

## Article

# Documenting Riyadh City's Significant Modern Heritage: A Methodological Approach

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**Abstract:** This paper's primary goal is to propose a methodological strategy to document and protect modern heritage buildings in Riyadh, Saudi Arabia. This is essential because these structures are part of the cultural heritage and identity of Saudi Arabia, considering the rapid urbanization and development taking place. Protecting modern heritage buildings is also essential to increase public appreciation and understanding of modernist architecture and valuable resources of the city's culture and identity. This study's objectives fall into two categories: it aims to provide a review of the relevant literature to develop a theoretical framework to examine and document Riyadh City's significant modern heritage buildings, and it aims to provide an examination and documentation of these structures. To ensure systematic and structured project documentation, quantitative and qualitative methodologies, inductive and deductive approaches, a chronological approach, data management techniques, workshops, and fieldwork methods are utilized. Over 1300 potential modern heritage buildings were identified and categorized into typological groups and building types that historians, architects, planners, designers, and policymakers can use to document and present Saudi Arabia's rich modern heritage effectively. Of the 1300 buildings, this study was able to identify more than 170 buildings, which were later recognized as the primary modern heritage buildings for Riyadh City in the study timeline (1950–2000).

**Keywords:** methodology; modern heritage; history; local architecture; identity; Riyadh; Saudi Arabia



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## 1. Introduction

Riyadh was a small, isolated, traditional settlement before the mid-twentieth century, built around a central fortification (Arabic: Qasr). Mudbrick buildings, narrow streets, and courtyard houses characterized the city's architecture, which reflected the traditional Islamic urban pattern prevalent throughout the region. In the 1950s and 1960s, the Saudi government launched modernization initiatives to transform Riyadh into a dynamic, modern, cosmopolitan city. These initiatives included the development of new infrastructure, such as a rail station, an airport, and highways, as well as the development of new neighborhoods and commercial strips. During this time, the growth of Saudi Arabia's oil industry provided the financial resources required to fund these initiatives. The government was able to invest heavily in urban development as a result of the country's newfound wealth, rapidly transforming Riyadh's built environment.

For several reasons, Saudi Arabia's growing interest in modern architectural heritage is significant. One of these is rapid urbanization and the need to demolish potential modern heritage structures in order to coexist with city formation and expansion. A critical understanding of modernist architecture and its historical context is provided by such an interest. In the early twentieth century, modernist architecture arose in response to social and technological changes such as urbanization, industrialization, and mass production [1,2]. The literature on modern architectural heritage examines the design, construction, and cultural significance of modernist buildings and landscapes, assisting in contextualizing them within their historical, social, and cultural contexts [3].

Since the mid-twentieth century, Riyadh has undergone significant urbanization and modernization, resulting in a unique and diverse collection of modern architecture. This is critical because Riyadh's modern buildings have never been systematically documented in a way that investigates and records all available architectural and historical data and information. As a result, this study investigates a methodological approach while reflecting on Riyadh's modern architecture from the 1950s to the 2000s and its historical context.

It is critical to preserve modernist Saudi architecture, which is still a developing concept in the country. Many modernist structures and landscapes are in danger of being lost due to neglect, modification, or demolition. Documenting their designs, construction, and materials will add to the architectural field's richness in Saudi Arabia and beyond. Furthermore, this information can be used to guide conservation and restoration efforts, ensuring that these structures are preserved for future generations, as they are and will be part of our new heritage [4]. Documentation is important not only architecturally, but also historically, socially, and economically.

Thus, in Riyadh, the modern heritage movement is a critical and transformative force in the city's urban and cultural landscape. Its significance goes beyond the preservation of architectural structures; it has broader implications and impacts on the city's identity and the future of its architectural heritage. Cultural identity and historical continuity, for example, are critical in defining and preserving Riyadh's cultural identity. Modernist structures from the mid-twentieth century onward serve as tangible reminders of the city's rapid development. They serve as a link between the past and the present, representing the aspirations, values, and innovations of a specific era. Riyadh ensures its historical continuity by preserving these structures, providing current and future generations with a window into the city's multifaceted history. This preservation effort promotes a better understanding and appreciation of the cultural heritage that has shaped Riyadh into the city it is today.

The significance of preserving and protecting modernist buildings stems from the fact that they are part of our cultural heritage and identity, particularly in the face of rapid urbanization and development. This paper will be a useful resource for architects, historians, and urban planners working to preserve and promote modern architecture in Saudi Arabia. Furthermore, it will increase public appreciation and understanding of modern architecture. Modern architecture is frequently associated with functionalism, minimalism, and abstraction, making it difficult for the general public to understand and appreciate the various architectural styles found in Riyadh. This will encourage the design principles, cultural significance, and aesthetic qualities of Saudi modern architecture to be explained in an approachable and engaging manner. The documentation of modern heritage can help practitioners, architects, and the general public gain a better understanding and appreciation of modern architecture, and it can be used as an open educational museum for the city's modern architectural heritage.



As a result, this study begins by setting the context in Riyadh City, highlighting its transformation from a traditional settlement to a dynamic, modern metropolis, drawing attention to the urgent need to preserve its modern architectural heritage. A comprehensive review of the literature on modern architectural heritage uncovers key themes and debates, emphasizing the significance of documenting and contextualizing modernist buildings in the evolving urban landscape. This study then outlines a methodological approach to explore Riyadh's modern architecture from the 1950s to the 2000s, addressing the lack of systematic documentation for these structures. The subsequent discussion delves into the cultural, historical, and economic importance's of preserving modernist buildings, shedding light on their relevance amidst rapid urbanization and development. This study concludes by underlining the pivotal role that this documentation plays in enhancing the understanding and appreciation of modern architecture, making it a valuable resource for architects, historians, and urban planners while promoting public awareness and comprehension of Riyadh's diverse architectural heritage.

## 2. Study Context: Riyadh City

Riyadh, the capital city of Saudi Arabia, is a bustling urban center that blends traditional Arab culture with modern technology and design. The city has grown rapidly over the past few decades, with a population of over 7 million people. As a result, the urban context of Riyadh is shaped by its history, geography, and modern urban planning.

The history of Riyadh dates back to the 15th century when it was a small village located in the heart of the Arabian Peninsula. It was ruled by the Al Saud family, who still govern Saudi Arabia today. In the early 20th century, the city started to grow and expand as it became the capital of the newly formed Kingdom of Saudi Arabia. The old city of Riyadh, known as Ad-Dirah, still partially stands today, a testament to the city's rich history and cultural heritage.

Geographically, Riyadh is located in the central region of Saudi Arabia, in the Najd plateau. The city sits on a large plain, surrounded by slightly rocky hills and natural valleys (Figure 1). The climate in Riyadh is hot and arid, with temperatures reaching over 40 °C (104 °F) during the summer months. The city's location has influenced its urban development, with many modern buildings designed to withstand the extreme temperatures and harsh climate.

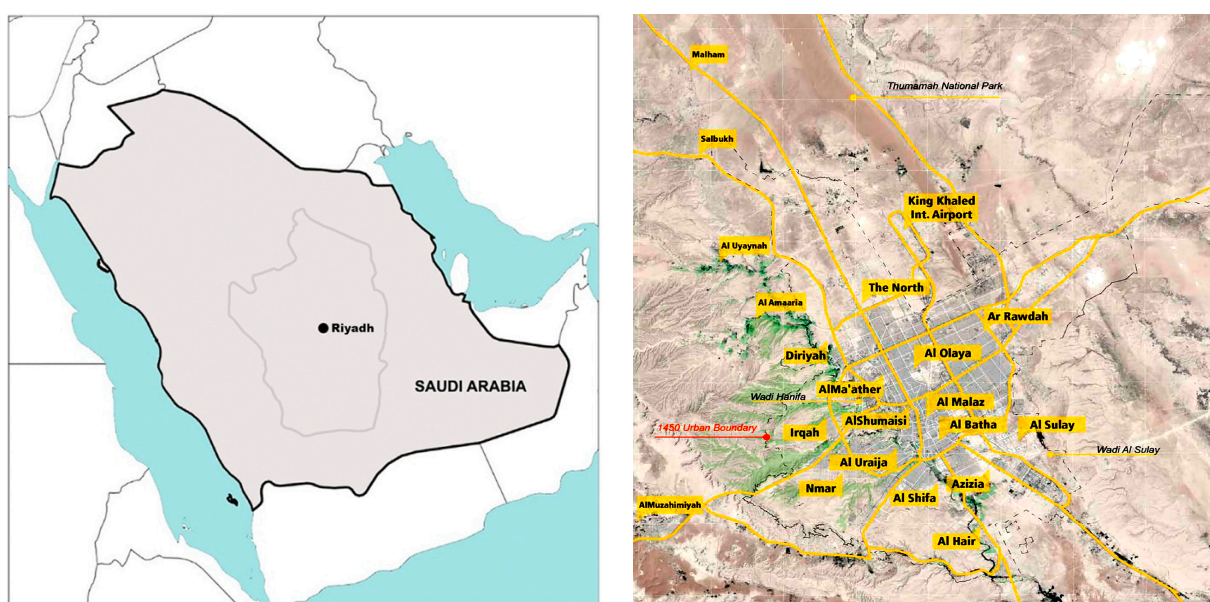


Figure 1. Cont.



**Figure 1.** Riyadh City's geographical location and 1950s map of Riyadh. Source: [5].

The city serves as the Saudi Arabian Kingdom's government seat. Riyadh has served as the fundamental nerve center of the urban renaissance. Since the beginning of the 1950s, when the state moved its ministries and governmental agencies to Riyadh from Jeddah, the city has experienced significant population growth [6]. As a result, it has become the primary center for national activities and a hub for governmental agencies, diplomatic missions, and embassies working in their respective fields. Since the early 1980s, the Kingdom of Saudi Arabia's infrastructure, specifically in the capital city, Riyadh, has been subjected to significant upgrades, and a construction boom has led to substantial urban growth [7,8].

Consequently, the main objective of this study is to propose a methodological approach to document Riyadh's rich modern heritage architecture. This is significant as this study not only enhances our understanding of the modern architecture of Riyadh, but also provides extensive architectural documentation of its architecture. Moreover, it sheds new light on how cities, in Saudi Arabia and beyond, can be comprehensively documented. The structure of this research paper starts with establishing the context and the importance of the topic. In the following section, relevant studies in the literature related to documentation in the field of architecture are reviewed. Then, the research design and the mixed methods used are highlighted. Later, the paper presents a discussion in which the findings are elaborated, analyzed, and interpreted, with final remarks that exhibit the research outcomes and recommendations.

### 3. Themes and Debates in Modern Architectural Heritage: Literature Review

In order to identify, document, and promote the built heritage of the nineteenth and twentieth centuries, the World Heritage Centre of UNESCO, the International Council on Monuments and Sites (ICOMOS), and the Working Party on the Documentation and Conservation of Buildings, Sites, and Neighborhoods of the Modern Movement (DOCOMOMO) launched the Programme on Modern Heritage in early 2001 [9]. Creating heritage documentation in African cities, for example, is a complex and multifaceted process. Unlike in some Western contexts, where heritage is often limited to physical structures or tangible artifacts, African heritage frequently includes a broader range of tangible and intangible elements, such as oral traditions, performances, and culturally significant landscapes [10]. Therefore, the Programme on Modern Heritage aims to raise awareness about the importance of modern architecture and urbanism and to encourage their conservation using a

multidisciplinary approach. It also seeks to establish guidelines for the management of modern heritage sites and foster international cooperation in their preservation.

From an architecture perspective, Goldberg (1995) argues that the twentieth century lasted only seventy-one years, with the end of the First World War, and the Victorian Age ended, ushering in the modern era. Goldberg discusses that it is still relatively recent and can already be considered extraordinary [11]. Thus, the term “modernization” was not coined until the 1950s, but the processes of individualization, democratization, and industrialization that began in the late 18th and early 19th centuries were arguably the primary drivers [12]. Goldberg’s argument highlights the rapid pace of change that has occurred since the industrial revolution, which has led to significant social and political transformations. Habermas’ view supports this by identifying individualization, democratization, and industrialization as key factors that have shaped modernization.

Typically, documenting modern architectural heritage entails a dynamic interplay of documenting physical structures, comprehending their sociocultural significance, and preserving the knowledge and techniques used in their creation. Architectural drawings, photographs, and descriptions, for example, were used to capture the innovative design and craftsmanship of the Hassan II Mosque in Casablanca, Morocco in 1993 [13]. Similarly, Australia’s 1973 Sydney Opera House was inscribed on the UNESCO World Heritage List in 2007 [14]. Not only did this structure change architectural design, but it also became a symbol of Australia’s cultural and creative identity [15]. Its documentation includes a detailed history of the structure, architectural drawings, and photographs and an evaluation of its heritage significance. It also includes policies and guidelines for the future preservation and use of the building. These methods of heritage documentation can place a strong emphasis on preservation and long-term viability.

As a result, the literature on modern architectural heritage covers a broad range of themes and debates, reflecting the diversity of modern architecture and its cultural significance, which explores its contribution to preserve and interpret modern architecture in a broader sense. This section provides a general understanding of modern architecture and its historical context through key themes and debates. In recent years, the literature on modern architectural heritage has expanded significantly, reflecting the growing interest in this field and the increasing recognition of the importance of preserving modern architecture [16,17].

**Modernism and its Cultural Context:** The literature on modern architectural heritage is mainly about the relationship between modernism and its cultural setting. Modernism arose at the beginning of the 20th century as a reaction to societal and technological changes, such as rapid urbanization, industrialization, and mass production. It questioned old ways of building and used new materials and technologies [18]. This led to a minimalist style that put function over decoration. Many buildings worldwide still use modernist ideas because of how they changed how buildings were made. The literature on modern architectural heritage looks at the cultural, social, and political factors that shaped modernism [19]. This puts modern architecture in its historical and cultural contexts. So, modern architecture is known for its use of new materials like steel and glass and its focus on simplicity and functionality. This style rejects traditional ornamentation and focuses on clean lines and geometric shapes.

**Preservation and Conservation:** The preservation and conservation of modern architecture are other critical themes in the literature on modern architectural heritage. Due to neglect, destruction, and changes, many modern buildings and landscapes are in danger of being lost. Several scholars argue that these structures are significant cultural artifacts that reflect their time’s values and ideals and that they deserve protection. Preserving them also contributes to the diversity and richness of our built environment [20]. This highlights the need for increased efforts to document, protect, and restore these structures, as they represent a significant cultural and historical legacy. Recognizing their values and ensuring their preservation for future generations are crucial. The literature on modern architectural



heritage provides guidelines for conserving and restoring modernist structures, thereby aiding their preservation for future generations [21,22].

**Technology and Materials:** Technology and materials are frequently associated with modern architectural heritage. The incorporation of new materials and technology has enabled architects to design innovative and eco-friendly structures that are also aesthetically stunning [23]. In addition, new materials and technology have enabled architects to push the limits of what is possible in contemporary architecture [24]. By designing energy-efficient, environmentally friendly, and aesthetically pleasing structures, architects can contribute to a modern architectural legacy that is both innovative and timeless.

### 3.1. Understanding Modern Heritage: Definitions and Interpretations

The term “modern heritage”, also known as “twentieth-century heritage” or “recent past heritage”, refers to architectural, cultural, or historic entities, sites, or items created during the twentieth century and onward. The term can refer to a wide range of heritage forms, such as buildings, landscapes, and monuments, and even intangible heritage such as recent traditions, practices, and cultural expressions [25].

Modern heritage is a nuanced and complex aspect of heritage studies. It is not just about the physical object or location, but also about the values, meanings, and contexts that go with it. It frequently intersects with ideas about cultural identity, memory, and place [26]. Therefore, it is often seen as a reflection of the social, political, and technological changes that have occurred in the twentieth century and beyond. This means it encompasses not only tangible structures and artifacts but also intangible aspects like language, music, and rituals that have emerged during this time period. In Table 1, it can be seen that understanding modern heritage requires a multidisciplinary approach that takes into account the diverse perspectives and experiences of different communities.

**Table 1.** Modern heritage’s multiple definitions and interpretations.

Aspect	Description
1. Modern Heritage as a Cultural and Historical Narrative	Modern heritage is also understood as a cultural and historical narrative. It reflects the political, economic, and social shifts of the twentieth and twenty-first centuries while providing insights into a society’s changing values and ideas over time [27].
2. Modern Heritage as a Concept of Value and Significance	Modern heritage is often evaluated based on its significance. This can include architectural significance (e.g., the work of a notable architect), historical significance (e.g., a site associated with a significant event), and cultural significance (e.g., a building or site that holds particular meaning for a community) [28,29].
3. Modern Heritage as a Challenge for Conservation	Modern heritage presents unique conservation challenges due to its relative newness and the often experimental and innovative nature of modern materials and design techniques. Consequently, modern heritage preservation frequently necessitates specialized knowledge and approaches [30].
4. Modern Heritage as a Reflection of Innovation and Change	Modern heritage is characterized by its reflection of new materials and technologies, creative and experimental design, and its embodiment of social, economic, and political change, according to the International Council on Monuments and Sites (ICOMOS) [31,32].
5. Modern Heritage as a Symbol of Technological Progress	Modern heritage is viewed as an embodiment of technological progress in some contexts. Buildings or structures that use new materials (such as concrete, steel, or glass) or innovative building techniques (such as prefabrication or modular construction) can be seen as evocative of their era’s technological advancements [33].
6. Modern Heritage as a Marker of Social Change	Modern heritage can also be identified as a social change indicator. Buildings or sites linked to significant social movements, changes in living or working conditions, or shifts in public attitudes and behaviors, for example, can be considered part of a community’s modern heritage [34].
7. Modern Heritage as a Reflection of Aesthetic Shifts	Modern heritage can reflect significant changes in aesthetics and taste. Buildings or sites that embody the principles of modernist, postmodernist, or other twentieth-century architectural styles can be viewed as evoking the aesthetic values of their era [35].

### 3.2. *The Importance of Modern Architectural Heritage: Design Principles and Aesthetics*

Kenneth Frampton writes, in the introduction to his already classic book on the history of modern architecture, that whereas technological changes resulted in a new infrastructure and the exploitation of an increased production capacity, changes in human consciousness resulted in new categories of knowledge and a historicist mode of thought that was so reflexive as to question its own identity [36]. According to Frampton, modern architecture is not only a product of technological advancements, but it is also a reflection of the changes in human perception and understanding of the world. He argues that this historicist mode of thought has led to a critical evaluation of architectural styles and movements, resulting in a more conscious and sustainable approach to design.

The design principles and aesthetics of modern architecture are central themes in the literature on modern architectural heritage. It examines modern architecture's design principles and aesthetic qualities, contributing to a broader public understanding and appreciation of this architecture [37,38]. The modern architecture looks and works the way it does because of how design principles and aesthetics work. A summary of the key design principles and aesthetics, which are often seen in the literature on modern architectural heritage, is as follows:

- **Form follows function:** This design principle is a hallmark of modern architecture, and it emphasizes the importance of designing buildings that serve their intended purpose [39]. The aesthetic beauty of a building is derived from its functionality and how well it fulfills its intended use.
- **Simplicity:** Minimalism is a key aesthetic feature of modern architecture. Buildings are often designed with clean lines, simple shapes, and minimal ornamentation [1]. This aesthetic emphasizes the structure's beauty rather than decorative elements [40].
- **Use of new materials and construction methods:** Modern architecture relies heavily on new materials and construction methods, such as steel, concrete, and glass [41,42]. These materials are often used innovatively to create new forms and shapes.
- **Emphasis on technology:** Modern architecture often incorporates the latest technological innovations to create buildings that are efficient, sustainable, and environmentally friendly [43,44].
- **Integration with the natural environment:** Modern architecture often seeks to create buildings harmonizing with their natural surroundings. This can be achieved through the use of natural materials, the incorporation of green spaces, and the use of natural light.
- **The importance of context:** Modern architecture recognizes the importance of context in shaping the design of a building. Architects must consider the surrounding environment, the cultural context, and the intended use of the building when designing a structure [45].
- **Timelessness:** Modern architecture strives to create timeless buildings rather than following passing trends. This is achieved through simple, clean designs emphasizing functionality over decoration [46].

In general, modern architectural heritage emphasizes the importance of functionality, simplicity, the use of new materials and construction methods, integration with the natural environment, and the importance of context in shaping the design of a building. These principles and aesthetics have helped shape the modern architectural landscape and continue to influence the design of buildings today.

### 4. **Riyadh's Modern Architectural Heritage: A Methodological Approach**

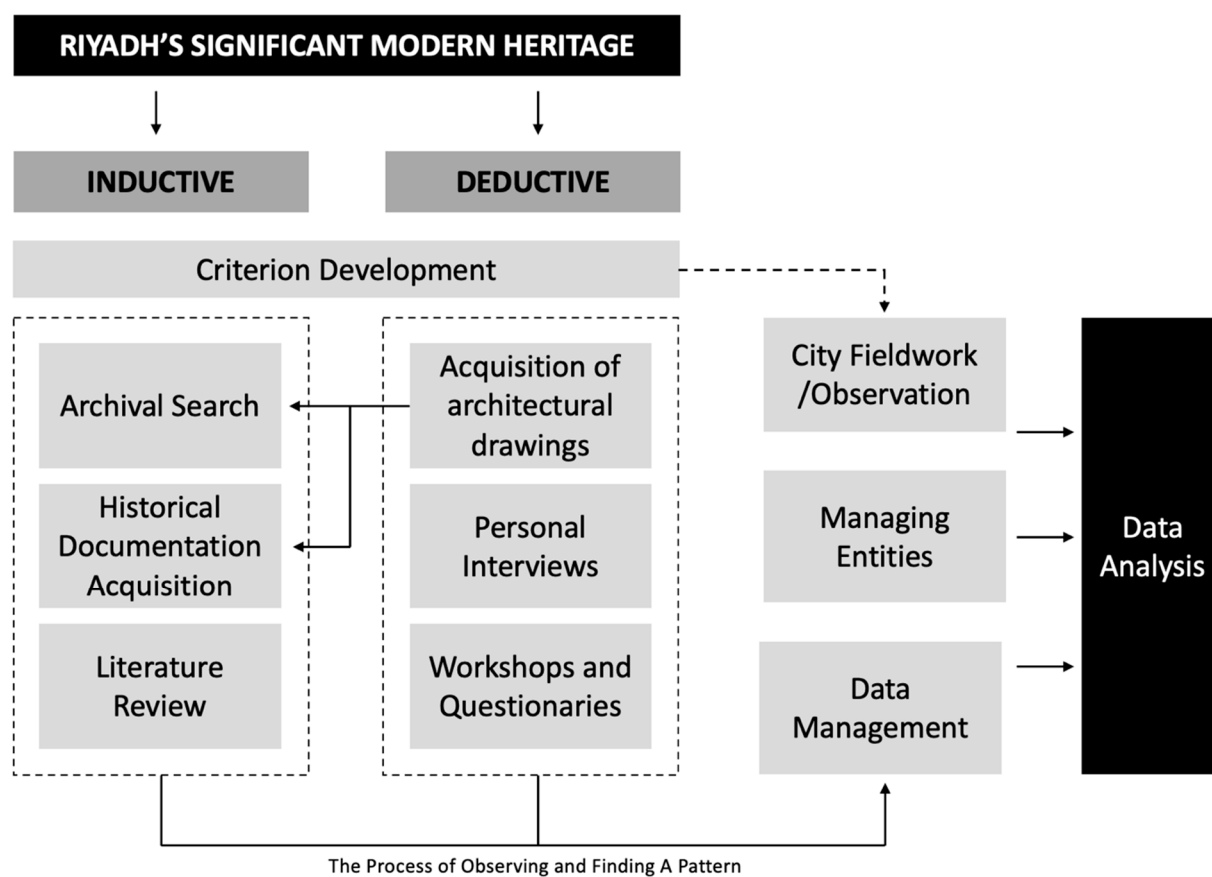
In order to document Riyadh's significant modern heritage, this study uses inductive and deductive approaches, which are used depending on the purpose and scope of the documentation project. Thus, the deductive approach involves starting with general ideas and working towards specific project details [47]. In this approach, the documentation process typically begins with the project's overall concept and design, followed by a



breakdown of each component's specifications. This approach is used to ensure the creation of a systematic and structured documentation project.

On the other hand, the inductive approach involves starting with specific details and working towards general principles [48]. In this approach, the documentation process usually begins with a detailed description of individual components and their specifications, followed by integrating these components into the overall concept and design of the project. This approach is used when the project data are available and reachable, aiming to create a detailed and comprehensive documentation project.

This study combines both approaches to create well-rounded and effective architectural documentation (Figure 2). For example, the deductive approach provides a high-level overview of the documented project, while the inductive approach is later used to provide detailed descriptions of individual components regarding said project [49]. Ultimately, the choice of approach will depend on the specific requirements and goals of the documentation, as well as the data in hand and to what extent it is possible to reach non-public documents of the project, especially in projects dating back more than sixty years old.



**Figure 2.** Research methodological framework. Source: authors of this study.

For example, ethnographic, archaeological, and historical research, as well as community engagement, are frequently used to document heritage in African and Middle Eastern cities [50]. Heritage professionals collaborate with local communities to document and preserve both tangible and intangible elements of heritage through a variety of methods, ranging from oral history interviews to digital storytelling [51]. In Western contexts, they frequently focus on tangible elements such as historic buildings and archaeological artifacts [52]. Documentation strategies frequently prioritize preservation and protection over living, intangible elements.

Therefore, the differences in how heritage is defined and documented across these various sociocultural contexts highlight the importance of adaptable and flexible approaches

to heritage documentation. Recognizing and respecting these differences is crucial to foster meaningful cross-cultural dialogue about heritage and its significance [53]. Acknowledging the diverse perspectives on heritage documentation can promote a more inclusive and comprehensive understanding of cultural identity. This allows for a richer appreciation of the complexities and nuances within different communities, ultimately strengthening the preservation and transmission of cultural heritage for future generations.

#### 4.1. Chronological Approach

A chronological approach refers to a method of organizing information, events, or data in the order they occurred, typically from the earliest to the most recent [54,55]. This approach is commonly used in history, the literature, and scientific research, among other fields, to provide a clear timeline and context for the subject matter [56]. In a chronological approach, events or information are presented in a linear fashion, with each subsequent item building upon the previous one. This allows for a clear understanding of the progression of events and how they relate to one another.

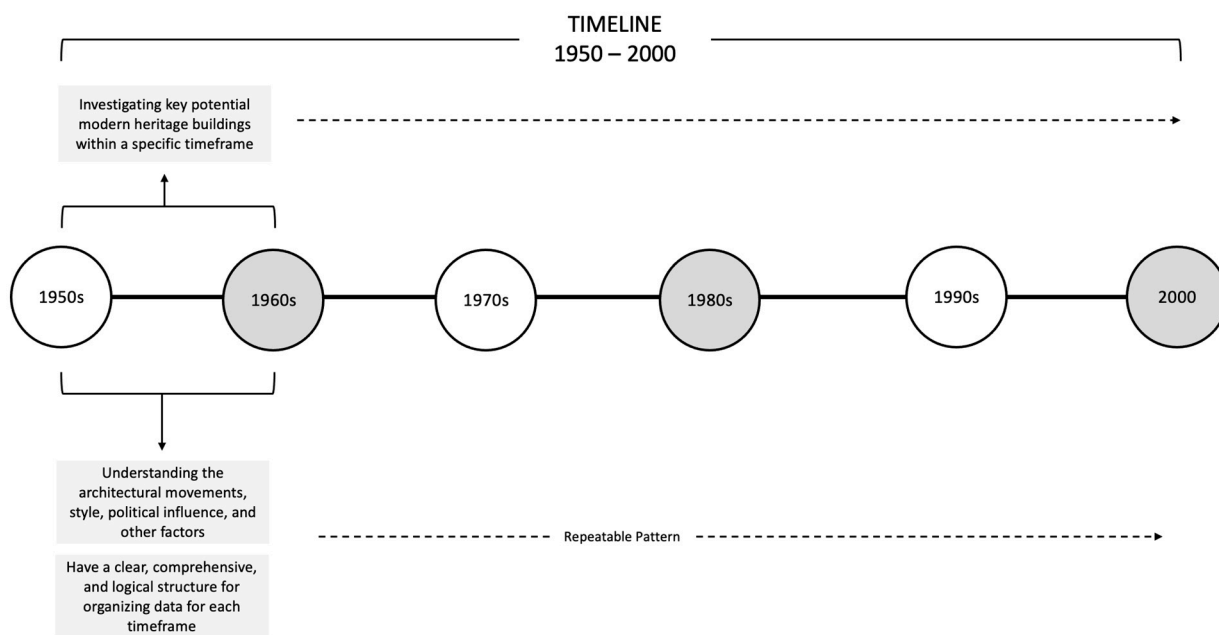
There are several benefits and significant advantages to using a chronological approach in this study to organize information, events, or data, such as the following:

- **Clarity and Understanding:** It provides a clear timeline for events or information. This helps readers understand the context, sequence, and relationships between the various components of the subject matter.
- **Comprehensiveness:** It ensures that no important details are left out, as it presents events or information in the order they occurred. This helps to create a complete picture of the subject matter.
- **Logical Sequence:** It provides a logical sequence for the subject matter. This helps readers to see how different events or information build on each other and lead to subsequent events or conclusions.
- **Easy to Follow:** A chronological approach is easy to follow and understand, even for readers who may not be familiar with the subject matter. The linear presentation helps to guide the reader through the topic in a clear and structured manner.
- **Useful for Analysis:** It is often used in scientific research and historical analysis to identify patterns, cause-and-effect relationships, and trends over time. This helps to draw meaningful conclusions and insights from the data or events.

For example, in a historical analysis of an urban regeneration such as Riyadh City's modern heritage buildings, a chronological approach would begin with the events that led up to the project initiative, followed by the initial design concept, and key political decisions, and concluding with the project constructure. This method would allow the reader to understand the context, causes, and sequence of the project in a clear and organized manner.

As a result, this study uses this method to divide the Riyadh modern heritage timeline (1950s–2000s) into five key milestones (Figure 3). The goal is to give each timeframe the attention it requires to examine the design principles and aesthetics of the project. By doing so, the researchers are able to better understand the architectural movements, styles, political influences, and other factors related to the project's emergence. This approach also allows for a comprehensive analysis of the project's historical and cultural context, which is crucial to gain insights into the significance and impact of the architecture. Additionally, it helps to identify the patterns and trends in the design that have influenced modern heritage architecture.

Overall, a chronological approach is a useful tool to organize complex information and events and to provide a clear timeline and context. The approach also helps to provide a clear, comprehensive, and logical structure to organize data, making it an effective tool to facilitate understanding, analysis, and communication of complex subject matters.



**Figure 3.** This study’s chronological timeframe and milestones. Source: authors of this paper.

#### 4.2. Criterion

The criterion method organizes architectural documentation that involves categorizing information according to specific criteria [57]. To help define the scope and requirements of modern heritage buildings, this method is used in the early stages of a study. It involves identifying criteria that are relevant to the study’s scope, such as the building conditions, built date, and style. Each criterion is then used to organize and filter the available information about the project, such as historical value, promoting a certain need, enhancing the quality of architecture in the city, and technological and engineering solutions.

Using the criterion method encouraged the researchers to quickly identify the most relevant information for a given aspect of the project and ensure that all necessary criteria are met [58]. This can help to streamline the documentation process and ensure that the final outcome meets all of the necessary requirements and has a similar criterion process. Therefore, to document the modern architectural heritage in Riyadh City, the researchers, in cooperation with the Riyadh Region Municipality, conducted several workshops between October and November 2022 to shape “ten criterions” that are believed to be inclusive to help boost the documentation efforts and determine the scope of the project’s search. These criteria underwent several alterations and adjustments along the documentation process to ensure that the most significant modernist architectural heritage buildings in Riyadh City are documented. Table 2 shows a comprehensive overview of the final ten criteria that the researchers and Riyadh Region Municipality team developed.

Consequently, the criterion method played a pivotal role in shaping the early stages of the architectural documentation process. By serving as a filtering mechanism for the information gathered, it enabled the researchers to meticulously validate that all essential criteria were satisfied in the ultimate deliverable. This systematic approach not only guaranteed the completeness and accuracy of the architectural data but also streamlined the collection process itself.

In this way, the criterion method proved to be instrumental in assembling a comprehensive database comprising over one hundred and seventy buildings throughout the Riyadh City. This database served as the cornerstone of the study’s research and analysis, offering a rich resource for various studies and evaluations.

**Table 2.** The ten criteria developed for the study and their methods and approaches.

No.	Criteria	Criteria Explanation	Method Used	Approach
1	The building must have been designed or inaugurated between 1950 and 2000	It includes all buildings that were designed, constructed, or opened between the years 1950 and 2000 AD.	Descriptive method (archival and field surveys).	Previous studies in the literature. Acquisition of architectural drawings.
2	The building contains influential historical value that contributed to the development of society, whether at the local or national level.	It includes buildings associated with community service through the function that the building was and is still performing. This also includes buildings that do not necessarily have unique architectural characters, but rather have developmental and societal contributions that made them part of the city's significant history (such as the buildings of the University of Riyadh in Malaz 1957 AD). Finally, this criterion includes any building associated with a significant historical event (such as the Malaz Hippodrome in which King Faisal announced the oil cutoff in 1973).	Historical method (retrieval) Archival approach. Descriptive method (archival survey).	Previous studies in the literature. Searching the archival sources (King Abdul-Aziz Foundation for Research and Archives—Darah, Arab Urban Development Institute (AUDI), National Library, personal notes, local newspapers, etc.). Conducting an exploratory questionnaire (community participation + focus groups or "specialists"). Conducting personal interviews with specialists and interested persons.
3	The building's impact on the city's historical and cultural contexts contributed to a significant transformation in the city.	It includes buildings of a unique architectural nature that contributed to the formation of the mental image of the city in its historical and urban context (such as the development of the Qasr Al-Hukum urban area in 1985).	Inductive method (analytical).	Previous studies in the literature. Searching the archival sources (King Abdulaziz Foundation for Research and Archives—Darah, Arab Urban Development Institute (AUDI), National Library, personal notes, local newspapers, etc.). Conducting an exploratory questionnaire (community participation + focus groups or "specialists"). Conducting personal interviews with specialists and interested persons.
4	The building has directly or indirectly affected the urban renaissance of the city.	It includes buildings that contributed to the development and diversity of Riyadh architecture by presenting unfamiliar ideas in the city, as well as buildings that contributed to the expansion of the urban area in the city.	Comparative method (analytical).	Previous studies in the literature. Holding a workshop for experts, specialists, interested individuals, and those concerned with the project. Searching the archival sources (King Abdulaziz Foundation for Research and Archives—Darah, Arab Urban Development Institute (AUDI), National Library, personal notes, local newspapers, etc.). Conducting an inductive questionnaire (community participation + focus groups or "specialists").

Table 2. Cont.

No.	Criteria	Criteria Explanation	Method Used	Approach
5	The building is designed by an influential architect in the context of national, regional, and international architecture.	It includes buildings with architectural ideas and solutions that were unique in that era and contributed to defining and branding the city of Riyadh globally, regionally, and also locally.	Inductive method. Descriptive analytical method (archival and field surveys).	Previous studies in the literature. Holding a workshop for experts, specialists, interested individuals, and those concerned with the project. Searching the archival sources (King Abdulaziz Foundation for Research and Archives—Darah, Arab Urban Development Institute (AUDI), National Library, personal notes, local newspapers, etc.). Conducting an exploratory questionnaire (community participation and specialized groups).
6	The building was found to solve an existing problem or an urgent need at the time.	It includes buildings that were the first headquarters of government agencies, as well as buildings with functions that were not available back then, making these buildings of importance and containing an urban historical transformation.	Descriptive analytical method (archival and field surveys).	Literature review. Holding a workshop for experts, specialists, interested individuals, and those concerned with the project. Conducting an exploratory questionnaire (community participation and specialized groups).
7	The building applied modern architectural or construction techniques and applications at the time.	It includes buildings characterized by functional applications derived from local, modern, or advanced building techniques or materials.	Comparative (analytical) method.	Previous studies in the literature. Reviewing and visiting the relevant authorities. Conducting personal interviews with specialists and interested individuals.
8	The building was established by a royal order or opened by Royal Highness.	It includes the buildings inaugurated by Their Royal Highnesses in Riyadh within the time.	Descriptive method (survey).	Literature review. Conducting personal interviews. Searching the local archival newspapers.
9	The government owns the building.	It includes all buildings owned by government agencies.	Descriptive method (archival and field surveys).	Previous studies in the literature. Field survey.
10	The building is associated with a notable personality.	It includes residential buildings associated with legal personalities at the community level, such as politicians, scholars, writers, etc.	Descriptive method (archival and field surveys).	Literature review. Conducting personal interviews.

#### 4.3. Data Collection Techniques

This study employs “triangulation techniques” to collect as much information as possible while also ensuring the credibility and validity of the findings [59]. The triangulation method is also known as “looking in from various angles and vantage points” [60]. As a result, multiple methods and data sources are used in this paper to not only comprehensively understand, but also to extensively document Riyadh’s modern architecture. Given that archiving in Riyadh architecture was not performed professionally until recent years, this data collection method became especially useful. This means that not only is it difficult to obtain information, but it is also difficult to find credible information sources. Several data collection techniques were used to overcome these issues. All of the techniques used to collect data to document modernist architecture in Riyadh are represented in Figure 4.



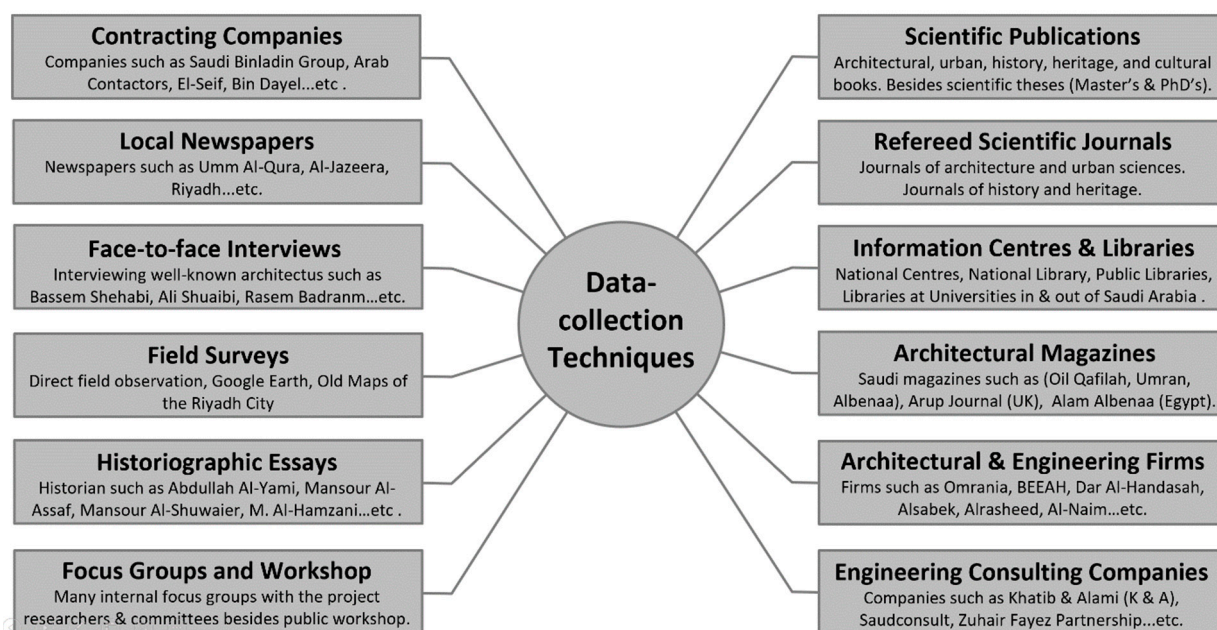


Figure 4. Data collection techniques used in this study. Source: authors of this paper.

Therefore, collecting data with a grade of importance was necessary to ensure that all involved and prioritized data were based on their significance and relevance to the study. As a result, a simplified table was generated to summarize the importance of the data collection grades. We used a simple numerical scale to represent the grade of importance in (Table 3), with higher numbers indicating greater importance. The letters “N/A” indicate that importance grades were not directly applied during those phases, as they are primarily used in data source prioritization, data collection planning, pilot testing, and quality control. The grades helped to ensure that high-importance data were given priority throughout the study by guiding decision making, resource allocation, and analysis.

Table 3. Data collection phase and its importance grades.

Data Collection Phase	Activity	Usage of Importance Grades
1. Define Objectives	Clearly state research objectives	N/A
2. Identify Variables	Identify key variables and metrics	N/A
3. Grading Criteria	Develop grading criteria for importance based on criterion	N/A
4. Prioritize Data Sources	Assess potential data sources	Assign importance grades
5. Data Collection Plan	Create a data collection plan	Incorporate importance grades
6. Collect Data	Implement data collection plan	Prioritize high-importance data
7. Data Validation and QC	Validate and control data quality	Address issues based on grades
8. Analyze Data	Analyze the collected data	Focus on high-importance data
9. Interpret Results	Interpret results in the context of objectives	Emphasize high-importance data
10. Decision Making	Inform decision making, actions	Prioritize actions based on grades
11. Continual Assessment	Continually assess data relevance and importance	Adjust grades and methods
12. Reporting	Document the data collection process and results	Communicate data importance

By assigning importance grades to different phases of the study, the researchers were able to effectively prioritize data source selection, plan data collection activities, conduct pilot testing, and maintain quality control. This systematic approach ensured that high-importance data received the necessary attention and resources throughout the study, enabling informed decision making and accurate analysis.

#### 4.4. Workshop and Questioners

Øngreen and Levinsen (2017) define a workshop as an arrangement in which a group of people learns, acquires new knowledge, performs creative problem solving, or innovates in relation to a domain-specific issue [61]. One of the primary data-collection methods was to engage people from various disciplines and backgrounds in intensive dialogue on the documentation of modernist architecture in Riyadh. The workshop participants were mostly experts in architecture, urbanism, history, and heritage. The goal of the workshop was to present how the documentation project was carried out and to solicit feedback from the participants. The workshop took place on 8 January 2023. A total of 93 people were invited, with 59 attending, for a 63% attendance rate (Figure 5). The workshop was scheduled to last four and a half hours, with 90 min allotted for presentations and 180 min allotted for open discussion. As a result, the workshop was both interactive and effective.



**Figure 5.** Part of the workshop held for this study. Source: authors of this paper.

A questionnaire was also used for data collection to ensure that all participants had the opportunity to participate and contribute to data correction and acquisition. The printed questionnaires, shown in Figure 6, were distributed to the 59 attendees of the workshop. The main goal of this questionnaire was to allow participants to add any comments or notes about the presented documentation of Riyadh's modern architecture. The questionnaire was intended to cover all of Riyadh's significant buildings that were designed, constructed, or opened between 1950 and 2000. The participants were asked to highlight any buildings that were not mentioned in the presentation or to correct inaccurate information or data. In addition to providing information about the existing buildings and landmarks, the participants in the workshop were also asked to provide details about the prominently demolished structures.



## THE FIFTIES (1959 – 1950)

Dear workshop participant:

- Please mention any missing buildings, which were opened between 1950 and 1959 AD in the table below.
- Please use the same table to also correct any information presented about the fifties buildings.

No.	Building Name (Previous name if applicable)	Building Owner	Location (District & Street)	Architect	Contractor	Opening Date
01						
02						
03						
04						
05						
06						

**Figure 6.** A sample of the questionnaire designed for the workshop. Source: authors of this study.

#### 4.5. Fieldwork and City Observation

Fieldwork is a research method that involves collecting data in a natural environment rather than in a laboratory or controlled setting. The method varies depending on the research objectives and the nature of the setting. For example, in South Africa, they used technology to document heritage buildings; 3D modeling and virtual reality were used after conducting intensive site work and city observation to capture and create interactive representations of heritage sites, offering new ways to engage with and understand heritage [62]. Thus, this study used architectural fieldwork and city observation as crucial aspects of the study documentation process.

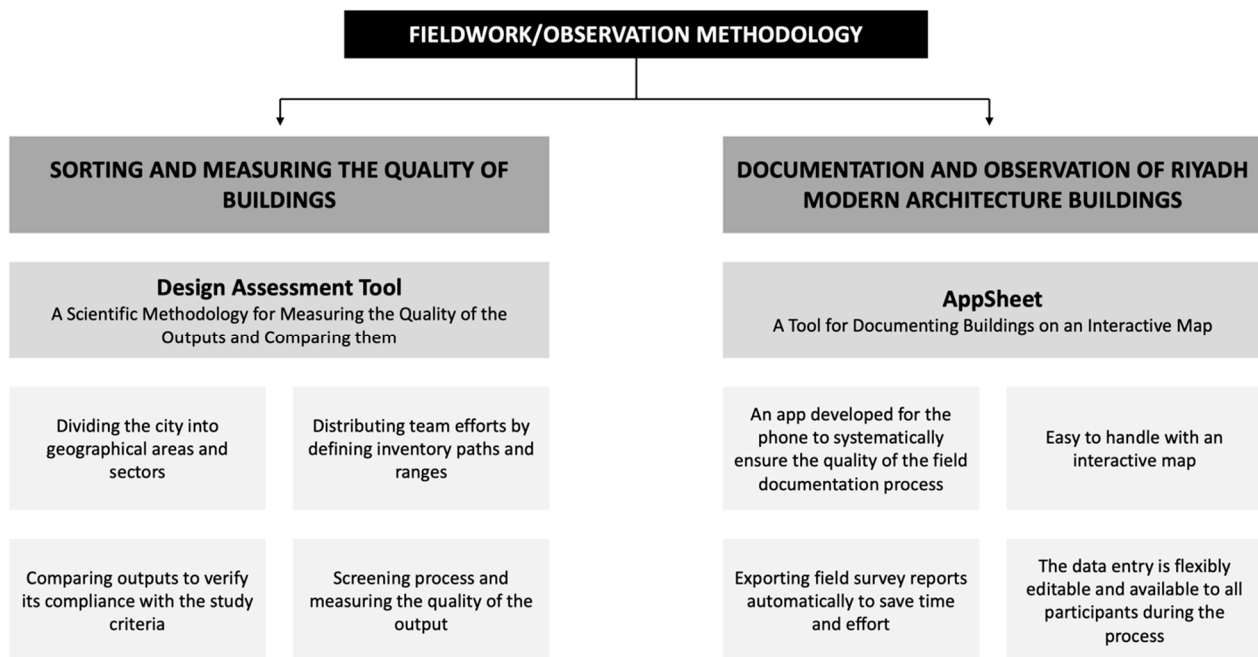
In order to conduct fieldwork and manage data outputs, this study, therefore, employed several techniques. The objective was to document existing buildings, search for significant undiscovered buildings, and create a database for Riyadh's built environment during the specified timeline (1950–2000) in relation to the ten developed criteria (Figure 7). It is worth noting that the fieldwork evaluation was carried out after using triangulation techniques to review the existing literature, national archives, and the workshop output to gain a better understanding of Riyadh's historical development. It was used to gain access to various aspects of Riyadh's built environment via four key factors:

- **Understanding of context:** Observing the built environment and analyzing its physical, social, and cultural contexts helped the researchers better understand a particular community's needs and aspirations at that time. This information informed the documentation process and ensured that the chosen project was well suited to the study criteria.
- **Inspiration by design:** By studying the architectural details, materials, and spatial relationships of the existing buildings, the researchers understood the prevailing architectural style at a given time. This helped the researchers to understand the given era's design process and its cultural relevance and to relocate them while conducting the fieldwork.
- **Materiality:** Understanding the prevailing materials allowed the researchers to gain a better understanding of the availability of materials and their suitability for use in specific contexts and times. This helped the researchers to make informed decisions about the belonging of the building in a given era studied through examining material



selection, which significantly impacted the filtering process of several buildings during the field observation.

- Collaboration with other entities: During the fieldwork, the researchers collaborated with other private and governmental entities to relocate infamous buildings within Riyadh. Even though it was a complex and challenging process, the goal was to gain more insight into buildings that may have historical and cultural significance, which were not fully documented or mentioned in the previous literature.



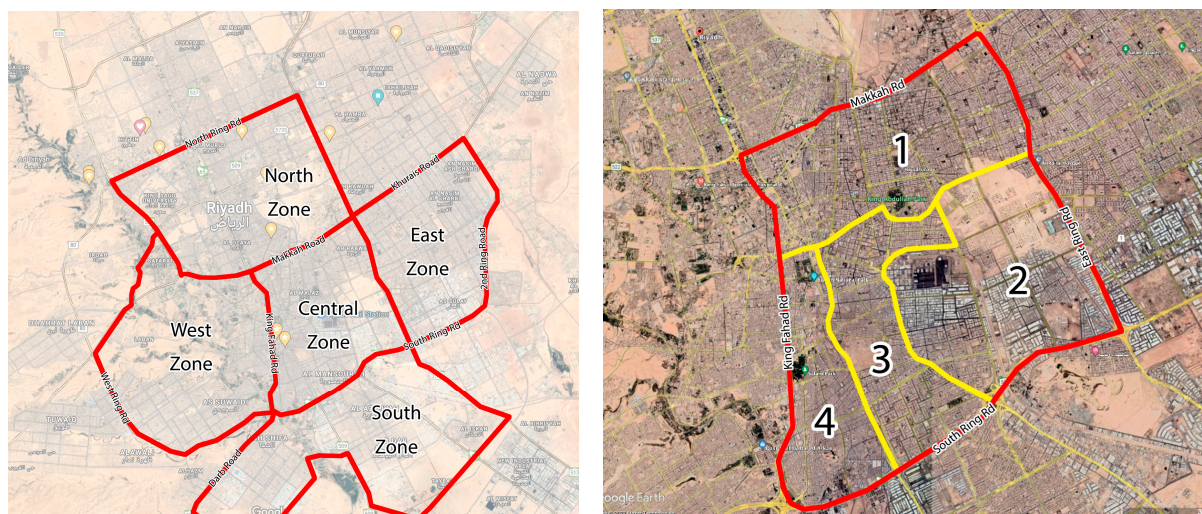
**Figure 7.** The fieldwork methodology. Source: authors of this paper.

During the remote sensing phase of the project, we made use of Google Earth Pro satellite imagery to identify and document structures within the timeline of the research area. This preliminary desk-based assessment identified approximately seventy potential modern historic buildings within the study areas that merited further investigation. However, determining the historical significance of the structures from satellite imagery presented difficulties, particularly in the context of urban heritage. As a result, site visits became necessary in order to pinpoint precise locations, collect field data and images, and assess their authenticity.

Over the course of five months, our research team visited 112 neighborhoods. Due to the visual accessibility constraints required for photographic documentation, only 1300 buildings were chosen for comprehensive research. Some structures were obscured by vegetation, hidden behind tall fences, or situated in restricted areas. Along with these desk- and field-based assessments, we kept spreadsheets to record preliminary data, such as the heritage resource's name and location, a resource overview, geometry and geographic information, a condition assessment, and, when available, links to additional resources (The spreadsheet information was later used to build the "ID" card for each project).

As a result, the initial strategy was to divide Riyadh into five zones (center, north, south, east, and west). Later, the five zones were subdivided into four sectors for each zone to focus and pay attention to the content of each sector in each zone, as well as to better manage human resources by requiring individuals to concentrate more on their assigned sector of the city. Each zone is approximately 100 square kilometers in size, and each sector is approximately 18 square kilometers (Figure 8). Each zone required one month of fieldwork, observation, photography, and data collection regarding potential and specific buildings. The primary purpose of this stage was to create a database of the city's modern heritage buildings, to shed light on buildings that were never documented, as well as to

sort and manage data collection for each zone individually to better relocate them in later stages of the documentation process.



**Figure 8.** The dividing strategy for Riyadh fieldwork. Source: authors of this study.

The second approach entailed creating a database within Google’s well-known and trusted “AppSheet” application. This database is used to manage and store data efficiently and interactively during the fieldwork process. Google’s “AppSheet” is a no-code app development platform that allows users to create custom mobile and web applications without the need for advanced programming skills. The researchers were able to connect to a variety of data sources using “AppSheet,” including Google Sheets, Excel spreadsheets, and cloud-based databases. As a result, they were able to create a versatile app tailored for the fieldwork study that was capable of performing multiple functions such as data collection, inventory management, and field service management.

Therefore, the study used the “AppSheet” abilities to generate automated site visit reports for the team members. The objective was to ensure that all of the data collected were stored correctly and managed similarly among the team members. More importantly was the application’s ability to save time during the site visits by allowing the member to document several buildings in one run by only focusing on documenting the building and having the application store and manage the data input.

To ensure that all potential modern heritage buildings within the five zones were covered and documented, a systematic survey and observation of the city was deployed. For each month from 15 October 2022 to 15 February 2023, and over the course of a week, the team members were tasked with thoroughly scanning the assigned subdivision for potential modern heritage buildings. In rare cases where a subdivision had few structures (such as vacant land) or lacked significant buildings, the team was directed to the second subdivision. To be fair and balanced, the team could only switch their focus to the new subdivision within the same week after surveying the initial subdivision for at least three days (Figure 9). This methodical approach ensured a thorough assessment of all potential modern heritage buildings within the designated zones.

In this case, each team member was to allocate a protentional modern heritage building within the assigned subdivision and zone and use the developed AppSheet application to insert the data collected. The workflow was as follows: (1) visiting the subdivision in person, (2) observing the subdivision to allocate a protentional modern heritage building, (3) taking necessary images, (4) noting necessary preliminary information such as the street name, building number, building name, and any other significant landmarks around the building, (5) gathering the building coordinates, and (6) inserting all of the data in AppSheet (Figure 10). In some cases, the teams were asked to enter the buildings to communicate



with the building owners so they can later contact them for more nonpublic information such as the building’s footprints.

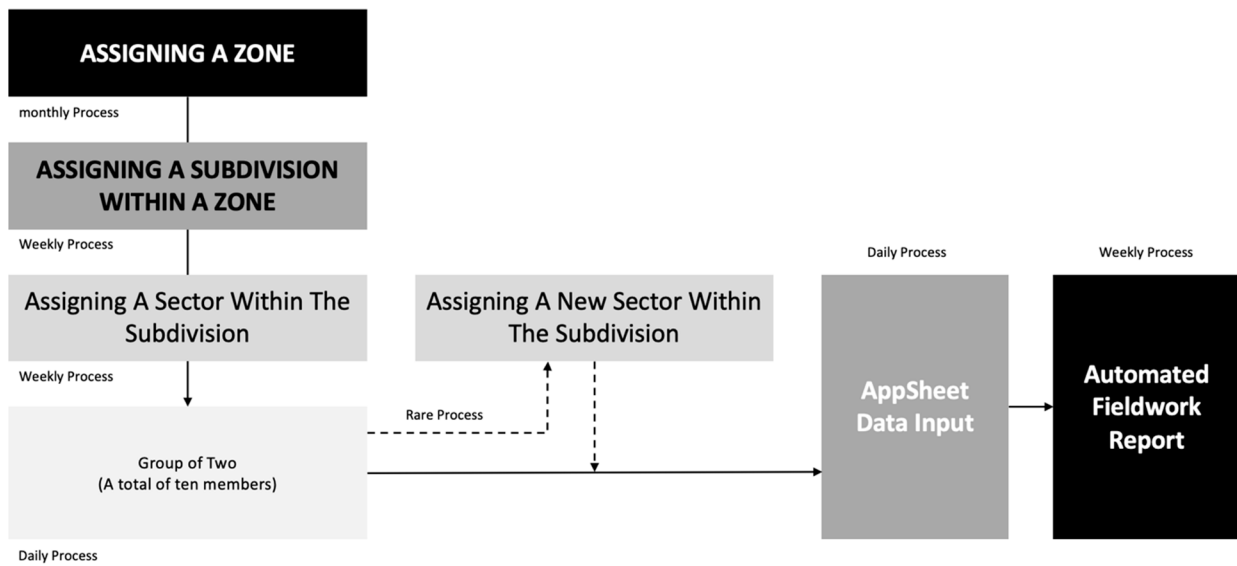


Figure 9. The flowchart of the fieldwork process. Source: authors of this study.

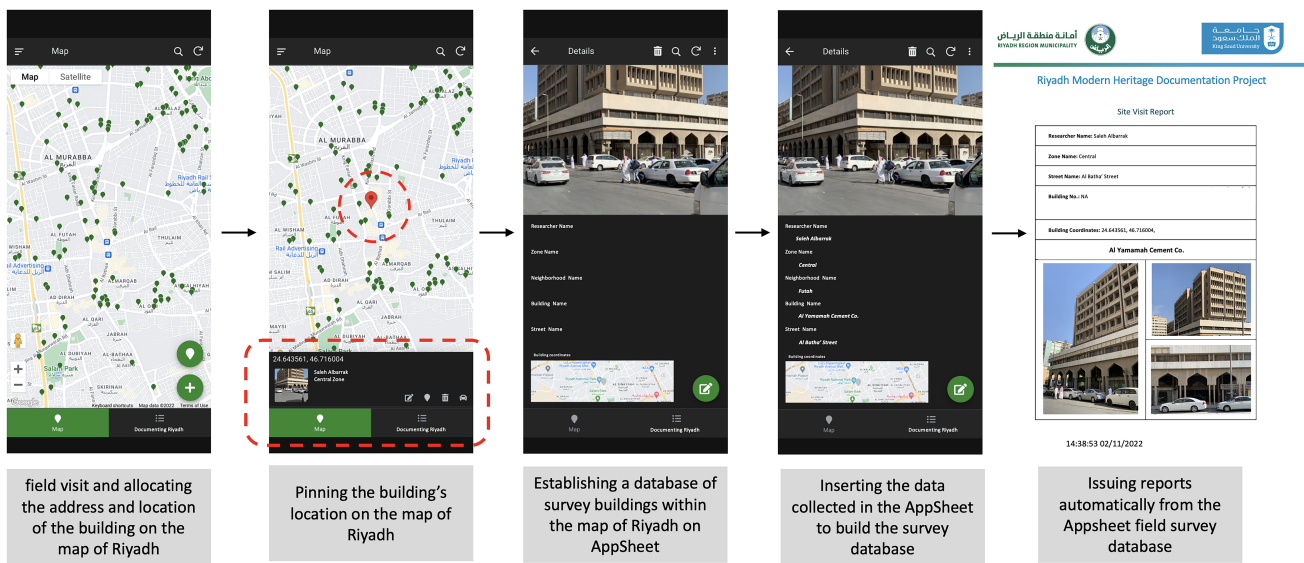


Figure 10. The flow of the fieldwork process using AppSheet. Source: authors of this study.

This lengthy process took exactly five months, during which the team diligently surveyed 112 neighborhoods and identified over 1300 potential modern heritage buildings. As previously stated, the goal was to filter and focus on the most significant modern heritage buildings in Riyadh City rather than to scrutinize every single document. Ten predetermined criteria guided this filtering process. However, one of the primary goals of this study was to create a robust and expandable database for the city. This database will be a valuable resource for future research and preservation efforts, allowing for a more comprehensive understanding of Riyadh City’s modern heritage buildings. It will also be useful in guiding decision-making processes related to urban planning and development.

#### 4.6. Data Organization

Modern architectural heritage documentation necessitates a significant amount of data collection, filtering, classification, and digitization [63]. Furthermore, documentation requires the involvement of multiple experts, extensive resources, precise organization, and a solid structure [64]. As a result, using a novel information management system streamlines documentation [65]. It can facilitate and monitor data streams between project leaders and teammates to facilitate and protect valuable buildings in real time [66]. This system can also improve communication and collaboration among team members, leading to increased efficiency and productivity in data management. Additionally, it can provide a centralized platform for data storage and analysis, allowing for more informed decision making.

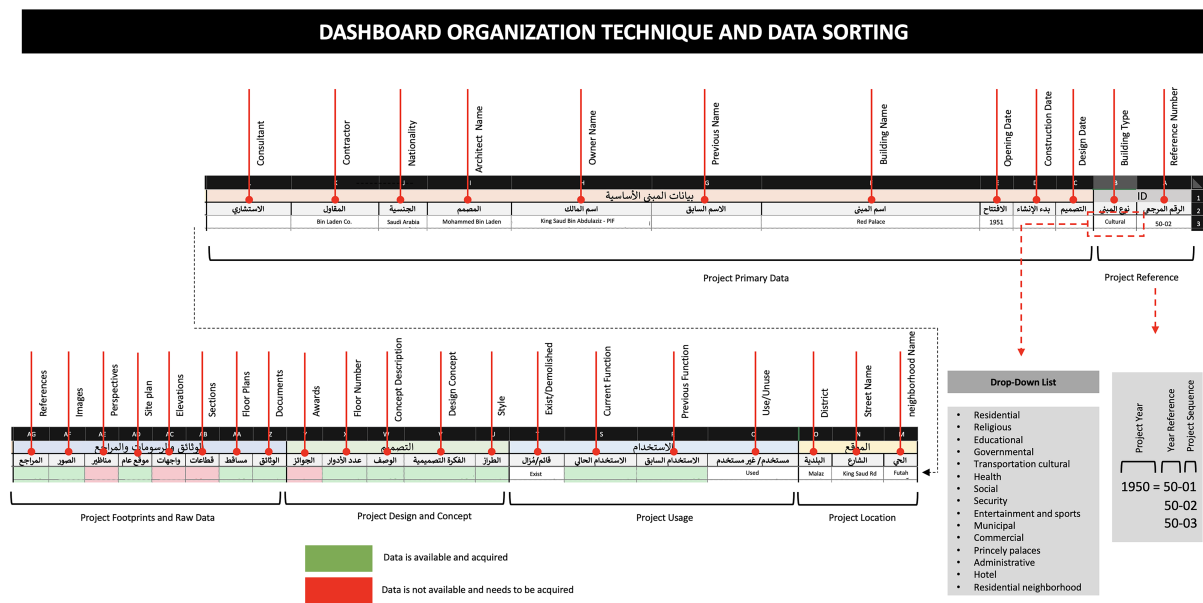
Dashboards are critical for progress tracking, trend monitoring, and informed decision making [67]. They accomplish this by aggregating key data points and metrics, making progress tracking and opportunity identification easier [68]. Several critical factors were considered before creating the project dashboard. The dashboard's ability to support decision-making processes was first evaluated. Second, the data familiarity of the team members was assessed. Finally, the anticipated level of existing context within the project was taken into account.

As a result, for each building, a unique identification card (ID) containing comprehensive primary information, data, graphics, and references was created. These building IDs served as the dashboard's foundational elements, primarily for monitoring the data collection process. Taking into account factors such as the data volume, complexity, real-time updates, and budget constraints, the Excel (version 16.78.3) spreadsheet was chosen as the data visualization software to create the dashboard. As a solution, the dashboard was designed to connect to all relevant data sources seamlessly. Cloud-based solutions were used to increase scalability and accessibility while also facilitating connectivity with all relevant data sources.

The second technique uses the ID card's reference number as the building's unique identifier, which is based on the building's construction date, style, and location, among other factors from the same era. The card also includes primary building data, such as the building's location, scope, and area; the building's category, function, and state of occupancy; a brief history of the building, including the design concept, a description of the building's architectural style, and the number of floors and built-up areas; awards and prizes, including a section for architectural drawings, images, and documents; and a list of references. To simplify data management and dashboard creation, each building has its own Excel sheet that consolidates all historical data and information. It includes drop-down list options to select the components that will be included in the dashboard. The dashboard is divided into eight primary columns, each with several sub-columns that will be further discussed below (Figure 11).

The primary column of the ID is divided into two smaller columns: the reference number and building type. For example, the reference number is made up of four digits separated by a dash (50-02). Beginning on the left, the building is from the 1950s and it is number 02 on the list. The second subsection contains a drop-down list to select the building type (residential, religious, educational, governmental, transportation, cultural, health, social, security, entertainment and sports, municipal, commercial, princely palaces, administrative, hotel, and residential neighborhood).

The structure's primary information is divided into ten sub-columns under the second primary column. The first three auxiliary columns are date pick lists that can be used to specify the building's design, construction start, and opening dates. Following that, there are columns for the building's current and previous names, current and previous owners, and information about the architect, including their country of origin, the building's executing contractor, and the project consultant. These data fields are filled in with information from the building's ID cards (Figure 12).



**Figure 11.** An example of the dashboard data monitoring and management. Source: authors of this study.

The location of the building should be entered in the third primary column. Here, we have the name of the neighborhood, the name of the street, and the city to which the neighborhood is officially assigned. The fourth primary column includes four selectable options for the use of the building, its status (existing or demolished), and whether or not the required data are on the ID card. Color also represents the visibility of the data in this dashboard column. The presence of data about the building's history and current function, for example, is denoted by green. The absence of this information on the ID card, on the other hand, is highlighted in red.

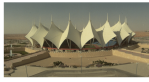
The fifth primary column is divided into five subsections related to design. In each sub-column, a drop-down list indicates whether or not the relevant information is present and it is color-coded (green: available; red: not available). The accompanying sub-columns cover the style, design concept, description, analysis, number of stories, awards, and prizes.

The sixth primary column contains documents, architectural drawings, photos, references, and their availability on the ID card. The eight sub-columns are each a drop-down list with different color codes (green: available; red: unavailable). The documents, plans, sections, facades, site plans, perspectives, images, and references are divided into columns.


The presence of the building as an exit is determined in part by the seventh primary column after all other data collection is complete. The documentation project will produce three significant deliverables, and the importance of structure in the outputs indicates the importance of the search and provision of information. A printed book featuring the city's most iconic structures, a searchable online database that records every structure counted, and a central database that grows and evolves over time were all planned outcomes of the project. The database tracks various projects that can be used as a jumping-off point to learn about the city's history. Finally, the dashboard's last primary column displays the percentage of data collected for each building.

In this study, the dashboard plays a critical role in presenting critical data required to achieve specific objectives, which is a critical component of analytical solutions. As the demand for data analytics grows, the dashboard is poised to become one of the most important tools in any project's toolbox [69]. It gives the researchers a comprehensive snapshot of the project's current status and allows them to make more informed decisions. The primary purpose of the dashboard, regardless of its design or functionality, is to simplify the comprehension of complex data sets, thereby increasing the effectiveness of the study.

### ID Card Sample #1

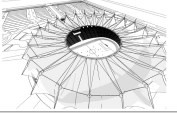
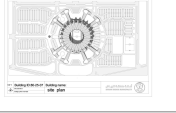


Basic building information		80-66	Ref. No	112	Building No.
		King Fahd International Stadium		Current Building Name	
Website		British		Mistry of Sport	
Building location		Nationality		Former Building Name	
1981 <sup>(1)</sup>		IAN FRASER, JOHN ROBERTS, and PARTNERS <sup>(1)</sup>		Owner	
1983 <sup>(2)</sup>		Nationality		Design Year	
1988 <sup>(3)</sup>		German		Project Start Year	
1988 <sup>(3)</sup>		American		Project End Year	
✓ 10		✓ 9		✓ 8	
✓ 7		✓ 6		✓ 5	
✓ 4		✓ 3		✓ 2	
✓ 1					
Location, Scope, and Area					
24.788593, 46.839208		Coord.	Alrawdah	Municipal	Al-Mu'ayzilyyah
				District	Alexandria Bay
Building category, function, and occupancy status					
		Sports building		Building type	
		Stadium		Current Position	
		Populated		Occupancy status	




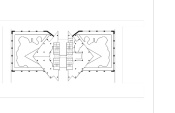
### ID Card Sample #2





Basic building information		90-14	Ref. No	142	Building No.
		Cooperative Tower		Current Building Name	
Website		Finland, Saudi		Former Building Name	
Building location		Nationality		Owner	
1993 <sup>(1)</sup>		Omrania and Partner <sup>(1)</sup> and Finnish architect Elmo		Design Year	
1996 <sup>(2)</sup>		Nationality		Project Start Year	
1998 <sup>(3)</sup>		Saudi		Project End Year	
✓ 10		✓ 9		✓ 8	
✓ 7		✓ 6		✓ 5	
✓ 4		✓ 3		✓ 2	
✓ 1					
Location, Scope, and Area					
24.687172, 46.685098		Coord.	Al-Olaya	Municipal	Al-Olaya
				District	King Fahad RD
Building category, function, and occupancy status					
		Tower		Building type	
		Commercial		Current Position	
		Populated		Occupancy status	

About the Building		Brief History
<p>King Fahd Stadium was designed by the British office (IAN FRASER, JOHN ROBERTS, AND PARTNERS) and implemented by (Philip Holzman Company). The first announcement of its establishment was in 1980 AD during the reign of King Khalid, and during the reign of King Fahd in 1982, Prince Faisal bin Fahd issued a decision to establish it, and its construction began in 1983 AD, and it was officially opened in 1988 in the month of Rajab at the opening of the ninth Gulf season.</p> <p>The stadium's location was far from residential neighborhoods, but population expansion quickly reached it, and the stadium witnessed carnivals, celebrations, and unforgettable days in the memory of the sports community.</p> <p>The first match was between the Saudi and Omani teams, and the Saudi team was able to win the match by two goals to zero in the presence of a crowd that filled the stadium. The crowds outside the stadium that could not enter were estimated to be three times the crowds inside since that match was the opening match of the Gulf Championship and the new stadium at that time.</p> <p>The stadium was designed by the architectural office of IAN FRASER, JOHN ROBERTS, AND PARTNERS, which was concerned with forming the exterior cladding of the stadium with tensioned structures to simulate Bedouin tents. For years, King Fahd Stadium has been and still is a distinguished example of architecture based on the sincere expression of the authenticity of the place. The architect Fraser excelled in imagining the architectural elements that mimic the modern form of the Bedouin tent. He was not limited to the aesthetics of the form but also surpassed two of the most essential structural designers in the world, setting an unparalleled record. It is preceded by a great deal of coverage, as well as stadium coverage, by Horst Berger and David Jerger, who had a role in designing the tents at Jeddah Airport.</p> <p>1. The stadium was designed by the architectural office of IAN FRASER, JOHN ROBERTS, AND PARTNERS, which was concerned with forming the exterior cladding of the stadium with tensioned structures to mimic the Arab tent.</p> <p>2. Structural consultant: Geiger Berger Associates Engineers<sup>(4)</sup></p> <p>3. Electrical and mechanical consultant: Mamens Titi<sup>(5)</sup></p> <p>4. The stadium has seven entrances, including the royal entrance.</p> <p>5. It contains eight main corridors designated for pedestrians, and the corridors connect to a circular corridor that surrounds the stadium and leads to the lower and upper stands.</p> <p>6. The stands are designed in an oval shape, which leads to ideal viewing.</p>		<p>Architectural style</p> <p>Design Concept</p> <p>Building Description</p>

About the Building		Brief History
<p>The Cooperative Towers buildings were designed by the Dar Al-Umranayah Studies Office and Partners and were established in 1998 AD on King Fahd Road. They were built two years before the inauguration of Al-Faisaliah Tower, and their location – the Riyadh Administrative District – was distinguished by its location, which was an attraction for visitors, tourists, and shoppers from 1985 AD to 2015 AD. Its opening coincided with the spread of insurance companies in Riyadh. The building was nominated for the Aga Khan Award for Islamic Architecture.</p> <p>Modern</p> <p>Architectural style</p> <p>Design Concept</p> <p>Building Description</p> <ol style="list-style-type: none"> <li>After the House of Urban Studies won a limited international architectural competition in 1993, it was commissioned by the employer to design and prepare all the implementation documents for a luxurious office investment building on King Fahd Road that includes the main offices of the National Cooperative Insurance Company "Tawuniya insurance." The commission also included the preparation of all designs, interior.</li> <li>It was built on land with dimensions (60x120).<sup>(1)</sup></li> <li>The project cost is 239 million Saudi riyals.</li> <li>One of the most prominent modern features of the project is the use of a thermal storage system to cool water and air condition the administrative and commercial complex at an ideal cost, as this system was applied for the first time in the Middle East.</li> <li>The building consists of two towers facing each other.</li> <li>The two towers are triangular, and each tower has 17 floors.</li> <li>The two towers are connected on the ground floor, mezzanine, first and second floors, and two bridges on the thirteenth and seventeenth floors.</li> <li>The two towers above emanate from a single three-story base, the commercial center, which includes shopping squares, shaded arches, public spaces, and an upper garden above the base's roof (the three-story commercial center).</li> </ol>		<p>Architectural style</p> <p>Design Concept</p> <p>Building Description</p>

Architectural Drawings and Images		Building Drawings
		
Perspective	Site	
		
Front Façade	Ground Floor Plan	

Architectural Drawings and Images		Building Drawings
		
Perspective	Site	
		
Floor Plan	Ground Floor Plan	

Images		Images
		
The exterior facade of the stadium	The exterior facade of the stadium	
		
Stadium stands	Stadium stands	





Images		Images
		
Side view showing the tower's openings	The exterior facade of the tower	
		
The side facade of the tower	The main entrance to the tower	

Figure 12. Example of the project ID card. Source: authors of this study.

## 5. Discussion

This study is one of the first initiatives deployed by the Riyadh Region Municipality that strives to establish documentation processes for Riyadh's significant modern heritage and introduces a novel and comprehensive approach utilizing mixed methods. The

chronological approach was an appropriate method to investigate streamlined modernity by focusing on the milestones that affected the decisions that shaped the city's form and created the sequential styles of the city's architecture.

Workshops are regarded as effective tools to explore the perspectives of city experts and engage with them in an interactive manner in order to gain access to information that is frequently lacking from archives and the literature. Organized discussions are beneficial in stimulating the collective memory of historians, experts, and those interested in the city's memory to follow the traces of modern architecture and create new memories. Another advantage of this method is the inclusivity it adds to the discussion by including the perspectives of others, such as architects, planners, officials, owners, and social historians. This study found that the story of modernity extends beyond the professional to include the story of the city and its people from a non-point expert's position.

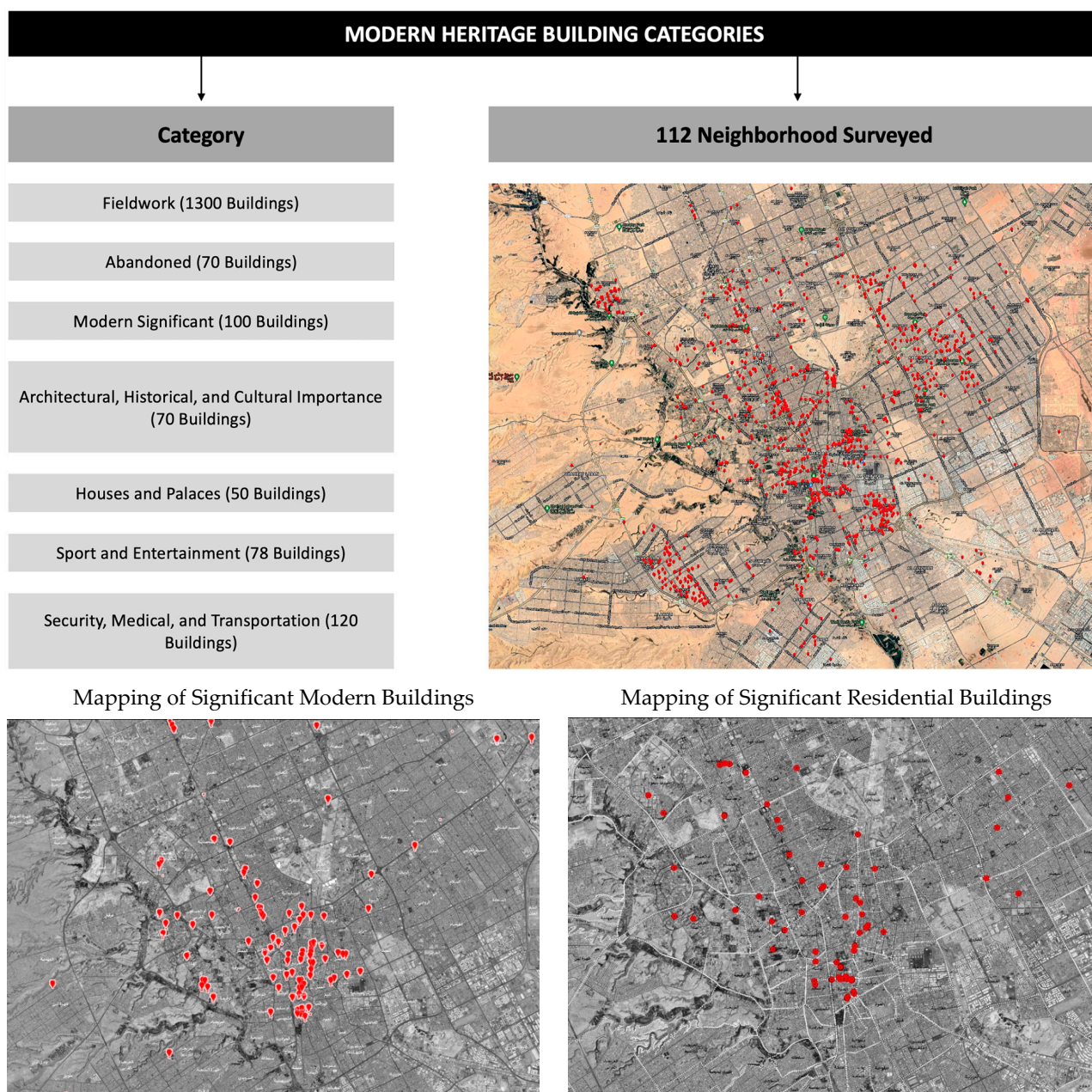
The fieldwork approach proved to be an effective method to observe and allocate architectural structures on the ground, assisting the researchers in revealing the rich and hidden aspects of the city's architecture or, to put it another way, the search for "popular" architecture rather than "high" architecture [70]. Additionally, it is important to consider the issues of time commitment, generalizability limitations, accessibility issues, and permission issues.

As a result, the fieldwork strategy that was deployed had its advantages and disadvantages. While it provided rich and detailed data about Riyadh's architectural heritage buildings and social and cultural phenomena, it was time-consuming, limited in generalizability, and subject to accessibility and permission challenges. The researchers took these issues carefully and understood the nature of the subject setting and the potential limitations of fieldwork methods when deciding whether to use them in their research (Table 4). However, by employing mixed-method techniques, the researchers were able to record over 1300 potential modern heritage buildings in Riyadh. Furthermore, the meticulous documentation process made it possible to categorize these 1300 buildings into typological groups and building types (Figure 13). This approach allowed for the study to not only showcase the city's rich modern heritage, but also to present Riyadh's versatile architecture. This finding revealed how Riyadh's architecture has evolved over time, reflecting the city's cultural and social changes. It also highlighted the importance of preserving these architectural treasures for future generations.

**Table 4.** The summary of fieldwork strategy.

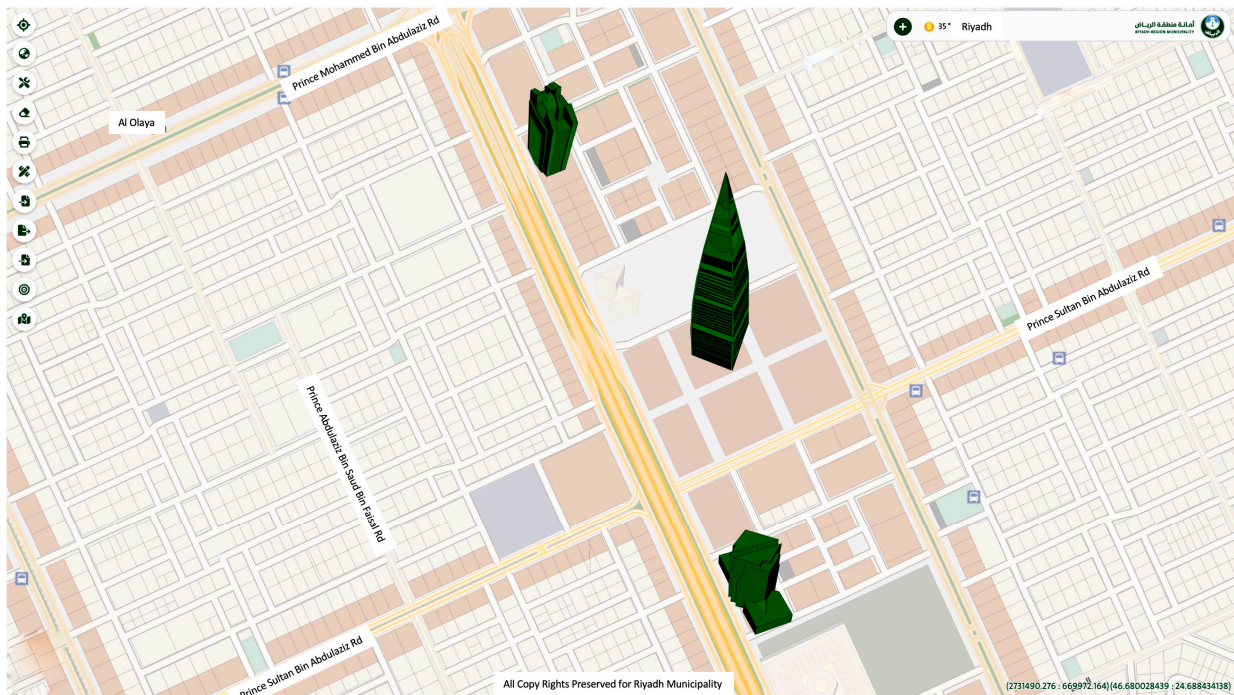
Fieldwork/Observation Strategy Summary		
Pros	Cons	Outputs
Divides the city into geographical zones and sectors	Time-consuming	Compare different buildings according to ten criteria in different eras.
The ease of distributing tasks among team members ensures quality	Needs a curved learning process	Insights regarding the quality of buildings and public spaces in the city.
Transparency during the documentation process among team members	Restrictions and limitations to certain areas	Processing data formats entered within the team members in an integrated manner.
Data availability to all team members to contribute to the development and modification of the outputs	Hesitations regarding certain buildings and whether they are within the study's scope or not	Identify the strengths and weaknesses of documented records.
-	-	Store and sort records by scope, era, and building type.





**Figure 13.** The study outcome of Riyadh’s modern heritage documentation. Source: authors of this study.

To make use of the data collected for this study, the researchers are collaborating with the Riyadh Municipality to update the “Riyadh Geo-place Portal” to include Riyadh’s modern heritage buildings and building biographies. This portal is intended to be a place where the public can interact with the city’s rich history and landmark locations (Figure 14). The portal aims to provide a comprehensive platform that showcases Riyadh’s modern heritage buildings and offers valuable insights into their historical significance and architectural details. By incorporating building biographies and architectural documents, the portal will be a valuable resource for researchers, historians, and architecture enthusiasts interested in exploring Riyadh’s cultural heritage.



**Figure 14.** Example of how the study data can be incorporated in the Riyadh Geo-place Portal. Source: authors of this study.

In general, this study adds to the body of knowledge by proposing a strategic methodological approach to document and preserve twentieth-century Riyadh architecture. However, such a study uncovered several issues:

- The absence of proper archives for the government and several private entities;
- The ease of access, as many governmental and private entities are unaware of the importance of documentation and are unwilling to share unpublic documents;
- In terms of modern heritage documentation and approach, there is a lack of definition awareness;
- The need to raise public awareness about the significance of such a subject, particularly among stakeholders who own such a heritage;
- The significance of preserving modern heritage buildings, reusing them, and preserving them as living memories for the city and its people.

## 6. Conclusions

Heritage documentation is a dynamic and evolving process that is fueled by a unique combination of tangible and intangible elements. These practices, which draw on a variety of methodologies, provide valuable insights into broader discussions about heritage, identity, and cultural preservation. We can gain a more nuanced understanding of how heritage is identified, preserved, and interpreted across different socio-cultural contexts by comparing these practices to those in Western contexts. Consequently, this study underscores how critical it is to recognize and value a range of perspectives in heritage documentation, providing a basis for more inclusive and comprehensive approaches to heritage preservation across the globe.

One of the most important implications of this study is that it demonstrates how city architecture can be documented. This study demonstrates a step-by-step approach to document the modern heritage of cities similar to Saudi Arabia's capital, Riyadh. Considering the current state of modern heritage in Saudi cities such as Jeddah and Dammam, the proposed methodology could aid in documenting and protecting the modernity legacy in other Saudi cities and beyond. The findings of this study and the application of its various



methods may improve documentation processes and contribute to the public recognition and appreciation of the value of modern architecture in the Arab Gulf region in general.

This study is significant for future research because studies on modern urban heritage in Saudi Arabia are limited. A future expansion of this research approach to include culture, health, and other modern heritage building types would be intriguing. In addition, it may be possible to use a more specific methodology by selecting and accurately analyzing a particular period, focusing on all aspects of modern architecture's formation during its period by examining cultural, social, and political influences and tracing the effects of modern urbanization using an anthropological approach. This approach would provide a more comprehensive understanding of the development of modern architecture and its relationship with the society and culture of that period. It could also reveal how modern architecture has evolved over time and its impact on contemporary urban design.

This study also emphasizes the significance of preserving modern heritage, as it contributes to a city's identity and cultural heritage and can attract tourists who are interested in modern architecture. This documentation process can also serve as a resource for future urban planning and development projects in Riyadh. By analyzing the documented information, urban planners can gain insights into the city's history, culture, and architecture, informing their decision-making processes. This can lead to more informed and culturally sensitive urban planning and development projects in Riyadh.

However, there are some limitations to this study. First, there is a lack of significant publications about modern heritage in local literature, which this study contends will bridge the gap as a result of the project's outcome. As a part of the study objectives, this study attempted to raise public awareness and propose a methodological approach. Second, the difficulty in gaining access to pioneer foreign architects' archives that exist outside of Saudi Arabia (e.g., Minoru Yamasaki at Wayne State University, Kenzo Tange at Harvard University, etc.) led the research team to trace the story of modernity from the inside out, focusing on local materials and stakeholder interviews, which led to time-consuming, cost, and other logistic issues. Finally, there is a scarcity of trained archivists with expertise in architectural research and archival studies. Most architectural schools emphasize design and technical aspects of architecture while ignoring other aspects such as writing, research, and humanities.

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