

The Impact of Urban Furniture Design on User Behaviour in Klang Valley, Malaysia

Malezya Klang Vadisi'nde Sokak Mobilyası Tasarımının İnsan Davranışı Üzerindeki Etkisi

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ABSTRACT: Urban furniture, encompassing items like benches, streetlamps, trash bins, bus shelter, and public art installations, plays an essential role in urban areas by improving both the visual appeal and functionality of these spaces. These elements profoundly affect human behaviour by fostering social interactions, enhancing safety and comfort, and building community spirit. By recognizing how urban furniture impacts human behaviour, urban designers can develop more vibrant, inclusive, and sustainable urban environments. This research is designed to identify the importance of urban furniture design towards users in Klang Valley. This research utilizes quantitative methods to gather data from various people, including students, and adults. The results of the study showed that designed urban furniture enhanced public comfort, safety and engagement, promoting longer stay and increased social interactions in public areas. Additionally, the study highlights the importance of considering local cultural and environmental factors in the design process to ensure the urban furniture meets the specific needs and preferences of the community. The result of the necessity urban furniture for the public spaces in Klang Valley to prioritise user-centric design in urban furniture is to foster more vibrant, inclusive and sustainable cities.

Keywords: Urban furniture, user behaviour, Klang Valley, Malaysia

ÖZ: Sokak mobilyaları, banklar, sokak lambaları, çöp kutuları, otobüs durakları ve kamusal sanat eserleri gibi öğeleri kapsar ve bu alanların hem görsel çekiciliğini hem de işlevselliğini iyileştirerek kentsel alanlarda önemli bir rol oynar. Bu unsurlar, sosyal etkileşimleri teşvik ederek, güvenliği ve konforu artırarak ve topluluk ruhunu oluşturarak insan davranışını derinden etkiler. Bu araştırma, Klang Vadisi'ndeki kullanıcılar için sokak mobilyası tasarımının önemini belirlemek üzere tasarlanmıştır. Araştırma kapsamında, öğrenciler, gençler ve yetişkinler dahil olmak üzere halktan toplanan veriler kullanılmıştır. Araştırma sonuçları iyi tasarlanmış sokak mobilyalarının kamusal konforu, güvenliği ve katılımı artırarak, kamusal alanlarda daha uzun süre kalmayı ve artan sosyal etkileşimleri teşvik ettiğini göstermiştir. Ayrıca, çalışma sokak mobilyalarının toplumun özel ihtiyaçlarını ve tercihlerini karşılamasını sağlamak için tasarım sürecinde yerel kültürel ve çevresel faktörlerin dikkate alınmasının önemini vurgulamakta ve Klang Vadisi'ndeki kentsel alanların, daha canlı, kapsayıcı ve sürdürülebilir kentsel ortamlar yaratmak için sokak mobilyalarında kullanıcı merkezli tasarıma öncelik vermesi gerekliliğinin altını çizmektedir.

Anahtar Kelimeler: Kent mobilyası, kullanıcı davranışı, Klang Valley, Malezya

1. INTRODUCTION

The world population, which was around 700 million approximately 250 years ago, has exceeded 8 billion today (Kuzmina et al., 2023; Ertürk et al., 2024). However, the urbanization rate, which was below 10% in the 1900s, is approximately 50% today and is estimated to reach 90% by 2030 (Arıca et al., 2024; Isinkaralar et al., 2024). While urbanization around the world had positive impacts on people's modern lifestyle, also has become an irreversible global problem like global climate change (Cantürk et al., 2024; Yaşar İsmail et al., 2024; Sevik et al., 2025). Urban areas contain many problems, such as pollution, traffic, and infrastructure, as well as social issues, and these conditions significantly affect people's health and psychology (Koç et al., 2024; Ozturk Pulatoglu et al., 2025). Therefore, when planning living environments and especially common areas in urban areas, their effects on people's health and psychology should be considered, and people's expectations, wishes, and needs should be considered.

Urban furniture, encompassing objects like seating, tables, and accessories profoundly shapes the urban experience by influencing city habits and feelings. These elements, found in public spaces such as streets, parks, and squares, enrich the city environment and encourage activities, rest, social interaction, and urban engagement (Yücel, 2013; Ertaş, 2017; Grabiec et al., 2022; Kłopotowska, 2020). Designers of urban furniture play a crucial role in enhancing public participation and positive environmental impact, contributing significantly to the aesthetic and functional value of urban areas (Schraml and Färber, 2024; Askarizad and He, 2025). As Jacobs (1961) and Bulut and Atabeyoğlu (2006) have noted, urban furniture is integral to creating "city identities" and improving social life. Moreover, various types of urban furniture found in public spaces provide users with visual cues that the area is well-maintained and equipped with necessary facilities, according to Amir et al. (2024).

In Malaysia, urban furniture blends practicality with cultural aesthetics, reflecting the nation's diverse heritage. Elements inspired by Malay, Chinese, Indian, and indigenous cultures contribute to the unique identity of urban environments. Practical considerations, such as the durability of materials in Malaysia's tropical climate and the promotion of new material choices, are also paramount (Hishammuddin and Alli, 2022). Urban furniture's placement and structure are vital for planning, enhancing pedestrian safety, accessibility, and the overall quality of urban life, thus fostering vibrant, inclusive public spaces.

Despite its importance, urban furniture often faces issues like deterioration, and inadequate maintenance, impacting its functionality and aesthetic appeal. The poor upkeep can lead to negative perceptions of safety and cleanliness, whereas sustainable approaches to design of the urban

furniture might tackle these issues (Allameh and Heidari, 2020). In Malaysia, urban furniture design is often unplanned and does not fully address user needs or environmental considerations (Siu, 2005; Amir et al., 2024). This study aims to investigate how urban furniture influences human behavior and social interaction, focusing on the design criteria and their impact on public spaces in Klang Valley, Malaysia.

The design and condition of urban furniture contribute to sustainable streetscapes, providing rest, social interaction, and accessibility for diverse populations, including the elderly and those with disabilities (Yücel, 2013; Kłopotowska, 2020). Historically, innovations like cast-iron urban furniture during the Industrial Revolution have transformed streetscapes (Soffritti et al., 2020). Contemporary trends emphasize sustainability and technological integration, with environmentally friendly materials and smart features like solar-powered lighting and charging outlets enhancing user experience and contributing to environmental goals (Harte, 2016). Well-designed street furniture reflects historical and cultural characteristics, fostering community identity and engagement (Gehl, 2010). Overall, urban furniture's strategic placement and design play a vital role in urban planning, improving accessibility, safety, and community interaction, and require ongoing innovation to address evolving urban challenges.

Malaysia's mixed history can be seen in the country's urban furniture, and its impact on tourists' visiting preferences was also studied by the scholars (Arnis et al., 2012; Hanafiah et al., 2021; Amir et al., 2024). Traditional Malay, Chinese, and Indian design elements are often used to give a building a feeling of place and character. Kuala Lumpur carried certain streetscape elements such as public art installations to showcase different cultural backgrounds with certain design features as well as updates on Klang River Street furnitures (Askari and Soltani, 2022). This method not only makes the area look better, but it also makes people feel like they belong and are proud of it.

Sustainability is now one of the most important things that Malaysians think about when they create outdoor furniture. More and more eco-friendly products and tools that use less energy are being used. In places like Kuala Lumpur and Putrajaya, solar-powered streetlights and benches made from recycled materials are becoming more popular (Zavari et al., 2016). Not only do these new ideas help the earth, but they also make people more aware of problems related to sustainability.

The importance of functional design cannot be overstated when it comes to ensuring that urban furniture effectively fulfils the practical requirements of city residents. Involving the public in the design process has demonstrated a correlation with the creation of urban furniture that more effectively fulfils the requirements of the community. User perception on design endeavors in places such as Johor

Bahru, was shown better insight on development of urban furniture that serves practical purposes and embodies the specific tastes of the local community (Nizam et al., 2025).

There has been a substantial improvement in the incorporation of cultural aesthetics, sustainability, and public participation into Malaysia's urban furniture design (Rashid et al., 2024). Although there are still issues that need fixing, the upbeat tendencies show that people are starting to see how important it is to have well-planned public places to improve city life. For urban furniture to play an integral role in the thriving and long-term urban development of Malaysian cities, there must be persistent endeavors in research, policy, and community engagement.

The purpose of the study is to explore the significance of urban furniture design in influencing user experience and behavior in urban spaces within the Klang Valley which includes the understanding of the impact of well-designed urban furniture on public comfort, safety, social interactions, and inclusivity. This purpose aligns with the study's emphasis on improving urban planning and fostering better public engagement in Klang Valley through thoughtful urban furniture design.

2. MATERIALS and METHODS

This research aims to identify the importance of urban furniture design towards users (Table 1). Klang Valley was chosen as the research base for the collection of data (Figure 1).

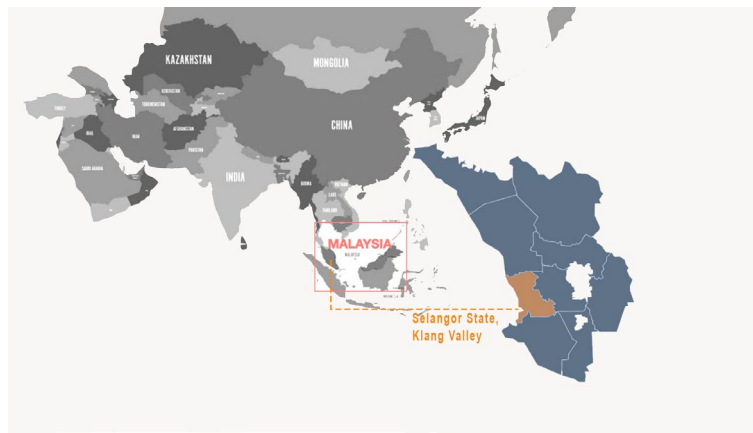


Figure 1. Location of study area

Klang Valley is one of the most populated areas in Malaysia, having diverse types of urban furniture (Askari and Soltani, 2022). Klang Valley, named by Klang River, is geographically bordered by Banjaran Besar Mountains and the Strait of Malacca. The valley contains major cities with multicultural background and economic significance within Malaysia. Today, Klang Valley contains the federal territories, including Kuala Lumpur and Putrajaya. Klang Valley is sized around 8236 km² and has hot and humid tropical weather throughout the year (Morris et al., 2017).

A questionnaire was chosen and developed to be the research instrument for collecting information from the respondents. A sample of 50 respondents, including adults, students, and end-users, were selected to represent a diverse background. Since the allocated time for data collection was limited, the total number of participants who joined the study was 50 residents of Klang Valley, considering the minimum number of 30 participants required for grounded theory research (Creswell, 2008). A questionnaire was chosen as the research instrument for its effectiveness over face-to-face interviews in gathering end-user opinions on the impact of urban furniture design on human behavior. The questionnaire consists of three sections with close-end questions regarding the requirements for achieving the objectives of this study.

Section 1 is about the background of the respondents. In section 2, seven questions are set to find out the 'how urban furniture design can give an impact to human daily life?' and used a five-point Likert scale. In section 3, five closed ended questions with multiple choices designed to investigate the main question of 'what is the importance of street furniture design between human behaviors?'.

The questionnaire, distributed via online platforms such as Google Form and WhatsApp to respondents aged 18-60 in Klang Valley, comprised three sections: respondent background, the impact of urban furniture on daily life, and the importance of urban furniture design for human behavior. The respondents were open to end-users in Klang Valley and the age ranged from fifteen to sixty years old as it were to ensure the data collected might be utilized in completing this research. The study used a descriptive analysis of the data collected. The analyzed data were converted from frequency count into the percentage of student responses and presented in pie chart and bar chart for ease of visualizing data to the audience by using Google Sheets and Words.

Table 1. Research question, research objectives and research methodologies

Research Objective (RO)	Research Question (RQ)	Research Methodology (RM)
To investigate urban furniture design towards human behaviours	What is the design importance of urban furniture to human behaviors?	Questionnaire
To identify the importance of urban furniture design towards users	How does the design of urban furniture give impact to user?	Questionnaire

The questionnaire's design included a mix of seven questions on the impact of urban furniture on daily life and five on its importance for human behavior, ensuring comprehensive data collection. The collected data underwent descriptive analysis, with frequency counts converted into percentages and visualized through pie and bar charts. This approach facilitated clear presentation and interpretation of the results, contributing to a better understanding of how urban furniture design influences human behavior in urban spaces.

3. RESULTS and DISCUSSION

The research aimed to investigate how urban furniture design impacts human behavior and its importance to users. A questionnaire addressing these objectives was distributed, focusing on respondents' understanding and thoughts. Key questions explored how urban furniture affects willingness to walk, the influence of benches on public space usage, the design of bus stops on perceptions of public transportation, the emotional impact of sculptures, the sense of safety provided by streetlights, and the usability and maintenance of public restrooms. Additionally, questions assessed the frequency of public space usage with urban furniture, types commonly encountered, accessibility for people with disabilities, the impact of design on comfort and relaxation, the influence of visual appeal on urban perception, the role of bus stops in choosing public transportation, the effect of urban furniture placement on pedestrian traffic, the design of bicycle racks on cycling decisions, and the overall impact of

urban furniture design on user experience and comfort. Respondents also provided insights on potential improvements to better cater to user needs. The data collected was analyzed to understand the interplay between urban furniture design and user behavior, highlighting its crucial role in enhancing urban environments.

According to the data, it is related to the frequency with which respondents use public spaces for their daily activities. A substantial 18 out of 50 respondents, or 36%, reported that they utilize public spaces on a daily basis as part of their routine activities in Klang Valley. This indicates that a significant portion of the sample engages with public spaces frequently, highlighting the importance of these areas in their everyday lives. Following 30% of the participants, indicated that they use public spaces several times a week, suggesting a high but slightly less frequent engagement compared to daily users. In contrast, 18% of the participants stated that they visit public spaces only once a week, showing a more periodic use of these areas. The lowest frequency of public space usage was reported by 16% of the sample, who only engage with public spaces monthly. This distribution of responses underscores a varied pattern of public space utilization among the respondents, ranging from daily use to occasional visits, and reflects differing levels of engagement with these communal environments. Overall, the data demonstrates that while a considerable number of people frequently use public spaces, there is also a significant portion of the population that engages with these spaces less regularly.

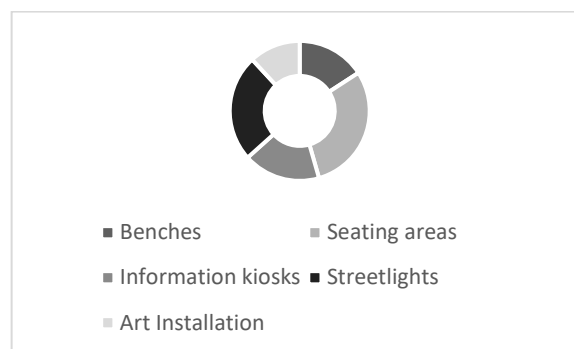

Figure 2. The types of street furniture that respondents commonly encounter in Klang Valley.

Figure 2 indicates the types of street furniture that respondents commonly encounter in their urban environments. The most frequently encountered type of

street furniture is seating areas, 30%, identifying these spaces as the most common feature they encounter in public areas. This indicates that seating areas are a

prominent and prevalent element in the respondents' daily experiences of public spaces. Following closely 24% of the total sample reported encountering streetlights as a common type of street furniture. Streetlights play a crucial role in urban environments, providing illumination and contributing to the overall safety and aesthetics of public spaces. Additionally, 16% of the participants mentioned encountering benches regularly, which are also a significant component of street furniture that offers resting places for the public. In contrast, the lowest percentage of encounters was reported for art installations, with only 12%. This lower frequency of art installations highlights that, while they are a valuable aspect of public space design, they are less prevalent compared to more functional street furniture such as seating areas, streetlights, and benches. Overall, the distribution of responses reflects that while functional elements like seating areas, streetlights, and benches are commonly encountered, more decorative or cultural elements like art installations are encountered less frequently in the respondents' urban environments. Moreover, 66% of the participant indicated that the visual

appeal and aesthetics of street furniture influence their perception of the surrounding urban environment. The survey results indicate that 60%, of respondents believe that there is a need to improve the design of existing street furniture to better meet users' needs. This distribution suggests that while a significant majority supports the idea of enhancing street furniture design for greater user satisfaction, there remains a considerable portion of the population that is either satisfied with the current designs or does not prioritize this issue.

Responses to the question 'How does urban furniture affect your willingness to walk or bike in a city?' shows different levels of willingness to walk in the city among the 50 respondents. Specifically, 26% strongly disagreed with the idea of walking in the city, and 24% disagreed. About 28% were neutral, while 22% somewhat agreed with walking in the city. Notably, none of the respondents strongly agreed with walking in the city, suggesting that there might be underlying issues affecting their willingness that could be explored further (Table 2).

Table 2. The percentage of respondents' willingness to walk or bike in Klang Valley. 'How does urban furniture affect your willingness to walk or bike in a city?'.

Answer	No	Percentage (%)
Strongly Disagree	13	26
Disagree	12	24
Neutral	11	22
Agree	4	28
Strongly Agree	0	0

Table 3 shows varied opinions on how long people stay in public spaces. Ten percent of respondents strongly disagreed with staying long in these areas, and 18% disagreed. Twelve percent were neutral, while 46% agreed

that they stay longer in public spaces. Additionally, 14% strongly agreed with staying longer. Overall, most people have a positive view of spending time in public spaces, but some still disagree.

Table 3. The percentages of respondents' on the amount of time to be spent in public space

Answer	No	Percentage (%)
Strongly Disagree	5	10
Disagree	9	18
Neutral	6	12
Agree	23	46
Strongly Agree	7	14

The results in Table 4 indicates the different opinions on how public transport affects perceptions of public spaces by the public furniture users in Klang Valley. Sixteen percent of respondents strongly disagreed, and another 12% disagreed or were neutral. In contrast, 38% agreed

that public transport influences their view of public spaces, and 12% strongly agreed. This indicates that while many people believe public transport impacts their perception, opinions vary widely.

Table 4. The percentages of percentage of respondent on effectiveness of public transport in Klang Valley

Answer	No	Percentage (%)
<i>Strongly Disagree</i>	8	16
<i>Disagree</i>	6	12
<i>Neutral</i>	11	22
<i>Agree</i>	19	38
<i>Strongly Agree</i>	6	12

Public art is an important component of the modern cities (Cartiere and Tan, 2020). Thus, the questions about public art were asked to the participants from Klang Valley. Table 5 shows opinions on the importance of sculptures in urban spaces. Twelve percent of respondents strongly disagreed, and 26% disagreed. However, 30% agreed that sculptures

are important, and 22% strongly agreed. Only 10% were neutral. This indicates that most people support the inclusion of sculptures in public spaces, though some remain indifferent or disagree. The data highlights the issue of recognitions of public art understanding by the people of Klang Valley.

Table 5. The level of response to sculptures in urban spaces influences their emotional reaction to the area by the respondents

Answer	No	Percentage (%)
<i>Strongly Disagree</i>	5	10
<i>Disagree</i>	6	12
<i>Neutral</i>	5	10
<i>Agree</i>	20	40
<i>Strongly Agree</i>	14	28

Since one of the significant measures on cities nighttime safety in urban areas where public furniture such as lighting design etc. can be associated, the question ‘Does streetlight in public spaces affect your sense of safety at night?’ was asked to the participants (Cozens et al., 2017). Ten percent of respondents strongly disagreed with the statement while another 10% were neutral. Twelve percent disagreed, while 40% agreed, and 28% strongly agreed that they feel safe at night. This distribution demonstrates that while there is a notable segment of the population with mixed or negative views on nighttime safety, most respondents either agree or strongly agree that they feel safe at night in urban environments, showcasing a predominantly positive perception of nighttime safety among the respondents. Lastly, the opinions on public restroom design were asked since it has

been a significant need in urban context (Kelly, 2024). According to the findings, twenty-four percent of respondents strongly disagreed with the current designs in Klang Valley, showing dissatisfaction. Only 4% disagreed but to a lesser extent. The largest group, 40%, agreed there are issues with restroom designs, and 20% strongly agreed that improvements are needed. The smallest group, 10%, was neutral. This distribution of responses reveals a general acknowledgment of design issues in public restrooms, with the majority either agreeing or strongly agreeing that improvements are necessary, while a smaller group is either neutral or in disagreement with the current state of restroom designs. Overall, it can be said that most respondents see room for improvement in public restroom designs.

4. CONCLUSIONS

The study highlighted the significant role of urban furniture design in influencing human behavior and user experience in urban environments. Distributed via online social platforms like WhatsApp and Telegram to urban furniture users in Klang Valley, Kuala Lumpur, the survey addressed two primary research questions. Firstly, it investigated the role of urban furniture design in shaping behavior (RQ1), revealing that well-designed urban furniture enhances comfort, accessibility, safety, and visibility. The majority

of the users (56%) reported that accessible and aesthetically pleasing bus stops influenced their use of public transport. Secondly, the impact of urban furniture design on users (RQ2) was explored, emphasizing the importance of quality, placement, style, and cultural significance. Respondents favored clear, minimalistic designs that enhanced their urban experience. Effective urban furniture design not only improves user experience but also promotes extended use of public spaces, environmental sustainability, and urban cleanliness which includes maintenance and vandalism precautions. Overall,

the research confirms that thoughtfully designed urban furniture plays a crucial role in enhancing the livability and appeal of urban spaces.

Based on the study's results, several recommendations are made to advance urban furniture design research and implementation. First, there is a need for ongoing research and communication to explore the effectiveness of various urban furniture designs. Designers should emphasize comfort and local aesthetic value, adhere to professional standards, and integrate current technologies to enhance urban environments. Additionally, the study's sample size of 50 respondents was insufficient for a comprehensive analysis, suggesting that future research should involve larger sample sizes for more robust findings. Despite the trend towards modernization, understanding how users navigate and interact with urban furniture is crucial for effective design. Future studies should focus on empirical research that is conceptually oriented and considers user behavior to improve public space functionality, safety, and user satisfaction. Enhanced urban furniture design can make urban spaces more accessible, comfortable, and engaging, ultimately contributing to a better urban experience. Most of the participants stated that the design of urban furniture is in relation to user behavior in public space, and the design of urban furniture is not user-friendly and not aesthetically appealing. Moreover, the respondents prefer the design of street furniture to emphasize comfort, accessibility, and inclusivity, according to the findings. According to the results, it can be suggested that more user-centered urban furniture solutions can be added to Klang Valley's urban landscape by considering the

users' opinions and climate factors, where tropical outdoor conditions play a significant role in the precautions of maintenance of urban furniture. The local councils can take the users' experience and opinions into consideration for upcoming upgrades in Klang Valley.

Author Contributions

Muhammad Khairie Nazmie Bin MUSTAPA: (a) Idea, Concept, (b) Study Design, Methodology, (c) Literature Review, (f) Data Collection, (g) Analyses, (h) Writing Text

Türkan Sultan YAŞAR ISMAIL: (b) Study Design, (d) Supervision, (h) Writing Text, (i) Critical Review

Noorul Nadya SHAHARUM: (d) Supervision, (h) Writing Text

Declaration of Ethical Code

In this study, we declare that all the rules stipulated within the scope of the "Directive on Scientific Research and Publication Ethics of Higher Education Institutions" have been adhered to, and none of the actions specified under the section titled "Violations of Scientific Research and Publication Ethics" of the mentioned directive have been committed.

Conflict of Interest

The authors have declared no conflicts of interest.

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