Proceedings of the Informatics Conference Vol. 11 No. 22 (2025): Requirements Engineering Methodologies ISSN: 2477-5894

Software Engineering Requirements for a Real Estate Website

Ridho Parmonangan Manurung[1], Setyawan Widyarto[2]
Magister Ilmu Komputer, Universitas Budi Luhur, Jakarta[1], Universiti Selangor, Malaysia[2]
2311600544@student.budiluhur.ac.id[1], swidyarto@unisel.edu.my[2]

***Abstract*— Real estate businesses are increasingly recognizing the importance of information technology in improving efficiency, reducing costs, and expanding their operations. The development of a real estate sales information management system is crucial for ensuring the timely and effective dissemination of information to buyers and other stakeholders. Based on these problems, a solution emerged to create a Real Estate Website which aims to make it easier for sellers to sell property and buyers to find the desired property. Real Estate is proven to be able to help users search for property information. Apart from that, it saves users time in visiting the property location directly. Just by looking at a picture of the property's condition, users can determine whether the property is worth reviewing or not. From the seller's side, it helps with property promotion and saves flayer or brochure costs. This system is expected to help young couples in Indonesia find their dream property at an affordable price.**

Keywords—Real Estate, HTML, CSS, MySQL, PHP

I. INTRODUCTION

The real estate industry has undergone significant transformations driven by the integration of technology, as the emergence of proptech and fintech companies has disrupted traditional business models. This increasing reliance on digital solutions has led to a surge in the demand for robust and user-friendly real estate websites that can cater to the diverse needs of buyers, sellers, agents, and property managers. This research paper aims to identify the essential software engineering requirements for a real estate website that can effectively bridge the gap between real estate consumers and other stakeholders, while also guiding the industry towards a more transparent and efficient future [1].

Requirements engineering is a vital aspect of the software development process, especially in the context of end-user computing. This field underscores the active participation of users in the software development lifecycle, ensuring that the final product aligns with their needs and expectations. In the real estate industry, this approach is particularly crucial, as the end-users possess unique and specific requirements [2].

The initial stage of the requirements engineering process involves identifying the key stakeholders participating in the real estate website project. This group may encompass real estate agents, brokers, property owners, and prospective buyers or renters. Once these stakeholders have been recognized, it is crucial to prioritize their needs and preferences, thereby ensuring that the most essential requirements are addressed at the outset [3].

Adopting a user-centric design approach is critical for the success of a real estate website, as it ensures that the platform is intuitive, accessible, and tailored to the specific needs of the end-users. This may involve incorporating features such as advanced search and filtering capabilities, personalized recommendations, and seamless communication and collaboration tools. User-centric design is a fundamental principle in requirements engineering, and it is particularly relevant in the context of a real estate website. By thoroughly understanding the needs and preferences of the end-users, the development team can create a website that is intuitive, easy to navigate, and specifically tailored to the unique requirements of the real estate market [4].

The real estate industry is increasingly leveraging data-driven approaches to guide their business strategies and enhance the overall customer experience. Requirements engineering for a real estate website should incorporate robust mechanisms for data collection, analysis, and integration, enabling the development team to make well-informed decisions that align with the specific needs and preferences of the end-users [5].

The real estate industry is progressively embracing innovative technologies, including virtual reality, augmented reality, and artificial intelligence, with the aim of enhancing the customer experience and improving the efficiency of real estate transactions. Requirements engineering for a real estate website should account for the integration of these emerging technologies, ensuring that the website is equipped to capitalize on the latest advancements in the field [6].

Proceedings of the Informatics Conference Vol. 11 No. 22 (2025): Requirements Engineering Methodologies ISSN: 2477-5894

II. Theory

A. Real Estate

The real estate industry has experienced substantial technological advancements in recent years, with the internet playing a pivotal role in its evolution. The emergence of real estate technology has facilitated transactions among various stakeholders, including real estate agents, brokers, property owners, and consumers, while also enhancing the transparency of real estate activities. According to a systematic review, real estate technology encompasses the hardware devices, online platforms, and software tools utilized by different participants in the real estate industry to gather and disseminate industry-related data [7].

Real estate technology-based companies in the United States have attracted substantial financial investment, having raised nearly $6.4 billion across 817 deals since 2012, which underscores the considerable financial backing in this industry sector [8]. According to reports, the global real estate industry lags the technological curve by approximately five years, indicating that there remains substantial potential for further adoption and integration of digital solutions within this sector.

B. HTML (HyperText Markup Language)

HTML serves as a fundamental building block in web development, and it is crucial for establishing the structure and layout of a real estate website. Utilizing HTML, developers can create interfaces that are responsive and user-friendly, catering to the diverse needs of real estate consumers who may access the website from a variety of devices and screen sizes [9].

Furthermore, HTML enables the incorporation of diverse interactive components, such as image galleries, property search functionalities, and virtual tours, which are pivotal features for an effective real estate website.

C. CSS (Cascading Style Sheet)

CSS is a complementary technology to HTML, and it is responsible for the visual styling of a real estate website. Developers can utilize CSS to create an aesthetically pleasing and visually consistent user interface that aligns with the brand identity of the real estate company. Additionally, CSS facilitates the separation of content and presentation, which can enhance the website's accessibility, performance, and maintainability [10].

Furthermore, CSS can be employed to implement responsive design, ensuring that the website adapts seamlessly to different screen sizes and devices. This capability provides an optimal user experience for real estate consumers accessing the website from various platforms.

D. MySQL

As an open-source relational database management system, MySQL is a widely utilized technology in web development, including real estate websites. The database can be leveraged to store and manage a substantial volume of real estate data, encompassing property listings, customer information, and transactional records [11]. The flexibility and scalability of MySQL render it a suitable choice for real estate websites, which often require the capacity to handle large data volumes and support intricate queries and data analysis.

E. PHP

PHP is a programming language that is well-suited for developing real estate websites due to its versatility, scalability, and widespread adoption in the web development community. One of the key advantages of using PHP is its ability to handle dynamic content, making it an ideal choice for real estate websites that need to display a large amount of property listings and real-time market data [12].

Moreover, PHP is supported by a vast ecosystem of frameworks, libraries, and tools that can accelerate the development process and enhance the functionality of a real estate website. For instance, the Laravel framework provides a robust and well-structured codebase that can be leveraged to build feature-rich real estate platforms.

III. Research Methodology

The research methodology for this study on real estate websites consists of the following steps:

A. Literature Review

The initial stage of the research methodology involves a thorough review of the existing literature related to real estate websites and the technologies employed in their development. This entails an analysis of academic publications, industry reports, and online resources to gain insights into the current landscape of the real estate sector, the integration of digital technologies, and the core features and functionalities characteristic of real estate websites.

B. Systematic Review

To further elucidate the facilitating and hindering factors affecting the adoption of digital technologies in the real estate industry, a systematic review of the pertinent literature is undertaken. This review adheres to a structured methodology to locate, assess, and aggregate the existing research on smart real estate technologies.

C. Technology Analysis

The subsequent stage of the research methodology entails an analysis of the specific technologies leveraged in the development of real estate websites. This encompasses an examination of the programming languages, content management systems, databases, and user interface

Proceedings of the Informatics Conference Vol. 11 No. 22 (2025): Requirements Engineering Methodologies ISSN: 2477-5894

frameworks employed in this context. The analysis focuses on evaluating the capabilities, advantages, and limitations of these technologies within the realm of real estate website development.

D. Industry Trends and Best Practices

The research also examines the prevailing trends and recommended practices within the real estate industry, particularly in the domain of digital technologies and web-based solutions. This entails an analysis of industry reports, case studies, and expert perspectives to discern the evolving needs and expectations of real estate consumers, as well as the strategies and technologies implemented by prominent real estate organizations.

IV. Analysis & Design

Developing a real estate website necessitates a thorough assessment of the software requirements to ensure the platform is aligned with the specific needs of the real estate industry and its target market.

A. Functional Requirements Analysis

This analysis aims to provide a detailed overview of how the Real Estate Website works.

1. Users/Seller

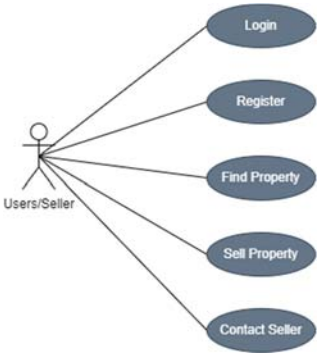

Fig. 1. Usecase Diagram Users/Seller

a) User/Seller can be Login using email and password.
b) User/Seller can Register account if don't have email and password.
c) User/Seller can Find Property based on location.
d) User/Seller can Sell Property to Real Estate Website.
e) User can be Contact Seller using email or phone number.

2. Administrator

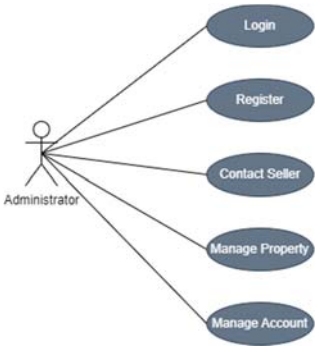

Fig. 2. Usecase Diagram Administrator

a) Administrator can be Login using Username and Password.
b) Administrator can be Register for the new account administrator.
c) Administrator can be Contact Seller Property.
d) Administrator can be Manage Property for listing.
e) Administrator can be Manage Account for User/Seller.

B. System Architecture Analysis

The development of a functional system requires the specification of both hardware and software components, as these elements are intrinsically linked and cannot be isolated. A comprehensive specification is necessary to ensure the system operates as anticipated, as demonstrated in the following table.

Table 1. Hardware Specification

No.	Hardware	Specification
1.	Processor	Intel Core i7-8750H
2.	Display	1920 x 1080 px
3.	SSD	240 GB
4.	Harddisk	1 TB
5.	RAM	16 GB

Table 2. Software Description

No.	Software	Description
1.	Windows 10 Home License	Operating System
2.	Visual Studio Code v 1.91.1	Text Editor
3.	XAMPP v 3.3.0	Web Server Local
4.	Google Chrome	Web Browser
5.	MySQL	Database Management

C. Interface Design

This section outlines the key software engineering requirements for the real estate website interface design:

Proceedings of the Informatics Conference Vol. 11 No. 22 (2025): Requirements Engineering Methodologies ISSN: 2477-5894

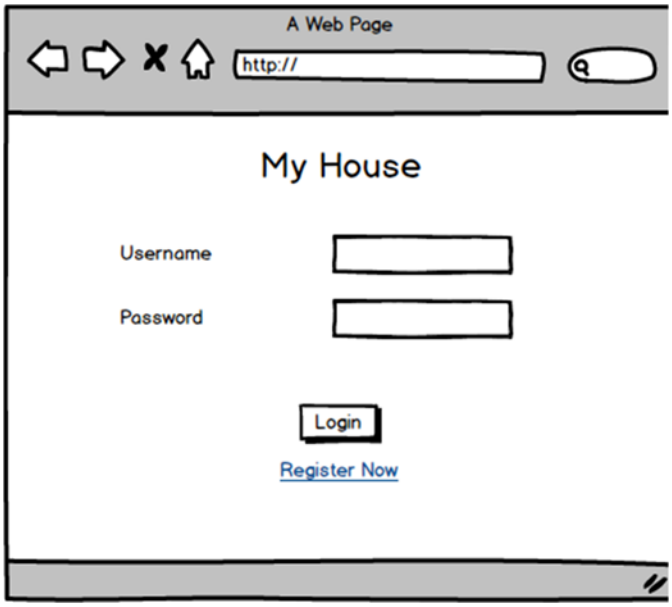

Fig. 3. Design Interface Login

The login interface design described previously details the process by which users can authenticate their identity and access the system using a username and password combination.

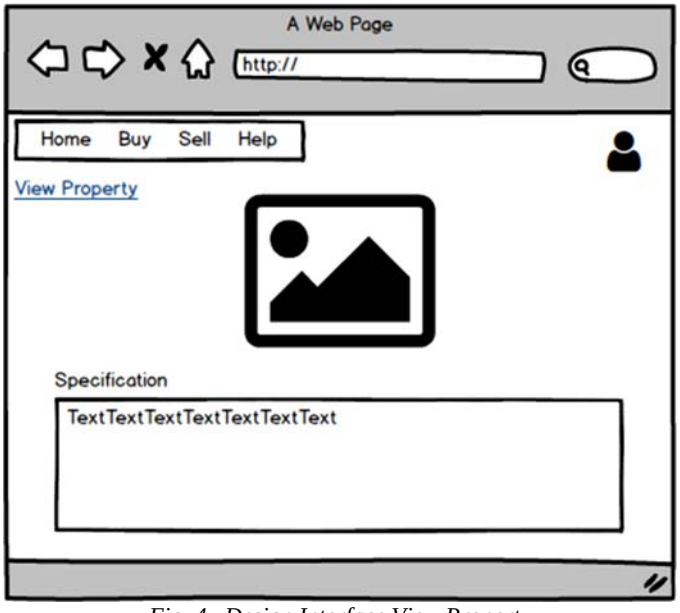

Fig. 4. Design Interface View Property

The property view design above is the display if the user sees a list of properties they want to search for or what they want. This display contains information in the form of price, location, facilities, number of rooms and pictures of the property being sold. This information makes it easier for users to view properties without having to come to the location.

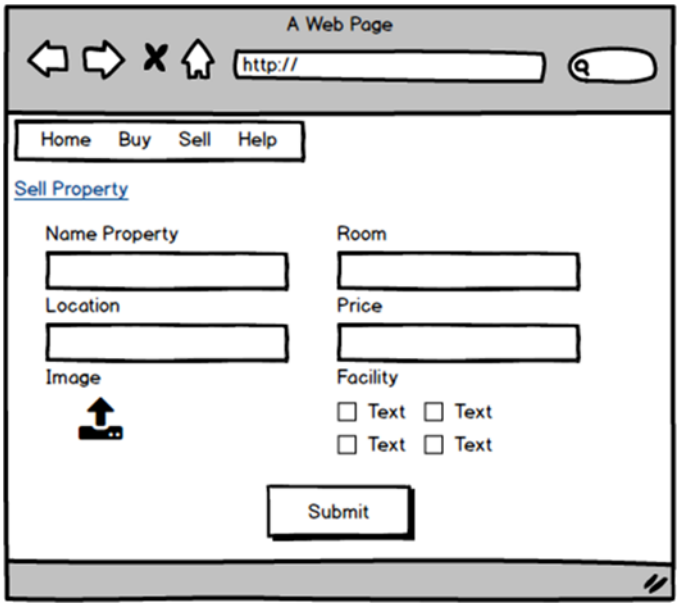

Fig. 5. Design Interface Sell Property

The interface depicted showcases the functionality for listing one's property for sale. Users or sellers must provide specific details, such as the number of rooms, the property's location, the price, an image of the property, and relevant facilities. Once the required information has been entered, the user or seller can submit the listing by pressing the designated button.

V. CONCLUSION

Informed by the software engineering requirements outlined for the real estate website, the following conclusions can be drawn:

1. The availability of a diverse range of property options on a Real Estate Website empowers users to freely select the property that best suits their preferences and needs.
2. A real estate website allows users to view and evaluate potential properties without the necessity of conducting in-person inspections. By providing property images uploaded by owners, the website enables users to assess the condition of the properties, thereby saving time for prospective buyers.
3. In the modern, technology-driven age, physical promotional materials such as flyers or brochures are no longer necessary for real estate marketing. With access to a device and a reliable internet connection, a comprehensive real estate website enables users to conveniently view, search for, and list properties for sale, thereby facilitating the promotion of available homes to prospective

Proceedings of the Informatics Conference Vol. 11 No. 22 (2025): Requirements Engineering Methodologies ISSN: 2477-5894

buyers.

REFERENCES

[1] T. O. Ombati, "Risk management in real estate property management systems," American Journal of Industrial and Business Management, vol. 12, no. 7, pp. 1175–1184, Jul. 2022. doi: 10.4236/ajibm.2022.127065.
[2] A. Alzayed and A. Khalfan, "Analyzing user involvement practice: A case study," International Journal of Advanced Computer Science and Applications (IJACSA), vol. 12, no. 10, pp. 294–300, 2021. doi: 10.14569/IJACSA.2021.0121036.
[3] J. C. B. Sandoval, V. F. de Santana, S. Berger, L. T. Quigley, and S. Hobson, "Responsible and inclusive technology framework: A formative framework to promote societal considerations in information technology contexts," arXiv preprint, arXiv:2302.11565, 2023.
[4] J. Lee and K. O. Lee, "Online listing data and their interaction with market dynamics: Evidence from Singapore during COVID-19," Journal of Big Data, vol. 10, no. 1, p. 34, Jun. 2023. doi: 10.1186/s40537-023-00727-0.
[5] K. Ahmad, M. Abdelrazek, C. Arora, M. Bano, and J. Grundy, "Requirements engineering for artificial intelligence systems: A systematic mapping study," Journal of Systems and Software, vol. 197, p. 111542, 2023. doi: 10.1016/j.jss.2023.111542.
[6] F. Dalpiaz and N. Niu, "Requirements engineering in the days of artificial intelligence," IEEE Software, vol. 37, no. 4, pp. 7–10, 2020. doi: 10.1109/MS.2020.2985625.
[7] F. Ullah, S. M. E. Sepasgozar, M. J. Thaheem, and F. Al-Turjman, "Barriers to the digitalisation and innovation of Australian smart real estate: A managerial perspective on the technology non-adoption," Environmental Technology & Innovation, vol. 22, p. 101527, 2021. doi: 10.1016/j.eti.2021.101527.
[8] Harvard Joint Center for Housing Studies, Emerging Models in Residential Real Estate or "How to Lose a Billion Dollars in Real Estate Tech", Working Paper, Jan. 2023. [Online]. Available: https://www.jchs.harvard.edu/research-areas/working-papers/emerging-models-residential-real-estate
[9] M. R. Anwar, M. Hardini, and M. Anggraeni, "Review of responsive design concept based on framework Materialize on the website," Al-Irsyad Journal of Research and Innovation (AJRI), vol. 2, no. 2, pp. 21–30, 2021. doi: 10.20885/ajri.vol2.iss2.art3.
[10] K. Stolley, "Enhancing CSS instruction with objective typography," in Proc. 51st ACM Technical Symposium on Computer Science Education (SIGCSE '20), Portland, OR, USA, Mar. 2020, pp. 310–316. doi: 10.1145/3328778.3366865.