

Exploring Thai Vernacular Houses for Heritage Tourism along the Western Bangkok Canals

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ABSTRACT

The tourism industry in Bangkok, Thailand, has predominantly focused on urban attractions within the city, overlooking the significant cultural heritage and historical value of the canal-side areas. This research seeks to explore the untapped potential of heritage canal-side tourism in Western Bangkok. The objective is to identify and map the Thai and vernacular houses situated along the canal in the western region of Bangkok, an area of important cultural and heritage significance, and analyze their clustering and distribution patterns, utilizing a rapid survey—a comprehensive and swift data collection method characterized by quick on-site assessments and visual inspections. The findings reveal three areas around Khlong Bangkok Yai, Khlong Bang Noi and Khlong Bang Chueak Nang, and Khlong Saman Chai connecting to the Khlong Bang Mod that exhibit considerable potential for developing tangible architectural resources, thereby creating scenic attractions for cultural tourism. These results serve as a foundation for further development of the canal-side areas as tourist destinations, showcasing their unique historic scenery of architectural charm and cultural heritage.

Keywords: canal network, khlong, rapid survey, Thai vernacular houses, tangible heritage

INTRODUCTION

The cultural heritage of canal-side areas in Western Bangkok has long captivated travelers from across the globe, providing them with an opportunity to immerse themselves in historical sites and catch a glimpse of the past (Unakul, 2012). In recent years, canal tourism has garnered significant attention due to its ability to offer a unique perspective on history while showcasing the natural beauty and historical significance of waterways. Among the regions with immense potential for canal-based cultural tourism, Western Bangkok stands out. Nestled alongside the Chao Phraya River, Western Bangkok boasts an impressive network of canals, known as "khlong" in Thai, which have played a pivotal role in shaping the region's history. These canals were once the lifeblood of the city, serving as vital transportation routes and irrigation channels. Although Western Bangkok has now been transformed into a densely populated residential area, remnants of its canal-centric past remain. The urban landscape along the canals seamlessly blends traditional architecture with contemporary elements, creating a harmonious fusion of the old and new.

The old elements and architecture give visitors a sense of nostalgia. Also known as cultural tourism, nostalgia tourism is a niche segment that caters to individuals seeking to reconnect with the past and experience a sense of days gone by (Ali, 2015). The canal-side areas of Western Bangkok offer a unique opportunity for visitors to immerse themselves in the ambiance of bygone eras, evoking memories, and a longing for the past (Denpaiboon & Tohiguchi, 2004; Iamtrakul et al., 2018). This form of tourism allows travelers to engage with the cultural heritage of the region, creating memorable experiences and deepening their understanding of the local history. Cultural tourism, on the other hand, focuses on the preservation and promotion of the cultural heritage of a particular area. The canal-side areas of Western Bangkok, with their historical significance and architectural splendor, serve as an ideal backdrop for cultural tourism initiatives. By showcasing and conserving its tangible and intangible qualities (Batra, 2014; Krasae-in & Yaemyolngam, 2020), such as the traditional buildings, customs, and stories of the canal-centric past, Western Bangkok can attract visitors

who are keen to explore and appreciate the rich cultural legacy of the region.

Several studies have delved into various aspects of canal-based tourism in Thailand. Jomsri (2020) utilized machine learning and analytic hierarchy process techniques to create a travel route recommender system for water travel attractions along the Om Non Canal. Prakraiwan (2017) emphasized the cultural tourism potential of the Bangkok Canal, exploring its historical, physical, economic, and socio-cultural aspects.

Madhyamapurush (2023) examined the characteristics of long-stay tourism in Thailand, particularly the potential emergence of the retirement home niche market. Suriya (2011) conducted a panel data analysis to investigate the impact of tourism on household income, poverty reduction, and income distribution at the village level. Suebsuk and Nakagawa (2017) focused on the conservation and restoration campaign along the Amphawa Canal, promoting water-based communities through homestay concepts and cultural conservation. Collectively, these studies have contributed valuable insights into attraction development, cultural interpretation, long-stay tourism, income generation, and community conservation efforts related to canal-based tourism in Thailand.

However, the objectives of this study are to explore the potential for nostalgia tourism centered around traditional buildings composing historic scenery, and highlighting the historical, architectural, and cultural elements that evoke a sense of nostalgia that connects visitors to the region's past, and to provide recommendations for the preservation, development, and promotion of cultural tourism to revitalize the canal-side areas and foster sustainable tourism growth. The clustered density of Thai vernacular house buildings in the canal-side areas composes historic scenery that intricately weaves together historical, architectural, and cultural elements. This unique setting evokes a profound sense of nostalgia, acting as a living testament to Bangkok's rich heritage. The arrangement of these houses forms an immersive experience for visitors, connecting them to the area's past, and becoming key elements in cultural tourism, offering a glimpse into the bygone era and fostering a deep appreciation for the historical and cultural significance of the canal-side communities.

The research identifies and documents the cultural heritage within the canal-side areas of Western Bangkok, comprehensively mapping the Thai vernacular houses situated along the canals. By embracing the potential of cultural tourism in the canal-side areas, Western Bangkok could breathe new life into the forgotten canals and contribute to the restoration and revitalization of the surrounding region. This form of tourism can also stimulate the grassroots economy and safeguard the cultural heritage of neighborhoods along the canals. Through thoughtful preservation and development, Western Bangkok can position itself as a captivating destination for domestic and international tourists, offering an enriching experience by combining nostalgia, heritage, and the beauty of canal-side exploration.

LITERATURE REVIEW

History of canal-side tourism in Western Bangkok

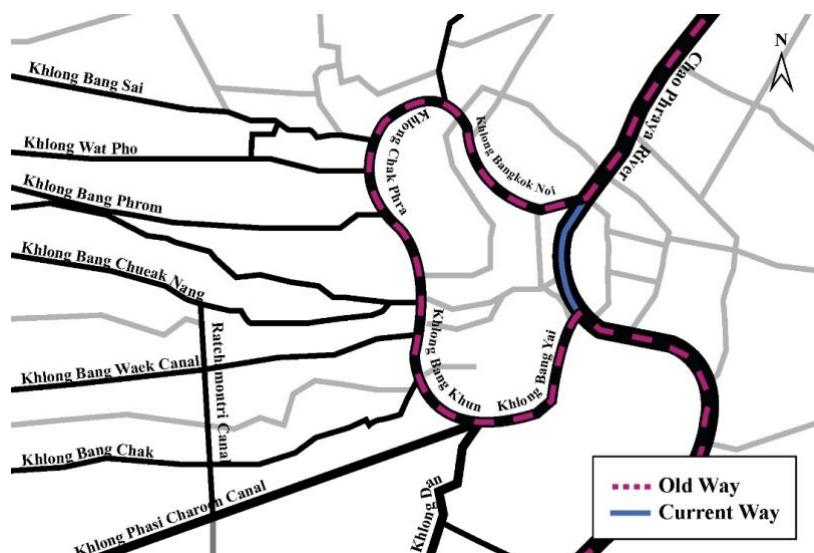
The western area of Bangkok, formerly known as Thon Buri Province, has a rich historical background. Thonburi once served as a food production hub for Phra Nakhon, known as the historic core area of Bangkok, with local residents being primarily involved in agricultural

activities—cultivating crops, and engaging in farming and gardening practices. As a result, a lengthy canal route was excavated, stretching from the Chao Phraya River to the western outskirts of Bangkok, with the landscape characterized by raised gardens, extensive ditches, canals, and ponds, all of which were necessary to meet the agricultural water demand.

To facilitate transportation and commuting within the neighborhood, an extensive water transportation system was developed, with shortcut canals being built, such as one linking the Khlong Bangkok Noi and the Khlong Bangkok Yai. The construction of this shortcut canal, known as the new Chao Phraya River (Green Line), has significantly reduced travel time and provided seamless connectivity within the area. This development has created a continuous water route, greatly benefiting transportation and accessibility in the region. Furthermore, several additional shortcut canals have been constructed to link with the main canal area (the Khlong Phasi Charoen being a notable example) in an effort to enhance the connectivity and accessibility of the region, providing convenient passage for both goods and people (Jindamaneerojana, 2012). The overall development of the water transportation system and the creation of these shortcut canals have played a significant role in shaping the western area of Bangkok, facilitating agricultural activities, and improving connectivity within the neighborhood.

Figure 1

Location of the Current Chao Phraya River.



Note. The location of the Khlong Bangkok Noi shortcut links to the Khlong Bangkok Yai.

Thai vernacular houses can be observed on both banks of the historic Chao Phraya River, specifically along the Khlong Bangkok Noi and Khlong Chak Phra. As the city's population grew and people migrated to the area, the residential zone expanded. This expansion has led to the development of distinct cultural expressions reflected in the physical characteristics of the architecture. For instance, there are some raft houses with spacious patio areas that serve as spaces for trading and commercial activities. These houses exhibit influences from Chinese immigrants, as evidenced by their architectural style and decorative elements that incorporate Chinese artistic elements (Yodsurang & Uekita, 2016). The Thai vernacular houses along the canals showcase the fusion of different cultural influences, resulting in unique architectural forms that reflect the lifestyles and heritage of the local community (O'Neil, 2008; Yodsurang, 2015).

The Khlong Phasi Charoen has been officially documented as a primary waterway for transportation, facilitating the movement of goods, including agricultural products and opium. Subsequently, additional canals were dug to the left of the Khlong Chak Phra, namely the Khlong Baan Sai, Khlong Bang Phrom, at the mouth of the Khlong Bang Noi, and the mouth of the Khlong Bang Chueak Nang. These canals provided housing and arable land for agriculture while offering the convenience of water transportation. Consequently, the western area was transformed into a significant agricultural region, supplying food to the capital city (Chankrajang & Vechbanyongratana, 2020; Jindamaneerojana, 2012). However, with the transition of Thonburi from a neighboring province to being a part of Bangkok, and the subsequent development of road and rail systems, real estate investors seized the opportunity to acquire land in the area. This led to the rapid urbanization and densification of Western Bangkok. Consequently, the once extensive maritime transport system has gradually diminished, with only a few conserved and utilized communities surviving.

In contemporary times, the canal has found a renewed purpose as a tourism attraction, as evidenced by government support for tourism initiatives that revolve around the preservation of cultural heritage. There has been an increase in water activities and the recognition of the value

placed on the local way of life and traditions within the area (Yodsurang et al., 2022b), thereby contributing to the authenticity and cultural richness of the destination. By embracing and promoting these cultural elements, Western Bangkok should be able to not only attract tourists but also foster a sense of pride and ownership among the local community, leading to the sustainable preservation and revitalization of canal-side neighborhoods.

However, it is disheartening to note that the number of traditional Thai vernacular houses remaining within Bangkok is diminishing rapidly due to urban expansion and changing local behaviors. The relentless growth of the city and the shift toward modernization have led to the demolition or alteration of numerous historic Thai houses, as room is made for new developments and infrastructure projects. Consequently, the cultural landscape is losing valuable architectural treasures and we are witnessing the gradual disappearance of the distinct architectural and cultural heritage that these houses once represented (Yodsurang et al., 2015). The decline in the number of remaining Thai vernacular houses emphasizes the urgent need to prioritize their preservation. These houses are not merely physical structures but repositories of history, traditions, and local knowledge. They offer insights into the unique way of life and cultural practices of canal-side communities, encapsulating the essence of Thai identity. Preserving these exceptional architectural examples is crucial for safeguarding the authenticity and diversity of the built environment in Bangkok.

Cultural tourism along the canal is an important component of sustainable tourism. It involves the integration of historical and cultural blocks with modern commerce, creating a complex space characterized by multi-elements, multi-cultures, and multi-functions (Ricart et al., 2019).

Understanding tourists' spatial cognition is crucial to supporting heritage conservation and encouraging sustainable cultural tourism. By using a space syntax-based methodology, designers and managers can identify areas where cognitive experiences can be improved (Xu et al., 2020). Additionally, the perception of tourists plays a significant role in the development of cultural heritage tourism. Factors such as heritage attraction, cultural

experience, service facilities, and market conditions influence tourists' attitudes toward heritage protection and their preference for tourism development (Ting et al., 2021). Visualizing acoustic comfort along tourist routes is also important for route-based tourism in historic areas. GIS-based traffic noise models can help identify areas where tourists may suffer from excessive traffic noise, which can adversely impact the promotion of route-based tourism (Sheng & Tang, 2015).

Cultural heritage conservation and the historic urban landscape

The conservation of cultural heritage encompasses various measures aimed at protecting its value, meaning, and historical significance. This involves preserving the physical and cultural forms of heritage to the greatest extent possible, and retaining its inherent value. In this context, the importance of the Historic Urban Landscape (HUL) becomes significant (Bandarin & van Oers, 2012). The HUL emphasizes a holistic and integrated approach to heritage conservation, considering not only individual buildings or sites but also the broader urban context in which they are situated. It recognizes that the cultural significance of heritage is deeply intertwined with its surrounding urban fabric, including the historical, social, and economic aspects (García-Hernández et al., 2017). By adopting the principles of the HUL, conservation efforts can extend beyond individual structures to encompass the entire urban landscape, preserving the integrity of the cultural heritage and the sustainable development of historic areas.

The evaluation of the HUL plays a crucial role in understanding the historic environments within these spaces. To achieve a comprehensive assessment, it is necessary to consider the consistency and relationship between the canal and surrounding settlement. The city or town area represents the accumulation of historical and cultural values, as well as unique geographical characteristics. Therefore, assessing the authenticity of environmental conditions along the canals requires the application of the HUL methodology, which

encompasses several indicators that reflect the value and importance of the historical landscape (Nilson & Thorell, 2018; Sirisrisak, 2007). The indicators mentioned can be categorized into tangible and intangible elements, both of which play a vital role in the preservation and promotion of the built environment and local identity, thereby contributing to the overall success of heritage conservation efforts.

In the context of an overlooked canal area, applying the HUL approach involves recognizing the multifaceted historical, cultural, and architectural significance of the space, and considering the canal as an integral part of the cultural landscape (Ricart et al., 2019). The cultural significance statement within the HUL framework calls for exploration of the architectural character along the canal, identifying elements that contribute to the area's cultural richness. This holistic understanding informs decision-making in urban planning and conservation, fostering sustainable development for overlooked canal areas by recognizing and preserving their cultural identity and historical narrative (Southgate & Sharpley, 2002). The cultural significance statement has been expanded to encompass a deeper understanding of the architectural character, going beyond quantitative assessments to consider the qualitative elements that contribute to the cultural richness of the canal environment.

On the tangible side, the architectural structure of canal-side Thai vernacular houses not only reflects the society and community in which they are situated but also serves as a tangible representation of social development, economic changes, and cultural influences (Panitchpakdi, 2018). Certain architectural landmarks possess exceptional value due to their rarity and significance in defining the canal-side landscape. The skyline, characterized by the visual intersection of the sky with buildings or land, acts as an iconic element representing the identity of the canal-side area and potentially influencing public perception. Urban areas, such as plazas, streets, and waterfronts, serve as gathering spaces where community activities and memories are formed, thereby shaping the overall image of the canal-side region (Issarathumnoon, 2020). Furthermore, the cluster of traditional Thai houses, specifically designed to showcase local identity, contributes to the

overall scenery and aesthetics of the HUL. Smaller elements, such as decorative features, architectural details, and landscaping, add charm and appeal for both local residents and visitors. Additionally, the presence of indigenous vegetation in a canal-side area plays a significant role in defining its unique character, with native plants often being associated with cultural meanings or narratives that connect to local communities.

From the perspective of intangibles, the canal-side Thai vernacular houses encompass various intangible elements that contribute to the preservation and promotion of the built environment and local identity. The functions assigned to a canal-side area, whether residential, commercial, or cultural, embody its distinct role and purpose within the community. The names given to houses, neighborhoods, and locations often carry significant meanings and give rise to stories, providing insight into the cultural significance of the site. The use of local languages and dialects further enhances the authenticity of the cultural heritage and serves as a medium for conveying the richness of the local traditions to visitors. Social activities and traditions, such as religious ceremonies, festivals, and communal gatherings, play a vital role in shaping the community's identity and fostering a sense of belonging. The historical significance of a canal-side area is captured through narratives and stories that reflect the experiences and memories of the community residing there. The authentic way of life preserved by the local residents, encompassing clothing, hairstyles, daily routines, and traditional practices, adds depth and authenticity to the cultural fabric of the canal-side region (Pongajarn et al., 2018). The local cuisine, with its traditional recipes, flavors, and cooking techniques, represents an intangible value that reflects the local way of life and contributes to the overall image of the locality (Lunchaprasith & Macleod, 2018). Additionally, the wisdom and beliefs ingrained in the local knowledge system demonstrate how residents have historically interacted with their natural environment, demonstrating their deep connection to the canal-side landscape and heritage.

Adopting a holistic approach to HUL management encompassing these elements can yield numerous benefits. Proper management

can stimulate economic and social development through tourism, trade, and increased property values, contributing to the revitalization of canal-side areas with Thai vernacular houses. The maintenance, restoration, and preservation of canal-side Thai vernacular houses should also generate a source of income for local communities, providing higher returns than non-significant sites. The proximity of these houses to historical sites, monuments, or renowned locations enhances the perception and desirability of the area, attracting a larger audience who may be willing to pay a premium for the authentic experience it offers.

In conclusion, an in-depth evaluation of the morphological form of canal-side Thai vernacular houses should consider the diverse elements that contribute to their cultural and historical significance. By embracing and managing the HUL in a comprehensive manner, cities and communities can unlock economic potential, preserve cultural heritage, and create memorable experiences for residents and visitors. The preservation and promotion of canal-side Thai vernacular houses contribute to the overall identity and charm of the region, fostering a sense of pride and connection among local residents while attracting visitors interested in exploring and appreciating the rich cultural legacy of these historic dwellings.

METHODOLOGY

This research involves surveying to gather tangible and intangible data related to cultural heritage and the HUL ensemble. Specifically, it focuses on documenting the remaining examples of Thai vernacular architecture in the area adjacent to the canal to identify the development potential of the region into a cultural landscape that can attract tourism in the future.

Through the acquisition of information, a framework and model were developed to survey and collect data in the Western Bangkok area. This framework focused on narrowing down the scope of architectural data collection, particularly regarding conservation efforts. Notable local characteristics were identified, such as the presence of gabled roofs with sharp slopes, long eaves designed to shield against rain and

sunlight, and the inclusion of basements to mitigate flooding during the rainy season, all of which comprise distinct traits of central Thai house architecture. For instance, shophouses often feature platforms for displaying and arranging products, as well as steps designed for mooring boats alongside the buildings (Yodsurang et al., 2022b). These buildings possess cultural heritage significance and offer the potential for further development as tourism resources, aligning with the principles of tourism and cultural heritage preservation. This qualitative research study emphasizes the collection of physical survey data involving the following steps.

Documentary data collection

A comprehensive review of relevant literature was conducted, including documents, aerial photographs, and historical records, along with a rapid survey to establish a database, define the scope of the survey area, and gather information on Thai vernacular houses, cultural heritage preservation, urban transformation, and the impact of urban expansion. The insights provided by local residents and experts contributed to a deeper understanding of the subject while informing the research objectives and methodologies.

The selection criteria for identifying Thai vernacular houses in data collection are based on specific architectural characteristics that distinguish these houses from modern buildings. The criteria aim to ensure the validity of the identification process beyond just quantity and location, emphasizing the cultural and historical value of these structures. The highlighted architectural elements include sharp slopes in gabled roofs, long eaves, the inclusion of basements, two-story structures, and gabled or hipped roofs. These criteria have been derived from empirical observations and an in-depth review of relevant literature, documents, aerial photographs, and historical records. By employing architectural characteristics grounded in empirical evidence, the research ensures a nuanced understanding of Thai vernacular houses, emphasizing their cultural and historical significance in the canal-based area.

Rapid survey

After conducting a comprehensive literature review, a detailed survey was performed along the canals of Western Bangkok. The main objective of this survey was to locate Thai vernacular houses and gather information on their historical significance and cultural value. By thoroughly examining these houses, a city-level understanding was gained of the area's potential as a tourist destination. The results of this survey are expected to provide valuable insight into the preservation and promotion of canal-side Thai houses, contributing to the overall objectives of the research.

The rapid survey was implemented as an observation tool and involved the collection of supplementary data to capture a broader perspective of canal-side Thai vernacular houses. This rapid survey consisted of observing and documenting the general characteristics, architectural styles, and conditions of selected Thai vernacular houses along the canal. By combining the findings from both the detailed and rapid surveys, a more comprehensive understanding can be gained of urban transformation and changes in the physical structures. These surveys form the foundation of the spatial analysis in this study, performed with the use of Geographic Information System (GIS) technology, which allows the identification and assessment of canal-side cultural tourism impacts on the area.

Rapid surveys play a pivotal role in enriching architectural research by offering dynamic and efficient means of data collection. Beyond the mere enumeration of houses, this method contributes significantly to holistically understanding the architectural context. Rapid surveys provide a nuanced exploration of architectural elements, capturing not only the quantitative aspects but also delving into the qualitative dimensions that define the architectural landscape. Rapid surveys yield a more comprehensive understanding of the built environment by incorporating observations on architectural styles, spatial arrangements, and the interplay of various design elements.

In the broader context of the HUL approach, rapid surveys become integral to preserving and interpreting the cultural significance of urban

spaces (Jones et al., 2020). This method allows for the identification and documentation of architectural features that contribute to the overall historic character of a locality. By examining the physical attributes within the urban fabric, rapid surveys aid in recognizing elements that are essential to the identity and continuity of a historic area. This approach goes beyond a superficial account of structures and embraces the intricate relationship between architecture, cultural heritage, and the evolving urban narrative. This facilitates the identification and assessment of not only individual structures but also their collective impact on the cultural and historical identity of an urban setting. Rapid surveys contribute to the preservation of urban heritage by providing essential data for informed decision-making in urban planning and heritage management. This method, therefore, emerges as a valuable tool for researchers and practitioners alike, bridging the gap between quantitative data collection and a nuanced appreciation of the architectural and cultural fabric within the HUL framework.

This manuscript utilizes GIS to significantly contribute to the HUL approach. The application enables the integration of various layers of information, facilitating a comprehensive understanding of the historic urban context. Notably, it supports the consideration of critical factors for the HUL approach, including site density and morphology. Leveraging advanced mapping and analysis tools, GIS aids in depicting the spatial distribution of features, assessing the

arrangement of buildings, and evaluating the density of cultural elements within a HUL sphere. Its suitability stems from its capability to handle intricate spatial data, establishing it as a valuable tool for the evaluation and preservation of the diverse characteristics of historic urban areas.

Mapping and data analysis

The data collected from the survey were analyzed to create detailed maps that accurately pinpoint the locations of Thai vernacular houses along the canals in Western Bangkok. The collected data were entered into the QGIS program, a powerful GIS software, to generate visual representations and spatial analyses (Malczewski, 2004; Yodsurang et al., 2022a). These maps provide a clear visualization of the distribution patterns and concentrations of the architectural structures, allowing a better understanding of the spatial characteristics and significance of canal-side Thai vernacular houses in relation to the overall urban landscape. The visual representations can be used as valuable tools for further analysis and interpretation of the data, contributing to the overall objectives of this research. The collected survey data were used to create maps pinpointing the locations of Thai houses. This information was then entered into the QGIS program to generate visual representations highlighting the distribution of these architectural structures.

Figure 2

Local Characteristics of Western Bangkok Canals.



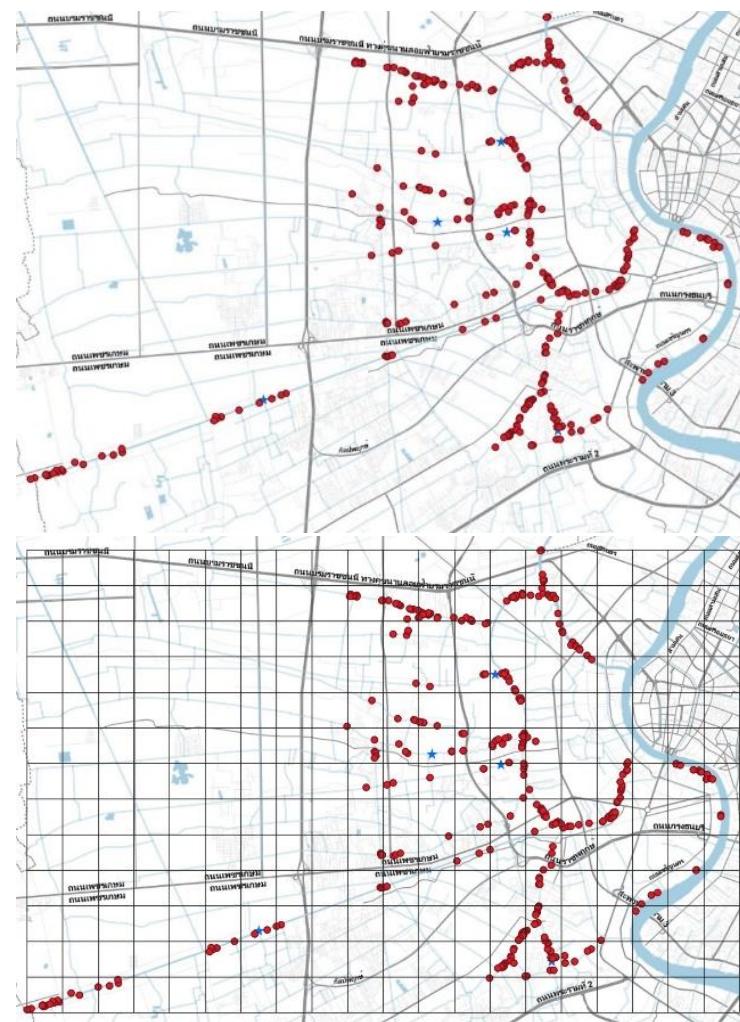
Note. Local characteristics of central Thai house architecture, shophouses, and gingerbread-style houses.

The data were then analyzed using the QGIS system to explore the relationships between the locations of Thai vernacular houses and various spatial factors, such as water and land transportation routes, as well as provincial boundaries. Additionally, the density of Thai vernacular houses was assessed by creating a 1x1 kilometer table to visualize and analyze the distribution patterns and concentrations of these architectural structures in the study area. Additionally, density characteristics using Kernel Density Estimation were implemented. This method is widely used for studying the characteristics of data distribution, and it is particularly valuable in geography for analyzing the concentration of point pattern data and the spatial distribution of events or objects (Gelb & Apparicio, 2023).

The analysis aimed to identify potential cultural tourism routes within the canal-side areas, highlighting areas of high-density Thai vernacular houses and providing insight into the development of tourism activities. By examining the spatial relationships and density, it was possible to identify the key areas contributing to the promotion and preservation of canal-side Thai vernacular houses that comprise important cultural heritage assets (Kaliraj et al., 2015; Sutton, 1997). The findings and results of this study take the form of mapped information, using visual representations to effectively communicate the research outcomes. This presentation format allows for a clear understanding of the research findings and supports decision-making processes.

Figure 3

Analysis Process in the QGIS Program.



Note. Distribution pattern of Thai vernacular houses in spatial data (left) after creating a 1x1 kilometer grid (right).

Table 1*Thai Vernacular Houses Classified by Canal*

Canal	Number of houses surveyed
1. Chao Phraya River	20
2. Khlong Bangkok Noi	25
3. Khlong Chak Phra	12
4. Khlong Bang Khun Si	17
5. Khlong Bangkok Yai	58
6. Khlong Baan Sai	35
7. Khlong Wat Pho	9
8. Khlong Bang Phrom	6
9. Khlong Bang Noi	13
10. Khlong Bang Chueak Nang	12
11. Khlong Bang Waek	8
12. Khlong Bang Chak	8
13. Khlong Phasi Charoen	40
14. Khlong Ratchamontri	13
15. Khlong Dan	13
16. Khlong Sanam Chai	30
17. Khlong Bang Khun Thian	15
18. Khlong Bang Mod	4
19. Khlong Dao Khanong	10
Total	348

Note. Actual data from the survey conducted in 2023.

RESULTS AND DISCUSSION

Existence of Thai vernacular house architecture

The canal-side area of Western Bangkok is characterized by the presence of traditional Thai vernacular houses with unique architectural features. These two-story buildings feature elevated basements high enough to accommodate a standing person, sloping shapes, gabled or hipped roofs, raised elevations, and long overhanging eaves. Their strategic orientation toward the canal emphasizes their connection to the waterway, highlighting the significance of the local community's relationship with the surrounding environment (Chaichongrak, 2002). During the exploration of the western side of the Chao Phraya River and its connecting canals, a total of 348 Thai vernacular houses were identified,

representing a tangible cultural heritage that reflects the area's rich history and cultural legacy.

The greatest number of Thai and vernacular houses (30–58) can be observed along the Khlong Bangkok Yai (58), located near the Chao Phraya River. This area exhibits a significant concentration of these traditional architectural structures, reflecting the historical and cultural significance of the canal. Following closely behind is the Khlong Phasi Charoen (40), serving as a major transportation route both in the past and present. The presence of a substantial number of Thai vernacular houses along these canals highlights their enduring importance within the local community. Khlong Baan Sai (35) and Khlong Sanam Chai (30) also demonstrate a considerable number of Thai vernacular houses, contributing to the overall architectural heritage and cultural landscape of the area. Further examination of these canals and their surrounding environments is essential for gaining a deeper understanding of the factors shaping

the distribution and preservation of Thai vernacular houses within these locales.

Khlong Bangkok Noi (25) and the western side of the Chao Phraya River (20) feature a moderate number (20–29) of Thai vernacular houses. The presence of a substantial number of Thai and vernacular houses along these canals suggests the stronger preservation and continuity of traditional architectural heritage. Further analysis is required to explore the historical, cultural, and socio-economic factors contributing to the relatively higher density of Thai vernacular houses along these canals and the western side of the Chao Phraya River.

In addition, the research findings reveal that several canals, namely Khlong Bang Khun Si (17), Khlong Bang Noi (13), Khlong Ratchamontri (13), Khlong Dan (13), Khlong Bang Chueak Nang (12), Khlong Chak Phra (12), and Khlong Dao Khanong (10), exhibit a relatively sparse amount of Thai vernacular houses. These waterways display a low concentration (10–19) of such architectural structures compared to other canals within the study's scope. The limited number of Thai vernacular houses along the canals raises the need for further investigation to understand the underlying factors influencing the development and preservation of these specific canal-side areas. Additional research and analysis are essential for elucidating the historical, cultural, and socio-economic dynamics contributing to the observed patterns in the distribution of canal-side Thai vernacular houses.

Among the canals surveyed in this study, several waterways, namely Khlong Wat Pho (9), Khlong Bang Waek (8), Khlong Bang Chak (8), Khlong Bang Phrom (6), and the Khlong Bang Mod (4), exhibited a relatively low concentration (1–9) of Thai vernacular houses compared to other areas within the study's scope. The limited presence of Thai and vernacular houses along these canals highlights the importance of further investigation to understand the underlying factors contributing to this phenomenon.

To assess the density of Thai vernacular houses in specific areas along the canal, a grid system measuring 1 square kilometer was implemented. This approach allowed the distribution and concentration of tangible cultural heritage within the Western Bangkok canal side to be analyzed. The identification and categorization of specific

areas was based on the distribution pattern of Thai vernacular house density in the selected area. Notably, two intriguing outliers (three areas), with 21 and 18 Thai vernacular houses in 1 square kilometer, were identified and highlighted within the purple circles on the map (figure 4). This emphasis on outliers is intended to draw attention to these specific areas with exceptional house density, providing valuable insights into the distribution patterns of Thai vernacular houses in the studied area.

One area exhibiting a notable density of cultural heritage in the form of Thai architecture was the Khlong Bangkok Yai area (purple circle number 21), which connects to the prominent Chao Phraya River. Due to its historical proximity to the capital, this area has attracted noble residents who have constructed residences there. Thai vernacular houses can currently be observed along the canal, with younger residents continuing to maintain and value these structures. While some external materials used for the houses may have been altered, the original infrastructure remains intact, contributing to the preservation of their unique character. Based on the field observations in this study, the Khlong Bangkok Yai area possesses great potential for the development of a cultural landscape showcasing Thai architecture (Nanta, 2009). In addition to Khlong Bangkok Yai, two other areas stand out in terms of density. The first is the Khlong Bangkok Yai T-Junction, which intersects with the Khlong Bang Chueak Nang and Khlong Bang Noi (upper circle number 18). In this area, Thai vernacular houses of significant cultural heritage value exist. These riverside dwellings offer a glimpse into the local community's way of life, with the canal serving as a bustling thoroughfare. Despite the variations from traditional Thai house designs, the urban landscape still presents charming wooden houses along the water, reflecting the authentic local lifestyle. Similarly, the Khlong Saman Chai, connecting to the Khlong Bang Mod (lower circle number 18), showcases Thai vernacular houses with notable cultural heritage significance. These dwellings contribute to the vibrant urban fabric and provide insights into the community's historical and cultural context. The presence of these canal-side houses highlights their enduring value and serves as a testament to the rich heritage of the area.

The density characteristics and cultural significance of Khlong Bangkok Yai unfold along its course, beginning at the Khlong Bang Phrom junction. Notably, the density of Thai vernacular houses is found in clusters from Khlong Bang Luang market to the canal's termination at the Chao Phraya River. At Khlong Bang Luang market, the distinctive features include wooden rowhouses lining the canal, creating a sense of the historic living atmosphere of the people who lived along the canal in the past. Furthermore, towards the end of the canal, there is a noteworthy concentration of aristocratic houses, adding a touch of architectural and cultural significance to this waterway.

Along Khlong Bang Noi and Khlong Bang Chueak Nang, extending from the Khlong Mon,

residential areas are found continuously in areas like Wat Pak Nam North, Wat Pak Nam South, and up to Wat Phikun. Beyond this point, the population of residents becomes sparser. Thai vernacular houses of local residents still stand, coexisting with front gardens without fences, showcasing their familial connection. The residents living along the canal have inherited both their lineage and land ownership from ancestors who were gardeners (Jindamaneerojana, 2012). In the past, they grew jackfruit, oranges, coconuts, mangoes, areca nuts, betel nuts, etc. Though gardening is less common now, some still practice it. Nowadays, most gardeners cultivate orchids, along with vegetables and cut flowers such as pandanus, tuberose, ylang-ylang, morning glory, kale, etc. (Silapacharanan, 2013).

Figure 4

Map Showing the Existence of Thai Vernacular House Architecture Along the Western Bangkok Canal Side.

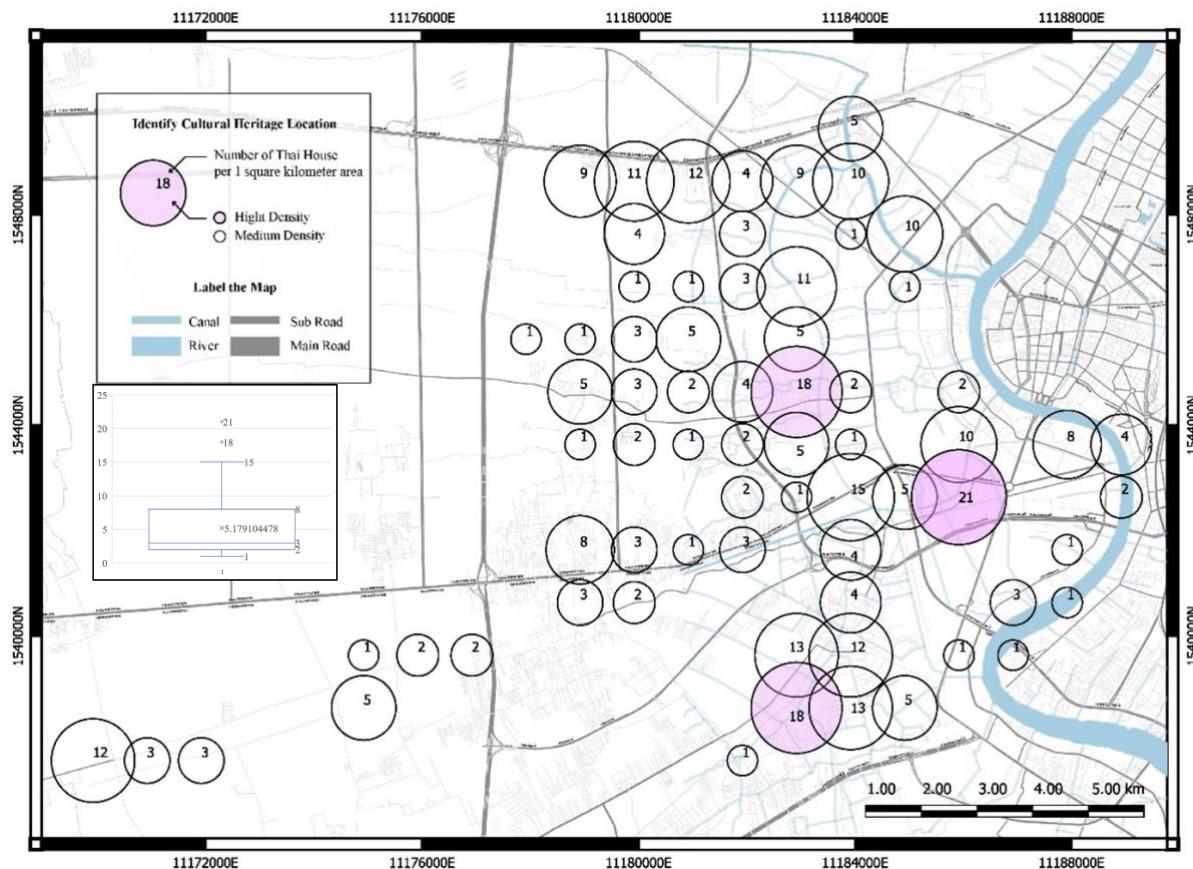


Figure 5

Images of Thai Vernacular House Represented Three Potential Areas



Note. Khlong Bangkok Yai (left), Khlong Bang Noi and Khlong Bang Chueak Nang (middle), and Khlong Saman Chai connecting to the Khlong Bang Mod (right)

Khlong Saman Chai holds historical significance as a canal connecting to Khlong Maha Chai in Samutsakorn province, facilitating transportation to the southwest. Its roots reach back to the Ayutthaya period, embodying a rich history that has witnessed the settlement of people along its banks since ancient times (Rodsiri, 2012). On the other hand, Khlong Bang Mod retains its allure, with numerous orchard houses nestled within the lush landscape, each intricately connected with the orchard-canal system. This area is also home to the Wat Sai floating market, which once thrived as one of the largest floating markets in Western Bangkok, adding cultural vibrancy to the surroundings. The remaining cluster of wooden rowhouses along the canal represents a glorious economic past. Thus, the connection between Khlong Saman Chai and Khlong Bang Mod reveals a historical and cultural tapestry, intertwining the canal's role in transportation and settlement since the Ayutthaya period with the enduring charm of orchard houses and the vibrant legacy of Wat Sai floating market. Together, these elements form a unique blend of tradition, history, and local life along these waterways.

DISCUSSION

Through systematic survey and analysis, this research has identified key areas with varying densities of Thai vernacular houses, shedding light on the cultural significance and historical context of Western Bangkok's canal-side communities. These findings will contribute to the preservation and promotion of the region's cultural heritage, enabling sustainable development and fostering a deeper appreciation of Thai architectural traditions.

The study's survey identified a limited number of remaining vernacular Thai houses along the canal. However, these clusters of traditional Thai houses provide valuable insights into how locals historically lived along the canal. The houses' spatial arrangement showcases an intimate connection between architecture and the water environment, reflecting the lifestyle of communities that thrived along these waterways. The discussion of the remaining Thai vernacular houses along the canal side intertwines with the broader context of canal-side cultural tourism, bringing forth the complexities associated with the HUL approach. While the survey reveals that the density of these houses may be relatively sparse, their clustered existence is crucial in shaping historic sceneries that contribute

significantly to the cultural and architectural tapestry of Western Bangkok.

The concept of canal-side cultural tourism, rooted in the remnants of Thai vernacular houses, holds intrinsic value. These structures not only serve as tangible links to the past, evoking a sense of nostalgia, but also play an important role in creating the unique atmosphere along the canal. Tourists engaging in canal-side tourism can witness the historical remnants of local life, gaining insights into how communities were once intricately connected to these waterways. Within the framework of the HUL approach, the discussion delves into the challenges and opportunities presented by these remaining vernacular houses. Preservation efforts are imperative since these structures, though sparse, possess cultural and historical significance. The architectural elements, such as sharp slopes in gabled roofs, long eaves, and the strategic use of basements, are not just physical features but representations of central Thai architecture. The HUL approach emphasizes the need to balance conservation with sustainable development, ensuring that the remaining structures contribute meaningfully to the cultural and economic vibrancy.

CONCLUSION AND RECOMMENDATIONS

In conclusion, this research has revealed the significant cultural and historical value of the Thai and vernacular houses along the canals of Western Bangkok. Khlong Bangkok Yai stands out as a promising area for cultural tourism development, offering a unique opportunity to showcase the cultural heritage and local identity embedded in traditional Thai architecture. By leveraging the tangible physical characteristics of these houses, such as their architectural style and historical significance, the canal can be transformed into a cultural tourism route, captivating visitors with its authentic charm. To fully harness the potential of Khlong Bangkok Yai and other identified areas, it is crucial to prioritize conservation efforts and promote the principles of the HUL approach. This framework emphasizes the holistic management of cultural heritage, considering both tangible and intangible elements, to ensure the preservation and sustainable development of historic urban areas. By adopting the HUL approach, stakeholders can integrate cultural heritage preservation, community engagement, and tourism promotion in a balanced and harmonious manner.

Figure 6

Potential Areas Map for Cultural Heritage Canal-Side Tourism in Western Bangkok



Note. Map Highlights Three Potential Areas according to density level.

Furthermore, figure 6 reveals density characteristics that play a pivotal role in shaping the character of specific areas along the canals, influencing the area's overall ambiance, functionality, and aesthetic appeal. It is important to highlight the three specific areas along the canals that hold great potential for nostalgia cultural tourism, representing their rich heritage. Khlong Bang Noi and Khlong Bang Chueak Nang, and Khlong Bangkok Yai, as well as the Khlong Saman Chai connecting to the Khlong Bang Mod, offer distinct cultural experiences and insights into the historical and cultural fabric of Western Bangkok. These areas can be further developed and promoted as key destinations for visitors seeking to immerse themselves in the local lifestyle, explore the architectural treasures, and delve into the captivating narratives of the community.

In accordance with the findings of this study, it is recommended that strategic conservation plans be implemented to prioritize the protection and restoration of Thai vernacular houses along the canals. This can be achieved through collaboration among various stakeholders, including local communities, government agencies, and tourism authorities. Balancing conservation and urban development mechanisms such as the Transfer of Development Rights (TDR) scheme for historic buildings—specifically these Thai vernacular houses—could serve as a valuable strategy for encouraging the restoration and preservation of these culturally significant structures. Enabling owners of historic buildings to transfer their Floor Area Ratio (FAR) and potentially receive subsidies would not only promote the conservation of these vernacular houses but also contribute to the broader goal of safeguarding cultural heritage within urban environments. This approach aligns with the principles of sustainable urban development and heritage preservation, fostering a symbiotic relationship between the community, historical architecture, and urban conservation efforts.

Additionally, targeted promotional campaigns should be launched to raise awareness and attract tourists to these unique cultural tourism routes, showcasing the rich heritage and distinct character of Western Bangkok. By conserving and promoting the cultural heritage of canal-side Thai houses, Western Bangkok can position itself

as a captivating destination, offering visitors an immersive and authentic experience. This would not only contribute to the preservation of the local identity and heritage but also generate economic opportunities and foster sustainable tourism development in the region.

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