearman's rank-order correlation will be employed for further analysis, as it is a non-parametric test that is well-suited for assessing relationships between variables when normality is violated (Astivia & Zumbo, 2017). Spearman's correlation will allow for robust analysis of the relationship between the physical environment and place attachment without the constraints of parametric assumptions. The correlation analysis aimed to identify the relationship between the physical setting aspects of the interior (e.g., lighting, seating) and place attachment. Spearman's correlation coefficient was used to measure the strength of association between variables, as recommended in similar studies that examine user satisfaction and environmental factors (Junior & Borges, 2024).

By employing correlation analysis, the research was able to determine which physical setting aspects had the most significant influence on the users' emotional attachment to the space. For example, a strong positive correlation between lighting quality and place attachment would indicate that better lighting enhances users' emotional and functional connection to the place, reinforcing findings from prior research on the environmental determinants of place attachment (Lewicka, 2011).

RESULTS AND DISCUSSION

Objective Measurement

The data set above is the average measurement on three aspect in the Physical Setting field, which are lighting, room temperature, and noise level. The data collection were done in 5 days from 10.00-20.00WIB at the Family Mart Retail Rungkut.

Table 2. Average level of objective measurement of the lighting, temperature, and noise level aspects (W. Nabila, W. Nadhila., 2024)

Physical Aspect	Average Level of Measurement	Unit
Lighting	580	lux
Room Temperature	23	°celcius
Noise Level	60	dB(A)

Objective measurements at Family Mart Rungkut revealed variations from the ideal standards of a learning environment. The recorded lighting level was 580 lux, slightly exceeding the recommended range of 300 to 500 lux for tasks requiring high concentration. Excessively bright lighting is generally associated with a higher risk of eye strain (Boyce, 2003). However, since the lighting level remained relatively close to the upper limit of the recommended range, it was still considered visually comfortable. Additionally, the room temperature measured at 23°C was classified as optimal, as it falls within the ideal range for learning environments (22–24°C) as recommended by ASHRAE (Bueno et al., 2021). This temperature range helps ensure physical comfort during extended study sessions. However, the measured noise level of 60 dB(A) theoretically exceeds the recommended threshold for learning activities, which is 40 dB(A), and therefore has the potential to disrupt concentration (Kang & Zhang, 2010). However, when examined in the context of its soundscape, the interior sounds at Family Mart Rungkut are composed of auditory elements that are generally soft and non-abrupt in character. These include conversational speech, the sound of a coffee machine, footsteps, faint traffic noise from outside, the consistent hum of HVAC systems, and the use of kitchen equipment. In theory, elevated noise levels are considered disruptive. However, such assessments do not fully account for whether the specific sound sources are actually perceived as

disturbing by users, which is the core consideration in soundscape evaluation.

Data Analysis On Physical Setting Aspects

The data set above is the mean measurement on the overall user appropriateness on physical setting. It is described in 9 descriptors as shown below.

Table 3. Physical setting aspects data analysis of the mean value (W. Nabila, W. Nadhila., 2024)

Aspect	Mean
(1) Seating Comfort	4.82
(2) Availability of Study/Workspaces	2.98
(3) Accessibility (Ease of Movement)	2.99
(4) Lighting	4.90
(5) Air Quality/Circulation	4.06
(6) Soundscape (Noise Levels)	4.82
(7) Visual Appeal of the Interior Design	3.01
(8) Cleanliness and Maintenance	1.99

Analysis of the Physical Environment Suitability Questionnaire revealed several key findings regarding respondents' perceptions of the space. The highest-rated aspects were Seating Comfort ($M = 4.82$, $SD = 0.39$), Lighting ($M = 4.90$, $SD = 0.31$), and Soundscape (Noise Level) ($M = 4.82$, $SD = 0.39$), indicating that these features were perceived as highly appropriate for the intended function of the space. These findings align with previous studies in environmental design that emphasize the importance of lighting and acoustics in creating environments conducive to productivity and comfort (Boyce, 2003). In addition, the high rating for seating comfort is consistent with findings from previous research, which suggest that ergonomic and comfortable seating can enhance user satisfaction in shared spaces (Vischer, 2007).

The correlation findings should not be interpreted solely as statistical associations, but as indicators of how physical environments construct different dimensions of place attachment. For instance, seating comfort and lighting primarily reinforce place dependence, as they directly support users' functional needs for studying and productivity. Meanwhile, the soundscape contributes more significantly to social bonding, as it creates a dynamic and socially engaging atmosphere that encourages interaction and co-presence among users. This suggests that place

attachment in hybrid spaces such as minimarket-café is not formed by a single environmental factor, but through the interaction between functional comfort and social ambience. From an interior design perspective, this indicates the importance of balancing ergonomic efficiency with atmospheric qualities, rather than prioritizing one over the other.

Data Analysis On Place Attachment Aspects

The data set above is the mean measurement on the overall user perception on the place attachment. It is described in 12 descriptors as shown below. It is collected from 100 university/college students respondents (54% female, 46% male) age 18-27, who were present in the observation area engaging in activities such as discussions, studying, and working. The data was collected over a period of seven days, from Monday to Sunday (January 6th – 12nd, 2025) on its peak hours, mainly at 08.00am to 21.00pm.

Table 4. Place attachment data analysis of the mean value (W. Nabila, W. Nadhila., 2024)

Dimension	Descriptor	Mean
Place Identity	(1) I feel that this place is a part of who I am	3.22
	(2) This place reflects my personality and preferences.	3.02
	(1) I feel that this place is a part of who I am. (2) This place reflects my personality and preferences.	3.09
Place Dependence	(3) I experience a strong sense of belonging when I am in this place.	2.74
	(4) This environment is important for my ability to focus and be productive.	2.90
	(5) I feel that this place provides all the facilities I need for studying or working.	2.85
Social	(6) It would be difficult for me to find another space that meets my needs as well as this place does.	3.25
	(7) I enjoy studying or	2.85

Bonding	meeting friends in this place.	
	(8) This place allows me to socialize with people who share similar interests.	3.18
	(9) I prefer this café because of the community of people who visit it.	3.02
	(10) I have been visiting this place for a considerable amount of time.	
Continuity and Time Spent	(11) The more time I spend in this café, the more attached I feel to it.	2.92
	(12) I prefer coming to this café over other study or work spaces.	

Findings from the Place Attachment questionnaire indicate a moderate level of attachment among respondents. For example, the statement “I enjoy studying or meeting friends in this place” received a relatively positive score ($M = 3.25$, $SD = 0.98$), suggesting that the space encourages social interaction, although not overwhelmingly so. This aligns with research on third places, which argues that social spaces such as cafés support casual interaction but do not always result in strong social bonds (Hendershott, 2007).

Descriptors related to sense of belonging and self-reflection also showed moderate scores, such as the statement “I feel that this place is a part of who I am” ($M = 3.22$, $SD = 1.06$) and “This place reflects my personality and preferences” ($M = 3.02$, $SD = 0.98$). These findings suggest that while respondents experience a certain degree of identity-based attachment to the space, the intensity of that attachment is not particularly strong. Place attachment theory posits that spaces which fulfill users’ emotional and functional needs are more likely to foster deeper attachment. The moderate scores observed in this study may indicate that the environment has not yet fully met those needs (Scannell & Gifford, 2010).

Interestingly, aspects related to productivity and functionality received lower scores. For example, the statement “This environment is important for my ability to focus and be productive”

was rated relatively low ($M = 2.74$, $SD = 0.99$), suggesting that respondents did not perceive the space as particularly supportive of activities requiring high concentration. This may help explain why overall levels of place attachment remained moderate, as productivity-related factors are essential in fostering long-term attachment to learning environments (Lewicka, 2011). Although the space facilitates social interaction and fosters a moderate level of place attachment, improvements in aspects that support focus and productivity have the potential to strengthen users’ emotional connection to the environment.

Correlation Analysis

The data set of a correlation analysis above is the mean measurement on the overall user perception on the place attachment. It is described in 12 descriptors as shown on the Table 6 below.

Table 6. Correlation analysis between the physical setting aspects and the descriptors of place attachment of 1-5 using Spearman’s correlation coefficient (W. Nabila, W. Nadhila., 2024).

		(1)	(2)	(3)	(4)	(5)
	Physical Setting / Place Attachment	Accessibility	Ventilation/ Air Circulation	Availability of Workspaces	Cleanliness and Maintenance	Availability of Power Outlets
(1)	I feel that this place is a part of who I am.	0.40	0.28	0.48	-0.28	0.19
(2)	This place reflects my personality and preferences.	0.42	-0.15	0.41	0.24	-0.41
(3)	I experience a strong sense of belonging when I am in this place.	0.39	-0.32	-0.40	-0.31	-0.27
(4)	This environment is important for my ability to focus and be productive.	0.41	0.33	-0.30	0.40	0.31
(5)	I feel that this place provides all the facilities I need for studying or working.	0.27	0.46	0.36	-0.37	0.36
(6)	It would be difficult for me to find another space that meets my needs as well as this place does.	0.31	0.42	-0.29	0.15	-0.36
(7)	I enjoy studying or meeting friends in this place.	0.36	0.39	0.45	0.29	-0.42
(8)	This place allows me to socialize with people who share similar interests.	0.42	0.41	-0.40	0.38	0.40
(9)	I prefer this café because of the community of people who visit it.	0.40	0.29	-0.33	0.42	0.44

(10)	I have been visiting this place for a considerable amount of time.	0.37	0.20	0.26	-0.39	0.40
(11)	The more time I spend in this café, the more attached I feel to it.	0.15	0.37	0.19	0.41	0.33
(12)	I prefer coming to this café over other study or work spaces.	-0.21	0.20	-0.34	-0.29	0.40

The correlation analysis between physical setting aspects and place attachment descriptors revealed several significant relationships, with Spearman's ρ values ranging from moderate to strong. Strong correlations, indicated by Spearman's ρ values between 0.60 and 0.79, suggest meaningful associations between specific environmental features and users' emotional and functional attachment to the space.

First, the aspect of Seating Comfort showed a strong correlation with several place attachment descriptors, particularly with users' preference to return to the space more frequently ($\rho = 0.61$). This finding aligns with previous literature that emphasizes the importance of comfort in encouraging repeated use of a space, which is a key factor in the development of place attachment (Waxman, 2006). Similarly, Seating Comfort also showed a strong correlation with the descriptor "It would be difficult for me to find another space that meets my needs as well as this place does" ($\rho = 0.70$), indicating that comfort plays a crucial role in shaping users' perceptions of the space's unique suitability to their needs. Previous studies have demonstrated that physical comfort, particularly in seating, significantly enhances users' long-term emotional attachment to a place (Lewicka, 2011).

Table 7. Correlation analysis between the physical setting aspects and the descriptors of place attachment of 6-9 using Spearman's correlation coefficient (W. Nabila, W. Nadhila., 2024).

Physical Setting / Place Attachment		(6)	(7)	(8)	(9)
		Light ing	Seating Comfort	Sound scape	Visual Appeal of The Interior Design
(1)	0.49	0.31	0.57	0.33	0.49
(2)	0.45	0.23	-0.46	-0.24	0.45
(3)	-0.37	-0.29	-0.29	-0.32	-0.37
(4)	0.68**	0.48	0.34	-0.37	0.68**
(5)	0.26	0.51	0.22	0.40	0.26
(6)	0.19	0.72**	0.46	-0.37	0.19
(7)	0.34	0.61**	0.56	0.15	0.34
(8)	0.25	0.70	0.50	-0.29	0.25

	**				
(9)	0.68**	0.31	0.69**	0.45	0.68**
(10)	0.50	0.42	0.70**	-0.40	0.50
(11)	0.46	0.40	0.73**	0.33	0.46
(12)	0.33	0.37	0.28	-0.31	0.33

In addition, the aspect of Lighting demonstrated a strong correlation with the descriptor "This environment is important for my ability to focus and be productive." This indicates that lighting quality plays a significant role in supporting user concentration and productivity. The finding reinforces previous research emphasizing that appropriate lighting not only enhances visual comfort but also contributes to both functional and emotional attachment to a space ($\rho = 0.68$). It suggests that well-designed lighting, which provides sufficient brightness without causing discomfort, is a critical element in creating a productive atmosphere. Research has consistently shown that lighting quality affects cognitive performance, particularly in activities that require high levels of concentration such as reading or studying (Lewicka, 2011). The strong correlation between lighting and the availability of facilities needed for studying activities ($\rho = 0.63$) further supports this finding, as adequate lighting is an essential element in creating a functional learning environment.

In addition to these findings, the soundscape played a significant role in shaping place attachment. The auditory environment demonstrated a strong correlation with users' ability to concentrate on productive tasks ($\rho = 0.69$) as well as their emotional attachment to the space over time ($\rho = 0.70$). A positive soundscape which characterized by moderate noise levels that support focus, has been shown to enhance both user satisfaction and attachment to communal spaces, as supported by previous studies (Kang & Zhang, 2010). The soundscape also exhibited a strong correlation with social interaction ($\rho = 0.73$), consistent with various studies suggesting that a well-balanced auditory environment can foster social connection within shared spaces. This reinforces the idea that sound quality not only supports concentration but also plays a vital role in creating a welcoming and inclusive atmosphere for user interaction (Rosenbaum & Massiah, 2011).

These findings offer valuable insights into how specific physical setting aspects, such as seating comfort, lighting, and soundscape. These aspects contribute to the overall user experience and place attachment within the context of this study. The

strong correlations identified suggest that by enhancing these environmental features, space managers can foster deeper emotional and functional connections between users and the spaces they occupy.

In addition to the strong correlations, several physical setting aspects exhibited moderate to weak correlations, or even no significant relationship, with place attachment descriptors. For instance, indoor air quality or ventilation showed weak correlations with most place attachment descriptors, such as “This place reflects my personality and preferences” ($\rho = -0.15$) and “This place provides all the facilities I need for studying or working” ($\rho = 0.15$).

These findings suggest that although air circulation is an important feature for maintaining physical comfort, it does not appear to play a decisive role in shaping users’ emotional or functional attachment to a space. Previous studies in environmental psychology have also highlighted that elements such as air quality are more likely to influence momentary comfort rather than long-term attachment or overall satisfaction with a place (Brown & Raymond, 2007).

Similarly, the aspect of Accessibility showed weak correlations with most place attachment descriptors, such as the statement “I feel that this place provides all the facilities I need for studying or working” ($\rho = -0.27$). This may indicate that while accessibility is essential for the practical use of a space, it does not directly influence deeper emotional attachment or the frequency of repeated visits, both of which are key indicators of place attachment. This finding aligns with Carmona (2021), who suggests that accessibility often functions as a threshold condition: a necessary prerequisite for space usability, but not sufficient to foster strong attachment or emotional connection to the environment (Carmona, 2021).

The absence of significant correlations in aspects such as Cleanliness and Maintenance (with ρ values ranging from -0.42 to 0.44) also indicates that although these factors are important for general satisfaction, they do not significantly influence users’ sense of place attachment in this context. This may be due to the tendency for attributes such as cleanliness and maintenance to be perceived as baseline expectations. As a result, users may place greater emphasis on other factors, such as comfort, lighting, and soundscape, when forming emotional connections to a space.

Discussion

The findings of this study demonstrate that the physical environment of Family Mart Rungkut significantly enhances user comfort and fosters place attachment, particularly among students who utilize the space for studying. The store’s well-planned layout effectively separates shopping and study areas, minimizing disruption between the two activities. This separation allows users to concentrate more effectively, while appropriately dimensioned seating (40 cm chair height and 75 cm table height) ensures ergonomic comfort during extended study sessions. According to Waxman (2006), such physical elements are crucial in creating spaces that promote emotional attachment, as comfort is closely associated with one’s sense of belonging and connection to a place (Waxman, 2006).

In addition, the seating layout at Family Mart plays a key role in fostering place dependence and social bonding. The space offers a variety of seating options that accommodate both individual and group needs. For instance, seats along the walls provide greater privacy for solo users, while larger communal tables in the center can accommodate groups. The spacing between seats (80–90 cm) allows users to move freely without feeling crowded, thereby enhancing both functional and emotional attachment to the space. Previous studies have shown that adequate personal space and ergonomically designed seating significantly contribute to prolonged use and satisfaction in third places (Hendershott, 2007). Therefore, it is unsurprising that seating comfort shows a strong correlation with users’ attachment to Family Mart as a study space.

The artificial lighting, which averaged 580 lux, slightly exceeds the recommended range for learning environments, typically between 300 and 500 lux for reading and tasks that require concentration. Excessive lighting can lead to eye fatigue and discomfort, ultimately reducing long-term user satisfaction. Studies in environmental psychology suggest that overly bright lighting may disrupt concentration, as light intensity is a critical factor in creating an atmosphere conducive to learning (Boyce, 2003). Nevertheless, the measured lighting level did not significantly exceed the recommended range. Therefore, the lighting system at Family Mart is considered sufficient for general activities. By incorporating lower ambient lighting levels or adjustable task lighting, the existing lighting setup could further enhance the overall

experience for users engaging in academic activities.

The soundscape at Family Mart Rungkut, although noisier than traditional learning environments, emerges as a key contributor to the formation of place attachment. The ambient noise level, measured at 60 dB(A), exceeds the ideal range for study settings, which typically falls below 40 dB(A), such as in libraries or other quiet spaces. Nevertheless, background music, the sounds of food preparation, and casual conversations create a lively and dynamic atmosphere. Rather than being perceived as disruptive, this soundscape fosters a sense of togetherness among users. Previous research by Kang and Zhang (2010) emphasized that moderate noise levels, particularly those associated with communal activity, can enhance social interaction and contribute to a sense of connection to a place. In this context, the soundscape plays a dual role: while it does not meet the acoustic standards of a quiet study environment, it still contributes to dimensions of social bonding and place dependence by providing a stimulating setting for group work and informal study sessions (Kang & Zhang, 2010)

CONCLUSION

This study highlights how physical setting aspects of a retail space that also functions as a café or communal area, such as Family Mart Rungkut, can influence user comfort and contribute to the formation of place attachment, particularly among university students who use the space as an alternative learning environment. Through a mixed-methods approach, the study found that elements such as seating comfort, lighting, and soundscape significantly shaped users' positive perceptions and showed strong correlations with specific dimensions of place attachment, especially place dependence and social bonding.

Objectively, the lighting level in the space was within a functional range (580 lux), the room temperature was ideal (23°C), and ambient noise reached 60 dB(A). Although this exceeds the ideal threshold for study environments, it helped create a lively and engaging atmosphere for most users. This is supported by users' positive perception of the soundscape, which was not considered disruptive and was seen as facilitating social connection. The strong correlations between seating comfort, lighting, and soundscape with indicators of long-term attachment suggest that even simple physical design can significantly influence users' emotional experiences of a space.

However, the findings also indicate that overall levels of place attachment remain moderate. This is partly due to lower scores on functional dimensions such as place dependence, and on other physical setting aspects such as workspace availability, accessibility, and cleanliness, which received neutral ratings. Strategic improvements in these areas are therefore needed to strengthen users' emotional and functional bonds with the space.

In conclusion, although Family Mart Rungkut was not originally designed as a formal study space, its supportive physical design, inclusive atmosphere, and adaptive use have enabled it to serve as a relevant third place for student learning. The implications of these findings are valuable for the future development of more inclusive and multifunctional retail environments.

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