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TOPIC:
Apartment E-Commerce and Management System

TITLE:
LivWell: An Apartment E-Commerce and Management System

RATIONALE:

Part 1: Problem, Existing Condition

Most landlords depend on manually keeping track of their records, which poses several challenges. Paper-based record-keeping is susceptible to loss or damage, rendering the identification of particular information concerning tenants or properties challenging. Moreover, manual processes are time-consuming, resulting in possible misunderstanding and oversights. This lack of efficiency not only requires a significant amount of attention and time from the landlords and property managers, but also adds to the complexity of managing and analyzing multiple properties. In addition, property listings are commonly posted through fragmented platforms, including social media platforms like Facebook and lesser-known websites. This approach presents challenges for landlords, as it leads to scattered listings across various platforms, making it difficult to maintain consistency and visibility. Furthermore, the absence of a centralized platform that integrates property listing and management functions hinders the landlords' operations as relying on various platforms often results in limited reach, effectiveness, and customer retention.

Part 2: Proposed Solution, Desired Condition

Introducing LivWell: a comprehensive web-based apartment e-commerce and management system designed to streamline the rental processes for landlords and renters alike. With LivWell, landlords can list their properties for rent, complete with appropriate descriptions and photos. Renters, in turn, can easily browse the available properties through the platform's user-friendly interface, allowing them to discover their ideal renting space easily.

Moreover, LivWell offers features such as automated record-keeping, digital lease agreements, and online rent management. These capabilities allow for improved organizing and analyzing of data freeing up time for landlords to focus on other matters. In addition, LivWell

facilitates seamless interaction between landlords and tenants, from addressing inquiries to resolving issues, our platform ensures a stable and simplified way of communication fostering positive and transparent landlord-tenant relationships.

By providing a centralized platform for property listing and management, LivWell not only enhances efficiency, but also mitigate the risk of data loss and error. Part with scattered spreadsheets and misplaced documents, as LivWell keeps everything securely organized and readily accessible, creating a more convenient and streamlined rental experience for all parties involved.

Part 3: Justification

LivWell offers a modern solution to the persisting challenges landlords face with manual record-keeping and inefficient rental management processes. Through a centralized web-based platform, LivWell aims to streamline the rental process, mitigating the risks and inefficiencies present in traditional paper-based methods.

Primarily, LivWell replaces the manual record-keeping with its digital platform, reducing the likelihood of data loss and enhancing organizational efficiency This automation not only saves landlords significant time and effort but also ensures the integrity and accessibility of property records.

Moreover, LivWell aims to simplify the rental experience for landlords and renters alike with its user-friendly interface. Landlords can efficiently list properties, while renters can conveniently search for and apply to rentals. In addition, features such as online payment, real-time communication, digital lease agreements, and data analytics can improve communication and planning, while streamlining administrative tasks. Together with the management features, the e-commerce section of LivWell aims to list properties in an orderly manner, helping customer retention with the use of the management section.

In summary, LivWell revolutionizes apartment e-commerce and management systems by providing an efficient, streamlined, and user-friendly solution to the challenges encountered by landlords and renters. Its comprehensive approach offers significant benefits over traditional methods, making it an essential tool for modern rental management.

TECHNICAL PREVIEWS: Literature Survey: Bases

Literature Matrix

Year	Author/s	Title	Methodology	Findings	Conclusion/s	Future Works / Recommendation/s	Remarks
2019	Devi Priya Thevaraju; Zalmiyah Zakaria; Khairul Amin Mohamad Sukrib; Shahreen Kasim	Vista Angkasa Apartment Management System	Agile with the PHP programming language	Based on the assessment, The system is easy to use as it has a user-friendly interface, easy to manage the record as insert, update, view and delete is just a click of a button away.	All the functional and non-functional requirements have been successfully implemented. Overall, the Vista Angkasa Apartment Management System solved the current issues with the management office and tenants.	1. Develop a mobile application for both Android and iOS platforms in order to further enhance accessibility and convenience for users. 2. Implement data analytics and reporting features to provide insights into apartment management trends, maintenance request patterns, and resident satisfaction levels.	Aside from the results that the study has stated- that apartment management systems are proven to promote efficiency and solve all an apartment's issues- there are no remarks to be taken note of.
2022	Hamzah, Muhamad Akram;	Application of Boarding House Rental Location Search	Agile type Extreme Programming, which has 4 stages:	Based on the discussion, the system has benefits for users who will	The results of the obtained good results or in other words, the system ran as expected.	1. Add features such as chat features that will make it easier for users to communicate with each other.	The utilization of Agile type Extreme Programming with four stages can be integrated or emulated as the study's methodology.

	Mustika, Nur; Mustapa, Mahmud; Rahmah, Ummiati	System Based on Android	conduct a research plan by collecting data on system needs in the boarding house application; design the system using using the Use Case Diagram; coding process or the system implementation stage; testing of the system using the BlackBox method.	search for the nearest boarding house from various features such as finding boarding house routes and viewing detailed boarding house information. Furthermore, the ease of boarding house owners managing data allows information to be continuously updated.		2. Information systems, especially boarding house route searches, can also be integrated with related parties such as the government for ease of data collection, especially boarding houses that operate.	
2022	A. Rathod; Kumar,Priyesh;	Apartment Management System: A Review	The system interface is developed using Java language by using eclipse software and the systems database created using	The system's features include pay bills, complaint submissions, and update the user's information online, making it more effective, efficient, interactive and successfully solves	As stated in the discussion, Overall, the project is considered a success. All the functional and non-functional requirements have been successfully implemented.	No recommendation for future works were found within the end of the paper.	The system demonstrates a commendable integration of technology to address various aspects of apartment management, such as online bill payment and security monitoring through apps. Because of this, it enhances efficiency through online bill payment and

			MY SQL Database	the problems faced compared to using the current system.			streamlined security monitoring via apps, fostering transparency and trust among residents.
2019	Alberto Ferraris; Alberto Mazzolen; Alain Devalle; Jerome Couturie	Big data analytics capabilities and knowledge management: impact on firm performance	Empirical analysis based on structural equation modeling with data collected from 88 Italian SMEs	The findings of this paper show that firms that developed more BDA capabilities than others increased their performances and that KM orientation plays a significant role in amplifying the effect of BDA capabilities.	BDA has the potential to change the way firms compete through better understanding, processing, and exploiting of huge amounts of data coming from different internal and external sources and processes	1. Ensure that knowledge generated from BDA initiatives is integrated and combined with existing firm knowledge. This integration facilitates a more holistic understanding of business processes and customer behavior, leading to more informed decision-making. 2. Conduct training and development opportunities for employees to enhance their BDA skills. This can include workshops, courses, and certifications to ensure that employees have the necessary competencies to leverage BDA effectively.	The study underscores the significance of BDA in enhancing business performance by leveraging data to extract meaningful insights. Applying the aforementioned to our study will certainly aid landlords to draw meaningful insights, and create informed decisions that are rooted from data.
2019	Swagato Chatterje e	Explaining customer ratings and recommendations by combining qualitative and quantitative	The research used a collection of methodologies including data collection, data processing, sentiment	The study highlights various factors influencing customer satisfaction in the airline industry. Core aspects like value for money and seat comfort emerged as key predictors of	In conclusion, the study highlights the significant influence of customer reviews on shaping satisfaction and recommendation behavior within the airline industry.	1. Explore the underlying psychological process that leads to the attitude and behavior of the consumers in the context of service experiences, as it may provide deeper insights in how and why consumers act and respond differently.	The study highlights the significant impact of using textual reviews not only to improve the airline service, but also in gathering and sharing personal experiences that shape the consumers into making the right decision.

		user generated contents	analysis, and explanatory model.	positive sentiments, while food and beverages had a lesser impact. Moreover, the study underlines the significant role of overall sentiment and emotions expressed in textual reviews. Additionally, it explores how different airline models prioritize service aspects, with low-cost carriers focusing on concrete elements like value for money, while full-service airlines emphasize abstract factors such as seat comfort and staff behavior.	Overall, the findings underscore the complex relationship between service attributes, consumer perceptions, and contextual factors in shaping customer satisfaction within the airline industry.	2. Consider additional variables that could affect the consumers response, variables that take into account the cultural or contextual factors like the origin of the consumer or the airline that may influence consumer perceptions. 3. Generalize or provide more industries that provide different services. While the current study only focuses on airline satisfaction, the researchers expect basic findings to remain the same. Though it is important to consider the different service contexts that may affect the consumers' perspective.	
2023	Yusuf Afif Ramadhan; Prawira Fajarindra	The Implementation of the Trial Strategy in Driving Purchase Intention on	An online survey with 336 participants	The findings from quantitative methodologies demonstrate that trial strategy, perceived value, and satisfaction have a direct, positive, and	In the meanwhile, buying intention is indirectly impacted	No recommendation for future works were found within the end of the paper.	This research looks at how giving people a chance to try out a service for free (like YouTube Premium and other platforms) affects whether they decide to pay for it later. It focuses on how customers feel about the

	Belgiawan	Youtube Premium	was undertaken.	significant impact on purchase intention.	by perceived quality and price.		service's value, their satisfaction with it, and its quality, and how these factors influence whether they choose to become paying customers after the trial period. It shows how customers perceive the value of the service after trying it out for free. It can analyze how customers relate the service's value to their decision to pay for it.
2023	Benzar Glen S. Grepon; JC P. Margallo; Jonathan B. Maserin; Rio Al-Di A. Dompol	RUI:A Web-based Road Updates Information System using Google Maps API	The Agile method, WordPress, PHP (Hypertext Preprocessor), CSS (Cascading Style Sheets), and Javascript was utilized in developing the software.	Using the ISO 25010, the project has been rated 4.21, signifying an excellent performance as determined through a Likert Scale Descriptive Interpretation. The project is now operational and hosted on the internet and is expected to increase its service area from	As stated in the research paper, the developed web application meets the objectives for which it was designed. Users agreed that the system was functional and a huge help to people who travel a lot. The system's overall effectiveness and performance were	For future development, The researchers advised to increase the coverage of the road updates, covering the entire Philippine archipelago, to make people who take long drives to be more informed regarding road updates. Also, utilizing mobile applications for more user-friendly design and interaction.	The study supports the efficacy of using Google Maps API in developing a web-application with location-based features in the Philippines.

				the nation of origin to the rest of the world.	excellent based on the ISO/IEC 25010 standards.		
2022	Quoc Huy Do; Pedram Hosseyni; Ralf Kusters; Guido Schmitz; Nils Wenzler; Tim Wurtele	A Formal Security Analysis of the W3C Web Payment APIs: Attacks and Verification	Rigorous Formal Analysis, based on the Web Infrastructure Model (WIM)	Two new critical vulnerabilities that allow a malicious merchant to over-charge an unsuspecting customer.	The researchers proposed fixes, verified their effectiveness, and reported the issues to the W3C and Google Chrome developers. Both parties acknowledged the problems and implemented the fixes, improving the security of	1. The browser could reject ambiguous entries 2. The browser could propagate the user's choice to the payment handler	
2020	Setty, Yashwanth	Management System for an Apartment	The authors did not explicitly cite their methodology, however they have indicated in their paper that they utilized SQL Server for their database,	Based on the assessment, the system allows users to sign up as Tenants, create profiles, and search for good apartments.	Overall, the system and study achieved its goal of creating a standard web-based online platform for renters and homeowners so that both parties may profit from the system.	No recommendation for future works were found within the end of the paper.	Apartment management systems normally allow users, such as homeowners or tenants, to create their own profile for them to perform certain activities such as finding an apartment to rent.

			C# for their User Interface, and Babel to convert the virtual DOM to genuine DOM.				
2020	Mokhsin, Mudiana; Shahuddin, Ahmad Zambri; Zainol, Amer Shakir; Som, Mohd Husni Mohd; Hazemi, Nurhaziani Binti	A Prototype of High Rise Residential Management Systems in Malaysia: A Case Study for Seroja Apartment	Considering that the focus of this study is on streamlining communication and data sharing, design thinking methodology was used to control the style of analysis.	As stated in the research paper, the study tends to have cross-referenced results from literature reviews and interviews with management representatives of LT Sdn Bhd to provide functional and non-functional requirements for mobile application.	As stated in the research paper, the first objective is achieved with the stakeholder interview in the empathy section. The second objective is achieved throughout the ideate and prototype phase, and the third objective is achieved in the Test phase. Overall, the objectives of the study were achieved.	1. Incorporate feedback from the user testing phase to further improve the user interface and overall user experience of the MyLT mobile application. 2. Consider extending the platform to accommodate users from multiple apartments or residential complexes within the same vicinity.	The research employs stakeholder interviews to understand the current management methods and communication dynamics within the community. This involvement of stakeholders ensures that the system to be developed will align with their needs and requirements.
2023	Rohit Rastogi;	Rental House Management System: An Empirical	Collected data from many resources, talked to	1. Users were satisfied with the web	The Rental Housing Management System is a web application designed to simplify	1. Make the online web application also for Android and iOS app systems	This paper presents a similar idea to our proposed topic; however, our system extends the functionality

	Rayush Jain; Prabhinav Mishra; Prateek	Approach with Simulation	people (customers) so that the researchers can understand the problems they are facing in the renting system, and collected views of people on the current online websites. Used HTML, CSS, JS, MySQL in developing the web application	application as more than 75% of the rating was above 4 stars 2. The feedback of both tenant portal and owner portal is that the average rating of both are almost the same 3. Most number of users using the web application lies between 18-32 which contains mostly bachelors and tenants	the process of finding rental properties. Built using HTML, CSS, JS, and MySQL in Visual Studio Code, it offers a user-friendly experience with features to improve the rental process. Users can log in or sign up, select a region, and view available properties to find a suitable rental. The system aims to enhance the relationship between renters and property owners and make the rental process more convenient for users.	2. Add dynamic features and also create an AI chat bot which helps to solve biggest problem regarding transaction, using the web application 3. Make the application system on voice command also with different languages	beyond listing properties. In addition to property listing, our proposed system offers landlords integrated property management tools, enabling them to manage their properties efficiently within the same platform.
2021	Mohd Rafiq Misyam;	House Rental Management System	Prototype Model	1. The result of the user acceptance test for user	The system has been developed following all the requirements and design that have	No recommendation for future works were found within the end of the paper.	The paper presents several diagrams that can serve as valuable resources for organizing and structuring

	Norhanim Selamat			interface design is good 2. The result of the system functionalities test of user is excellent, with register and login function as the highest	been discussed in the study.		the flow of our proposed topic or system.
2023	Avegail L. Montevede; Joshua James S. Maderazo; Keyleen Christine M. Cruz; Nicko A. Magnaye	A Web-Based Rental House Smart Finder using Rapid Application Development basis for Evaluation of ISO 205010	The study used the Rapid Application Development methodology, by utilizing data analysis and quick design to gather rental house details, using WordPress and GoogleMap API. The prototype cycle included building,	The findings of the study indicate that the Web-Based Rental House Smart Finder, developed using Rapid Application Development (RAD) and evaluated against ISO 25010 standards, is functional, usable, secure, and maintainable. The system simplifies the process of finding rental homes, reducing the time required for users to locate rental	In conclusion, the system effectively serves its intended purpose. Firstly, it efficiently locates rental houses in Bongabong and Bansud areas by utilizing the provided filtering categories. The system also provides comprehensive information about rental properties, including amenities, location through Google Maps, images, pricing,	1. This project should be recommended to the clients and homeowners/landlords around Bansud and Bongabong to simplify finding and locating rental houses for clients as well as promoting the rental homes of the homeowners/landlords. 2. This project must be used also by the parents to keep a track on the location of the specific rental house of their son/daughter. 3. This project must be used by the homeowners/landlords to	The study provides an outline on what a web-based rental house finder should be, most especially it is a study made in the Philippines.

			demonstrating, and refining the system based on user feedback. ISO/IEC 25010 standard guided testing, using beta testing to ensure functionality.	properties within their desired areas. Evaluation feedback from IT practitioners, landlords/homeowners, and clients was collected and used to refine the system, resulting in high satisfaction among evaluators. The overall evaluation mean score of 3.67, interpreted as "very effective," demonstrates the system's effectiveness in meeting user needs. However, there is a recommendation for future improvement, particularly in enhancing the system's capability to locate rental houses.	description, nearby landmarks, house rules, and rental house types. Moreover, it facilitates the reservation process for clients by integrating reservation detail fields. Overall, the system has been evaluated positively, being deemed usable, functional, secure, reliable, portable, maintainable, and efficient, meeting the expectations of system evaluators.	promote their rental houses in order to attract clients. 4. The future researchers must conduct the same study and should add cashless payments like GCash, since the system only accepts Cash on Meet Up payment only. 5. The future researchers must create a mobile application for the system	
2022	Chin Shee Iu; Mohd Zaki	Room Renting Management System	The waterfall model was utilized in this project. The languages and tools such as	The study's findings cover system analysis, design, implementation, and testing. System analysis identifies	In conclusion, the proposed system has met its objectives based on the system requirements, scopes, and user needs.	1. Provide users with a better user interface design and a more reliable platform environment.	The study showcased the different functionalities that would be present in our study, while also providing the languages and software

	Mohd Salikon		PHP, C++, MySQL, HeidiSQL, and the use of Case Diagram and ClassDiagram were also utilized in this study.	faults and determines system goals, while the system design specifies modules to meet requirements using tools like use case diagrams and class diagrams. Use case diagrams showcased the system's functionality, while use case specifications detail interactions. Class diagrams aid in coding for software applications. The implementation ensures the system meets goals, while the testing verifies requirements are met and prevents errors. The developed Room Rental Management System includes modules like admin login, dashboard, and user lists, enhancing functionalities such			that our system can be based on.

				as authentication and data management.			
2021	Dipta Voumick; Prince Deb; Sourav Sutradhar; Mohammad Monirujjaman Khan	Development of Online Based Smart House Renting Web Application	The methodology employed in the study outlines the system development process using the waterfall model. Technical tools utilized include MySQL for database management, Sublime Text for code editing, PHP, Java, and HTML for coding, Laravel for secure feature designs, CSS and JavaScript for frontend design, and Ajax for asynchronous	The study emphasizes the importance of an online smart house renting system to address urban housing challenges. It facilitates efficient transactions and meets owners' needs with user-friendly interfaces and the real-time chat system to allow user communication between owners and tenants. Security measures ensure data protection, while sustainability is ensured through user contributions and system upgrades. Addressing affordability requires comprehensive interventions, and advertisements serve as a revenue source. The system benefits	In conclusion, the development of the online web-based smart house renting system outlined in this paper offers a user friendly framework for efficient transactions within the defined timeframe, catering specifically to the needs of rental house owners. Overall, this comprehensive package is poised to effectively meet the diverse requirements of users, promising a powerful solution for the rental house market.	No recommendation for future works were found within the end of the paper.	The study emphasized the benefits of having an online house rental system in addressing the growing population especially in urban housing. The tools used and the functionalities it showcased serves as a strong guideline in making our system.

			web applications.	diverse users and contributes to local economic development.			
2019	Joy Paul	The Rental Zone (House Renting Website)	The methodology employed in this study involved several stages, beginning with a thorough literature review and critical evaluation of relevant work. A plan was then formulated for the creation of a renting website, outlining the process and structure of the event system. The methodology for the software	The findings of the study revealed several key points. In the development process, numerous bugs and errors were identified and addressed properly, resulting in an improved application performance. The process for both tenants and rental managers were enhanced by making tasks more efficient and effective.	In conclusion, the main purpose of the house rental website was accomplished, saving time and reducing stress in showcasing the rental properties in an online manner. Ultimately, the project seeks to foster better relationships and streamlined interactions between tenants and landlords, offering a more effective and convenient rental experience for all parties involved.	1. Continuously monitor and strengthen security protocols to safeguard user data and protect against potential cyber threats. 2. Proceed with the development of a mobile application to complement the website, providing additional convenience and accessibility. 3. Explore opportunities to integrate artificial intelligence (AI) technologies to enhance user experience, improve search functionalities, and provide personalized recommendations. 4. Consider adding new features and functionalities to the system based on user feedback and evolving market trends, such as advanced search filters, interactive mapping tools, or virtual property tours.	The study's proven to make the process of house renting more efficient by doing so in an online manner, streamlining the process such as the interaction between the tenants and landlords.

			development was the waterfall model.				
2021	Eyal Ert; Aliza Fleischer	The evolution of trust in Airbnb: A case of home rental	The methodology used in the study involves a comprehensive analysis of three main indicators in peer-to-peer accommodation markets primarily focusing on Airbnb. Researchers examine changes implemented by Airbnb overtime. Reviewing the evolution and analyzing the data on listings from multiple cities before and	The findings of the study highlights how Airbnb's adjustments to trust measures reflect its evolving approach in online markets. Firstly, the 2014 modification of Airbnb's reputation system aimed to address concerns about retaliation by delaying the visibility of ratings until both guests and hosts had submitted their scores. While this change led to a statistically significant but modest reduction in review scores across multiple cities, its impact remained relatively small. Secondly, the removal of hosts' photos from the main	To conclude, the study demonstrated Airbnb's dynamic approach to trust indicators, switching to more objective measures over time. These findings collectively underscore Airbnb's proactive approach to enhancing trust and quality within its platform, reflecting broader trends towards standardization and similarity with traditional accommodation markets.	No recommendation for future works were found within the end of the paper.	The study showcased the importance of a website or an application's rating system in enhancing the quality and trust for tenants to homeowners, emphasizing the importance of using it in our system.

			after policy changes. Using statistical methods to analyze the impact, the addition of incorporating insights from previous literature were also done to contextualize the findings better.	search screen aimed to mitigate discrimination. This adjustment potentially reduced the influence of host photos on listing prices, aligning with Airbnb's goal to promote fairness and objectivity. Lastly, the introduction of the "Superhost" badge system aimed to provide an objective quality measure. Superhosts in major European cities commanded a price premium of 4% to 9%, indicating a successful perceived value of this certification.			
2022	Kirti Rathore; Aleena Syed; Rahul Patel	Rental House Management System	The methodology employed in this project involves a series of steps to develop a web	The findings demonstrate the successful development of a web application facilitating convenient housing searches for both	In conclusion, the House Rental Management system represents a significant evolution in the process of renting houses, from a manual and location-	No recommendation for future works were found within the end of the paper.	The study demonstrated the importance in developing an web application facilitating housing searching for landlords and tenants. With filters and sorting with the use of tags and maps, while also providing possible

			application using the Django framework. Initially installing and configuring python, Django was then installed together with the MySQL API drivers, XAMPP, and phpMyAdmin . A superuser was also created for admin access with the development server running locally.	landlords and tenants. Key features include a virtual system for property owners to find tenants, sorted graphical locations with maps for easy navigation, and an overarching aim to provide users with a virtual platform to find their ideal housing match.	bound to one facilitated by technology. With the use of online platforms, house owners and tenants alike can efficiently book, buy, sell, and rent properties in a streamlined manner.		software we can use to develop our system.
2020	Aderonke Ikuomola	A Secured Mobile Cloud-Based House Rental Management System	The methodology employed for developing the house rental management system involved the strategic use	This project aimed to create a Secured Mobile Cloud-based House Rent Management System for landlords, agents, tenants, and prospective tenants, addressing existing	In conclusion, the application Secured Mobile Cloud-based House Rental Management System caters to landlords, agents, tenants, and possible tenants. Offering a	1. Integrating and embedding systems like smart doors for seamless communication integrated in the house. 2. Implementing features such as countdown timers for rent expiration.	The study created a system that put emphasis on making it secure, by putting authentication while also doing the other functionalities properly. The study's system also provided an efficient payment system that can

			of technologies and frameworks such as the AngularJS, Ionic, and Laravel as they were selected for their capabilities in building scalable, secure, and cross-platform applications. Design considerations prioritized user experience, security, and accessibility, evidenced by features like single-page applications (SPA), authentication mechanisms, and hybrid	system limitations. The developed system offers accurate registration, secure authentication, user-friendly interfaces, and seamless mobile access. It facilitates efficient communication between all parties involved, enhancing the overall rental experience.	comprehensive house record sharing, advertisement capabilities, and an efficient payment system with a wallet engine.		help outline what functionalities are present in our system.

			mobile app development.				
2023	Iveta Linina	Problems and Solutions of Multi-apartment Housing Management in Latvia	A survey of residents from various apartment buildings in different locations and with varying numbers of apartments was conducted to gauge their awareness and views regarding issues related to apartment building management. Questionnaires, divided into three main blocks covering informational, cooperation, and problem-related aspects, were	Since the onset of apartment privatization, continual economic changes and legislative updates in Latvia and the European Union have sustained the relevance of issues surrounding multi-apartment building management. The study identified challenges such as poor quality, overcrowding, and low energy efficiency in managing these buildings, alongside legal and organizational issues concerning property status and decision-making. Crucially, resident awareness of their rights and responsibilities in apartment ownership was highlighted.	In conclusion, the rushed privatization of multi-apartment residential buildings in Latvia led to a lack of understanding among residents regarding their ownership responsibilities, negatively impacting management. Regulatory complexity further hinders effective management, with many apartment owners lacking awareness of their rights and obligations. Communication challenges between owners and managers exacerbate conflicts, potentially violating consumer rights. Legislative changes are proposed, including penalties for negligence and	No recommendation for future works were found within the end of the paper.	The study provided data on the problems in apartment management, with agreements, rights, and contracts not being upheld. With the continuous rise of population, a rental housing management system can provide assistance in this manner, by streamlining communication and automating notices for both tenants and homeowners.

			used to gather data.	Despite evolving legislation and economic conditions, questions regarding multi-apartment building management persist, emphasizing the ongoing need for research and improvement in this domain.	incentives for compliance, alongside comprehensive information campaigns. Developing a comprehensive housing management policy, informed by EU member states' experiences, is crucial for addressing these challenges.		
2022	Fernandez, S. M.	Dormitory Management Information System with SMS Notification and Biometric Security.	The methodology employed follows a Rapid Application Development (RAD) model. Researchers also gathered information from dormitory management for system design and utilized Arduino IDE,	The study implied that fingerprint scanning with Biometric technology enhanced the security measures. This system allows the administrator to automatically check the tenant's attendance and reduce its time to execute transactions involving an individual's information.	The research concludes that the dormitory management system effectively secures user data and provides accurate real-time notifications. Users found the system user-friendly, reliable, and efficient.	No recommendation for future works were found within the end of the paper.	

			SQL Server, C#, VB.Net in developing the system.				
2023	Rodibelle F. Leona, Kyle Kristan M. Manantan, Jephsonlley Marc D. Puzon, Jhon Laurence A. Guiling, Cydrin James V. Nelmida, Benedict P. Espiritu,	Development and Assessment of AppStay: A Web-Based Room, Dorm and Apartment Reservation System	Modified Waterfall Model and Descriptive research design was utilized in the study, involving 50 respondents in Sumacarab Este, Cabanatuan City, Nueva Ecija. To evaluate the system's quality and technical aspects, ISO 25101 quality standards is applied.	The assessment of AppStay's technical aspects revealed a high level of acceptability, as indicated by the positive evaluations conducted by IT experts. Additionally, the study found the system to possess highly favorable qualities in terms of usability. These results demonstrate the suitability of AppStay for use within the local context of the study.	The development and assessment of AppStay yielded promising results, highlighting its potential as an effective web-based reservation system. Continued efforts to improve its usability and performance will contribute to its long-term success and enhance the overall user experience.	1. Regularly update the app based on user feedback to improve functionality, usability, and overall user experience. 2. Increase reach by expanding to new locations and implementing targeted marketing to attract more landlords and tenants. 3. Collaborate with educational institutions, local businesses, and technology providers to promote the app, acquire more users, and ensure smooth system operation.	The smartphone accessibility feature of the system enables users to easily browse and find suitable accommodations, providing a convenient and efficient solution to their housing requirements. We can integrate this on our proposed system

	Cris Norman P. Olipas						
2018	Xin Li, Shidan Cheng; Zhihan Lv; Houbing Song; Tao Jia, Ning L	Data analytics of urban fabric metrics for smart cities	This study uses multiple statistical methods with computation techniques and machine learning to fulfill factor analysis and clustering to classify major block types and their spatial distribution	The study provides accurate basis and technical support for the optimization of urban construction	It has important and practical significance for promoting the scientific and reasonable implementation of a new type of urbanization.	No recommendation for future works were found within the end of the paper.	
2021	W. Pak, Inhan Kim; Jungsik Choi	Proposal of the energy consumption analysis process for the residential houses using big data analytics technique	This process is organized into four stages as follows: Data Understanding , regarding exploring and collecting architectural	It is expected that the "Big Data Analysis Process for Energy Consumption" will be used to confirm the correlation between the energy consumption of residential houses	To effectively derive the energy performance improvement factors for energy saving in buildings.	The study suggests that a comprehensive understanding of the urban form and built environment is essential for developing smart cities.	

			data, meteorological data, and energy consumption data; Data Processing, regarding the transforming energy consumption data of residential housing and reference input data to make master data, which is analysis data that have been processed by filtering, refining, and type conversion of the collected data, for the	and the architectural elements			

			big data analysis; Data Analytics, development of an analysis model for the energy consumption of residential housing applying analysis algorithm; Evaluation, data assessment and application of the analytical model.				
2023	Natalia Amat-Lefort; Federico Barravecchia;	Quality 4.0: big data analytics to explore service quality attributes and	This study applies a combination of text mining techniques to analyze Airbnb	A total of 37 quality attributes are identified. Four of them show a significant positive relation to the guest's sentiment: apartment	This paper provides a practical example of how Quality 4.0 can be implemented, proposing a data-driven methodology to extract service	No recommendation for future works were found within the end of the paper.	

	Luca Mastrogiacomo	their relation to user sentiment in Airbnb reviews	reviews, identifying service quality attributes and assessing their relation to the users' sentiment. More than two million reviews written by guests in four European cities are analysed. First, topic modelling is applied to find the quality attributes mentioned by reviewers. Then, sentiment analysis is used to assess	views, host tips and advice, location and host friendliness. On the other hand, the following attributes are negatively correlated with user sentiment: sleep disturbance, website responsiveness, thermal management and hygiene issues.	quality attributes from user-generated content. Additionally, several attributes that had not appeared in existing Airbnb studies are identified, which can serve as a reference to extend previous quality assessment scales.		

			the positiveness/negativeness of the users' feedback.				
2022	Saleh Nagi Alsubari, Sachin N. Deshmukh; Ahmed Abdullah Alqarni; Nizar Alsharif; Theyazn H. H. Aldhyani 4, Fawaz Waselallah Alsaade;	Data Analytics for the Identification of Fake Reviews Using Supervised Learning	The proposed methodology adopted in this study used a standard fake hotel review dataset for experimenting and data preprocessing methods and a term frequency-Inverse document frequency (TF-IDF) approach for extracting features and their representation	The classification results of these experiments showed that naïve Bayes (NB), support vector machine (SVM), adaptive boosting (AB), and random forest (RF) received 88%, 93%, 94%, and 95%, respectively, based on testing accuracy and the F1-score.	The obtained results were compared with existing works that used the same dataset, and the proposed methods outperformed the comparable methods in terms of accuracy.	The dataset used in the experiments was limited to the hotel domain. The features used for training the proposed models were less. Future research should combine a large-scale dataset with several textual and behavioral features for detecting fake reviews on different e-commerce domains.	

	Osamah I. Khalaf;		. For detection and classification, n-grams of review texts were inputted into the constructed models to be classified as fake or truthful. However, the experiments were carried out using four different supervised machine-learning techniques and were trained and tested on a dataset collected from the Trip				

			Advisor website.				
2019	Luca Oneto; Irene Buselli; Alessandro Lulli; Renzo Canepa; Simone Petralli; Davide Anguita	A dynamic, interpretable, and robust hybrid data analytics system for train movements in large-scale railway networks	Two main approaches exist in the literature to address these problems. One is based on the knowledge of the network and the experience of the operators. The other one is based on the analysis of the historical data about the network with advanced data analytics methods.	Results on real-world data coming from the Italian railway network will show that the proposed solution outperforms both state-of-the-art experience-based and data-driven systems in terms of interpretability, robustness, ability to handle nonrecurring events and changes in the behavior of the network, and ability to consider complex and exogenous information.	No conclusions were found within the end of the paper.	No recommendation for future works were found within the end of the paper.	
2022	Atharva Panse; Dhiraj Lahoti	Implementing Big Data Analytics in Business Management	The methodology encompasses two key approaches:	The study's analysis uncovered key insights into customer demographics and	The study utilized big data analytics involving the collecting and analyzing of customer	1. Encourages businesses to utilize big data analytics techniques to gain insights into consumer behavior and preferences to tailor their	The importance of being able to tailor the content to what the consumer needs is a pivotal aspect in the e-commerce world. Being

			Naïve Bayes, utilized for probability calculations including posterior, likelihood, prior, and marginal probabilities, and the K-means Algorithm, an unsupervised machine learning technique employed for segmentation and clustering tasks. These methodologies collectively enable the development of models and the analysis of data crucial for the study's objectives.	spending behaviors. Visualizations like distribution plots and bar graphs provided an overview, while segmentation by age and spending patterns revealed distinct customer groups. The scatter plot highlighted clusters based on income and spending, offering valuable insights. Using the elbow method, optimal clusters were identified for further analysis. These findings emphasize the importance of understanding customer data for informed marketing strategies	buying patterns to predict future purchases. For instance, if a customer purchases bread, it's likely they will also buy butter, suggesting they can be placed together to increase profits. This exemplifies customer segmentation. Reviews of these strategies can be gathered, categorized, and analyzed using sentiment analysis techniques.		marketing strategies and enhance customer engagement. Emphasizing the importance of continuous data analysis and optimization to stay competitive in the e-commerce sector.	able to visualize properly what is needed helps in staying on top of the market.

2019	Ghasemaghaei, Maryam	Does data analytics improve firm decision making quality? The role of knowledge sharing and data analytics competency	This study uses the positivist research approach to investigate the causal relationships in the proposed research model wherein they used survey measures to investigate the mediating role of knowledge sharing on the impact of data analytics use on the quality of firm decisions.	The impact of data analytics use on the quality of firm decisions is fully mediated by knowledge sharing; the impact of knowledge sharing on firm decision quality is not significant and it is moderated by data analytics competency; and data analytics competency does not moderate the impact of data analytics use on knowledge sharing.	Collectively, the findings provide a theory-based understanding of how data analytics improves firm decision quality. The results also provide actionable guidelines for firms regarding the critical resources they need to invest in order to obtain benefits from using data analytics tools.	No recommendation for future works were found within the end of the paper.	The study further shed light into the reality that the utilization of data analytics can enhance the quality of firm decisions through increasing knowledge sharing. Basically, data analytics can help business owners draw meaningful decisions based on data.
2022	Shao, Cuili; Yang, Yonggang;	IoT data visualization for business intelligence in corporate finance	The methodology of the research paper was not explicitly stated however, Corporate	The statistical outcomes of the simulation analysis show the increased performance with a lower delay response of 5ms and improved revenue analysis with	Overall, the study highlighted that IOT and Business Intelligence business intelligence establishes a genuine business benefit for data properties and	No recommendation for future works were found within the end of the paper.	The use of Business Intelligence and Internet Of Things can be remarked from this paper for the aforementioned concepts are essential for organizations to harness real-time data insights and

	Juneja, Sapna; GSeetharam, Tamizharasi.		analytics management is introduced to enhance the data analysis system's risk, and the complexity of different sources can allow accessing Business Intelligence.	the improvement of 29.42% over existing models proving the proposed framework's reliability.	provides significant advancements in recognizing and utilizing consumer potential.		drive informed decision-making.
2021	Fielbaum, Andrés; Jara-DíAz, Sergio	Assessment of the socio-spatial effects of urban transport investment using Google Maps API	Santiago is used as a case study, as the city introduced 150 km of urban highways, a reorganization of surface transit, and new subway lines in a relatively short period.	The study shows that the high-income segment of the population has been the most favored, simultaneously increasing the difference between transit and car travel times in those areas where car ownership is low, stimulating the acquisition of a car.	The paper intensively used the tools provided by Google Maps to study the effects on mobility of urban highways built during the first decade of the XXI century in Santiago, Chile. Because of using Google Maps Api, they have achieved their goal of finding out which population segments have been mostly favored by highways and Transantiago, and to	No recommendation for future works were found within the end of the paper.	After reading about this study, integrating Google Maps API into an apartment management system can provide users with accurate and interactive location-based information, enhancing their ability to find and navigate to apartments efficiently.

					determine the impact of those projects on low car ownership segments.		
2022	Shi, Zhongming; Silvennoinen, Heidi; Chadzynski, Arkadiusz; Von Richthofen, Aurel; Kraft, Markus; Cairns, Stephen; Herthogs, Pieter	Defining archetypes of mixed-use developments using Google Maps API data	The methodology of the research paper used data-informed methodology for linking zoning types to UBEM use types via programme types. The methodology has five-step workflow: collect the master plan data, group Google Places into programme types, formulate a programme profile, similar programme profiles are grouped	The result of the study is the identification and characterization of 163 mixed-use zoning archetypes for Singapore, derived from analyzing the program profiles and Ground Plot Ratio (GPR) data of 3064 mixed-use plots. These archetypes represent typical combinations of land use distributions within mixed-use developments across the city, providing valuable insights for urban planning and development strategies.	The conclusion of the study highlights three main contributions: the introduction of a new concept of "programme types" linking zoning and building use types, the creation of mixed-use zoning archetypes for urban modeling applications, and the development of a robust ontology for representing these archetypes, with future outlooks focusing on automation, application to diverse urban contexts, sensitivity analyses, and broader integration into urban modeling workflows.	No recommendation for future works were found within the end of the paper.	

			together to form the mixed-use zoning archetypes, and the archetypes and programme profiles are linked to other urban planning concepts in an ontology				
2024	Muñoz-Villamizar, A., Faulín, J.; Reyes-Rubiano, L. S.; Henríquez-Machado, R.; Solano-Charris, E. L.	Integration of Google Maps API with mathematical modeling for solving the Real-Time VRP	The researchers proposed an approach that aims to outperform the traditional real-time optimization method. The methodology includes: creating a mathematical structure, estimation of speed and	The study shows that the proposed methodology outperforms the conventional approaches in a major city in the U.S. by up to 18% in terms of routing time, underscoring its practical relevance and effectiveness.	The study highlighted the use of Google Maps API and Mixed Integer Linear model in solving real-world traffic problems.	1. The scope of real-time data could be improved to include sustainability metrics. 2. The role of real-time data in vehicle routing will become increasingly important as vehicles become more prevalent, further studies are encouraged. 3. Identify optimal storage solutions for handling large amounts of real-time data generated by this approach. 4. Future work could explore the integration of capacity constraints into the RT-VRP	The researchers created a new approach that utilized Google Maps API to locate vehicles and solve real-time vehicle routing problems. Google Maps API would be a valuable addition for locating apartments.

			distance through Google Maps API and utilizing a Mixed Integer Linear Programming model to illustrate RT-VRP.			model for a more comprehensive approach to vehicle routing.	
2021	Muñoz-Villamizar, A.; Solano-Charris, E. L., Azad, M.; Reyes-Rubiano, L. S.	Study of urban-traffic congestion based on Google Maps API: the case of Boston	Utilizing real and recent data from the Google Maps API and classifying sources of traffic variation through statistical analysis, the researchers proposed a new approach to estimate the speeds in specific areas. In order to validate the approach, an	The research have identified that Boston is a high-congestion city with an average speed of 21.5km/h	The study's results provide managerial insights for key stakeholders (i.e., Carriers, Consumers, and Government) to improve the efficiency of the road network and reduce traffic congestion in cities.	1. Future research could explore the environmental impact (e.g., CO2 emissions), considering the hourly and weekly delivery capacity during the planning of the routing process. 2. The estimation of speeds using Google API could enrich the time-dependent vehicle routing problem.	With the use of Google Maps API, users can easily see the locations of listed apartments and the establishments near them.

			experimental analysis is conducted in Boston,US.				
2021	Nurdin, N.; Pettalongi, S. S.; Mangasing, M.	Implementation of Geographic Information System Base On Google Maps API to Determine Bidikmisi Scholarship Recipient Distribution in Central Sulawesi Indonesia	The researchers utilized the mixed-method approach which is a data collection and analysis procedure that is carried out by mixing qualitative and quantitative at the same time.	According to the study's result, 305 students received the scholarships from 12 regencies in Central Sulawesi, Indonesia. The students' origins have been successfully mapped across the province.	The study proved that the geographic location of the students who obtained the Bidikmisi scholarship can be determined and managed with the use of Geographic Information Systems (GIS) application.	1. Future researchers are advised to map the economic performance of each region to provide economic data of university students. 2. Future researchers are encourage to focus on making precise coordinate points to determine correct students locations.	
2021	Romeo L. Jorda, Jr., Edmon O. Fernandez; Jessica S. Velasco; Maria Victoria C. Padilla;	Development of a web-based land-use mapping	The system is developed using Convolutional Neural Network (CNN) as the classifier and recognizer of the system; Python and Django for the back-end user	The Res-Net 50 is the CNN model adopted in the study, being the best classifier achieving the highest accuracy of 98.57%. The findings of the evaluation indicate that the system could support the Greater Manila region, using an easy-to-use yet effective and	Integrating a land use classification system into a web application using satellite data and machine learning can help government organizations with urban planning and resource allocation. Studies have demonstrated the efficacy of this technique in	1. Further studies are needed to identify additional datasets for better classification of different land uses in the Philippines. 2. Enhancing the User Interface (UI) of the web application and creating a UI for mobile application can provide a better user experience and improved accessibility. 3. Encourages researchers to utilize real-time mapping, which can help anticipate	

	Shiela Mae P. Agoylo; Mary Joy A. Bultron; Ailyn Joyce O. Clamor; Jaishree Keith M. Monzaga; Catherine Rose R. Rosales; Cleodelaine S. Salvador; Lean Karlo S. Tolentino		interface; and HTML 5, CSS3, Bootstrap 3, Javascript, and Jquery for the front-end user interface	educational online application.	increasing data quality for country development.	changes in land cover immediately.	
2021	Costa, C., Ha, J.; Lee, S.	Spatial disparity of income-weighted	Demographic and socioeconomic data on the	The study discovered notable intra-regional differences in accessibility to CBDs	This research provides a scientific foundation for addressing	No recommendation for future works were found within the end of the paper.	

		accessibility in Brazilian Cities: Application of a Google Maps API	seven cities were extracted from Indonesia's 2010 population census. A Google Maps application programming interface was utilized to provide accurate journey time estimates for private and public transportation in order to assess accessibility to central business districts (CBDs).	by private vehicles and public transportation, offering a solid scientific basis for optimizing the socio-spatial distribution of public transportation services in seven (7) cities across five distinct Brazilian regions.	accessibility inequalities and enhancing public transit services to promote more equitable mobility in medium-sized Brazilian cities.		
2019	Zheng, Z.; Xia, H.;	Spatial Accessibility to Hospitals Based on Web Mapping	The study utilizes Google Maps API for efficient data acquisition,	The study found significant disparities in the frequency and spatial distribution of hospital accessibility between public	The research findings offer a deep understanding on the accessibility of urban public services and provide a scientific	No recommendation for future works were found within the end of the paper.	

	Ambinakudige, S.; Qin, Y.; Li, Y.; Xie, Z.; Zhang, L.; Gu, H.	API: An Empirical Study in Kaifeng, China	including residential locations, hospital locations, and real-time travel times.	transit and self-driving modes of transportation. Furthermore, there is an imbalance between accessibility travel times in the research region and the number of hospital arrivals.Different modes of transportation, as well as travel periods, have an impact on medical treatment accessibility.	foundation for local governments to optimize the geographical structure of hospital resources.		
2020	Romy Jun A. Sunico; Elwin S. Argana; Mark Anthony T. Golo; Maribel A. Aniñon	Vulca Loc: A Mobile Application for Finding Vulcanizing Shops embedding GPS	The study adopts the Rapid Application Development model and used ISO 9126 to evaluate the application in terms of usability, functionality, and Maintainability	According to ISO 9216 standards, the system achieved a grand mean total of "4.23" which has a "Strongly Agree" description. The application is perceived as a completely usable function and can be maintained efficiently. Functions are fundamentally recognized that	The researchers conclude that the VulcaLoc is significantly helpful for travelers on the Island of Siargao, providing information on vulcanizing shops, service offered, travel and distance feature, and Google Maps integrated features. The application's usability, functionality, and	1. The application should be uploaded to Google Play Store for the easy access of other end-users. 2. The administrator should coordinate with the Google Map to update the picture and information of some of the vulcanizing shops. 3. More researches shall be conducted to future advances to enhance the usability, functionality, maintainability characteristics of the application	The research confirms the effectiveness of utilizing Google Maps API in creating a web-based application with location-based functionalities in the Philippines, suggesting its potential value for similar projects.

				satisfied the client's needs.	maintainability received a beneficial rating for users, easing the hassle of tourists in times of need.		
2022	Danai Tanamee; Pithoon Thanabordeekij; Kritchaporn Witchawanitchanun; Noppanat Pornkongcharoen	Factors Influencing Generation Z's Subscription Intention of Video Streaming During the Pandemic in Thailand	Survey data were collected from 208 respondents via Instagram, Facebook, and Line. Quantitative questionnaires were used. The data were analyzed by using the Ordinary	Survey data were collected from 208 respondents via Instagram, Facebook, and Line. Quantitative questionnaires were used. The data were analyzed by using the Ordinary Least Squares (OLS)	Thus, promoting and advertising, which people often see as the key to accessing consumers and achieving higher subscriptions due to the degree of consumer recognition of its name.	1. Business providers must emphasize information and adapt it to improve their business. 2. The service provider should discount loyal customers and allow them to see the movies or series before others.	

			Least Squares (OLS)				
2021	Hans Christian Yulianto; Augustinus Nicolaas Hillebrandes Oroh	The Effects of Social Value, Value for Money, App Rating, and Enjoyment on the Intention to Purchase the Premium Service of the Spotify App	The sample was Spotify users who had been using Spotify for at least one month (both free and premium), aged at least 13 years old, who had a smart device, and were domiciled in Surabaya, Indonesia. 135 samples were used	All independent variables positively and significantly affected the dependent variable, both individually and as a whole. The most dominant factor was the value for money, followed by enjoyment, app rating, and finally, social value.	The findings can be used to develop strategies to help improve the performance of freemium businesses, including Spotify.	No recommendation for future works were found within the end of the paper.	

2023	Meimona Abdelrhim Bushara; Ahmed Hassan Abdou; Thowayeb H. Hassan; Abu Elnasr E. Sobaih; Abdullah Saleh Mohammed Albohnayh; Waleed Ghazi Alshammari; Mohammed Aldoreeb;	Power of Social Media Marketing: How Perceived Value Mediates the Impact on Restaurant Followers' Purchase Intention, Willingness to Pay a Premium Price, and E-WoM?	To achieve this, an online questionnaire was developed for data collection from a convenience sample of casual-dining restaurant followers in Saudi Arabia. A sample of 433 social media followers was studied using PLS-SEM for testing the	The findings highlighted the significant positive impact of SMMAs on followers' PV, PUR, e-WoM, and WPP. Further, PV partially significantly mediated the relationship between SMMAs and their consequences.	Consequently, providing relevant, up-to-date, and entertaining content; responsiveness to customer needs and feedback; and positive brand engagement significantly contributed to enhancing restaurant followers' perceived value, which sequentially improves their purchase intention, boosts positive e-WoM, and promotes the possibility of WPP for restaurant products and services. This research provides restaurant operators and marketers with valuable insights into how SMMAs	No recommendation for future works were found within the end of the paper.	

	Ahmed Anwar Elsaed; Mohamed Ahmed Elsaied		study hypotheses.		influence followers' behavioral intentions and enhances their understanding of how perceived value can be utilized to capitalize on the benefits of social media.		
2023	ANN SOPHIA; ARDRA ANILKUMAR	A STUDY ON THE IMPACT OF COVID-19 ON SUBSCRIPTION BASED BUSINESS MODEL AND PROMOTIONAL STRATEGIES OF NETFLIX AND SPOTIFY	Methodology means for any particular area of study or activity we use a system of methods. The research and methodology we use in this present study is in systematic form and it is according to the objective which has	Several reasons why OTT platforms garnered millions of users in just five years have been identified. They have been successful for years due to their effective social media advertising and high-quality content. The average customer spends between 2 and 4 hours each day on OTT services. As the digital media industry grows, so	The point of research was to show the way in which online streaming platforms are working in the state of the entertainment world and particularly in the field of the Internet Industry. The study also investigates how consumers are switching from cable services to online streaming platforms, how satisfied customers are with these platforms, and	1. Business models that rely on subscriptions run the risk of having a high rate of cancellations. Maintaining the product's freshness and building strong client relationships are effective approaches to overcome this drawback. 2. People's innate dislike of contracts is possibly one of the subscription business model's major drawbacks. They bind you and force you to consent to future actions that you're not entirely sure you'll still want. A lot of work can be put into proving the product's continuous worth to counter this trick	

			been detailed above	does OTT. With time, platforms will garner more customers. OTT has benefited from the COVID-19 virus. To pass the time during the lockdown, many people have subscribed to OTT platforms. OTT platforms have benefited the telecommunications sector because consumers were spending more money on them. These platforms hold the majority of their internet data. As a	their preferences between online streaming platforms and traditional cable channels. Furthermore, the research explores consumers' tendencies regarding purchasing online subscription platforms, whether they prefer lower-priced options or a broader range of choices. Additionally, the research examines how online streaming platforms are impacting consumers' day-to-day lives, including their time spent on these platforms and their ability to multitask	3. The likelihood of competition in this market has increased as subscription- based companies continue to proliferate. It could be harder to draw in and keep clients because of the competition. We may address this issue by establishing a strong and distinctive brand, offering top-notch customer service, and offering the highest-quality product available. 4. It's crucial to periodically analyze and update your communications when it comes to subscription-based businesses. Because consumers have a limited attention span, it's important to regularly update your product or your perks because they can decide to switch to something else. 5. A further issue is privacy. Customers must provide sensitive information, such as contact information and financial information, along with personal and professional information. These clients may be at risk of identity theft, financial loss, and other	

				result, the movie industry has profited	while consuming content.	negative exposures if a company's database is breached. Therefore, appropriate, effective, and efficient steps should be made to prevent data theft and leaks.	
2020	Cris-Norman P. Olipas; Dr. Rubelyn M. Esperon	The Design And Development Of A Cashless Payment System With An Automatic Identification And Data Collection (AIDC) Technology	Descriptive and developmental method involving parents and students as the respondents using purposive sampling. The system was developed following the stages of the Incremental Model of software development	1. Cashless payment may be developed following the incremental model of software development 2. The respondents viewed the system as an acceptable alternative tool to cash-based payment transactions	The design and development of a cashless payment system with an automatic identification and data collection technology achieved its purpose of describing the processes undertaken to develop the project.	1. The need to conduct more studies employing the incremental model of software development is essential to contribute to the body of knowledge so that the model will be further refined and enhanced 2. The assessment on the technical quality of the software may be assigned to other group of experts to see how they view the project in different perspective 3. Larger numbers of respondents may be involved to further analyze their views and perspectives 4. An empirical analysis on the assessment for the cash-based and cashless payment systems may be conducted to know their	

				in a school canteen		differences supported by empirical evidences 5. Replication of the same study and concept may be made so that more similar studies can be developed to serve as basis for future studies and references	
2022	Jayson Diaz; Adrian Viray; Lexter Dela Cruz; Jetter Tabudlong;	Factors Affecting Customer Satisfaction on Mobile Money Services (Gcash, PayMay, and CoinsPh) in General Santos City, Philippines	Quantitative, descriptive, and multivariate correlation approach with a predictive analysis component Convenience sampling	The research found that there are more female users of mobile banking services than male users. Gcash is the most popular mobile banking platform, with almost all (96%) of users choosing it. PayMaya and CoinsPh are not as popular, with 70% and 52% adoption rates respectively.	Gcash emerged as the dominant platform. The researchers identified significant factors affecting customer satisfaction. System availability emerged as a positive contributor, while Reliability had a slightly negative impact. Lastly, factors like convenience, security and trust, and accuracy played significant roles in shaping overall satisfaction.	1. Service provider should tailor their products and services to better meet the needs of users 2. Policymakers should create regulations that promote a competitive and user-friendly mobile money environment	We can use the findings in this paper as a guide to determine which online payment methods to integrate into our system.
2022	A.P. Thangamuthu	A Survey on Various Online Payment and Billing Techniques	No methodology was found within the paper.	Safety and versatility were the main success factors for ePayment systems.	There is no ePayment system that is “best” or “most safe”. The suitability of these systems depends on the context of the program. Evaluation	No recommendation for future works were found within the end of the paper.	

					of use-value is an effective and simple form of analysis, as it allows for the consideration of different perspectives of use.Even though many ePayment systems are available, as is the case with online gaming, there are situations that need personalized solutions.		
2020	Wassan Abdullah Alkhowaiter	Digital payment and banking adoption research in Gulf countries: A systematic literature review	Weight and meta-analysis	1. 3 out of 7 factors affecting intention to adopt performed satisfactory. 2. Researchers can deduce the type of variables to be selected for analyzing consumers' intention to adopt and	Majority of the studies focused on factors affecting the intention to adopt digital banking and payment methods in GCC countries using UTAUT and TAM as theoretical foundations. The best predictors for digital payment and banking adoption in GCC countries are trust, perceived security and perceived usefulness.	1. Practitioners should use the findings from this study to improve adoption and quality of digital banking and payment services 2. Findings from the study can help policymakers and bank directors to advance understanding the mobile banking adoption in various cultural settings 3. Findings can be used for proposing appropriate strategies which help to improve the adoption of digital banking.	

				use behavior towards digital and payment method		4. Future research with a larger pool of studies should explore the moderating effect.	
2020	Md Arif Hassaf; Zarina Shukur; Mohammad Kamrul Hassan	An Efficient Secure Electronic Payment System for E-Commerce	No methodology was found within the paper.	It has been found that the researchers' protocol has much improved security effectiveness in terms of confidentiality, integrity, non-repudiation, anonymity availability, authentication, and authorization.	E-commerce has gained significant popularity in recent decades, leading to a surge in the market for digital payments, especially mobile payment methods. This increase highlights the need for secure payment systems and online authentication for both clients and web servers. The research proposes an efficient and secure electronic payment system for e-commerce that addresses these concerns. A comparison with other existing systems shows the suggested framework's superiority in	1. Future researchers should focus on applying the proposed framework in real-world settings to demonstrate its effectiveness against various attacks and assess the time required for electronic payment	The paper provides valuable insights into best practices for and potential vulnerabilities of electronic payment systems. By using the security measures and protocols outlined in the paper as a guide, we can strengthen our proposed system

					securing debit and credit card details and maintaining client anonymity. Clients favor this secure e-commerce system because it meets all necessary requirements. The proposed method involves a transaction gateway acting as a proxy between the client/merchant and the bank. Security analysis indicates that the proposed plan offers better protection in terms of confidentiality, non-repudiation, integrity, availability, and anonymity.		
2020	Rubyet Hossain; Debashish Saker; Sumya Sultana Meem;	Analysis of Centralized Payment Eco-System: A Systematic Review on E-Payments	No methodology was found within the paper.	1. Centralized payment systems has both advantages and disadvantages	As online businesses and payments continue to grow, the drawbacks of centralized payment systems are becoming more apparent. The paper suggests that blockchain-based	No recommendation for future works were found within the end of the paper.	The paper provides a comprehensive analysis of various payment services and payment gateways that can be used in different countries, examining their advantages and disadvantages. This comparative study serves as

	Khandoker Shahrina; Md. Al-Amin			2. The transaction cost also varies for different organizations 3. Different Company uses different payment Option 4. The company has different strategies to complete the transaction	decentralized payment systems could provide a solution to these issues. These systems offer high security at lower costs and may be particularly beneficial for large-scale businesses. Although centralized payment systems are effective for current online transactions, the future may see a rise in blockchain-based decentralized payment solutions due to their significant potential.		a valuable resource for guiding the selection of an appropriate payment gateway.
2022	Ketut Nila Arta; A.A Kompiang Oka Sudana; Gusti Agung Ayu Putri	Workshop Marketplace System Using Rajaongkir API, Leaflet API and Midtrans Payment Gateway	The method used in the research is the Waterfall method. The system is developed on a web-based basis using the PHP programming	The system was tested using the black-box method and it showed that the entire menu could normally run without errors/bugs.	The workshop marketplace system that was developed and tested using the black-box method successfully addressed the current challenges in the marketplace sector. These challenges include the lack of focus in existing	No recommendation for future works were found within the end of the paper.	The paper's approach to integrating map and payment APIs provides a useful reference for our proposed system, which also aims to incorporate these features.

			language with Laravel framework and integrated with the Leaflet API, RajaOngkir API, and Midtrans Payment Gateway		marketplaces and the difficulty of obtaining information about surrounding workshops.		

Conceptual Framework

INPUT

Knowledge Requirement:

- Knowledge about different type of rentals
- Web based system
- Apartment Management

Software Requirement:

- Visual Studio Code
- GitHub
- AdobeXD

Hardware Requirement:

- Processor: Intel Core i7-7500U or higher
- Memory (RAM): 8GB DDR4 RAM
- Graphics Card: NVIDIA GeForce 920MX or higher
- Operating System: Windows 10 (64-bit)
- Storage: Minimum 256GB SSD or 500GB HDD
- Internet Connection: Stable internet connection for database connection

→

PROCESS

Project Design:

- Review of Related Literature
- Entity Relationship Diagram
- Use case Diagram
- System Flowchart
- Module Hierarchy
- Data Flow Diagram
- Architecture Diagram

Project Development:

- HTML
- CSS
- JavaScript
- MySQL
- Vue
- Django
- Python

Operation and Testing

→

OUTPUT

LivWell: An Apartment E-Commerce and Management

→

Evaluation

Transaction ID	
Signature	

References

Alkhowaiter, W. A. (2020). Digital payment and banking adoption research in Gulf countries: A systematic literature review. *International Journal of Information Management*, *53*, 102102. https://doi.org/10.1016/j.ijinfomgt.2020.10210

Alsubari, S. N., Deshmukh, S. N., Alqarni, A. A., Alsharif, N., Aldhyani, T. H. H., Alsaade, F. W., & Khalaf, O. I. (2022). Data Analytics for the identification of fake reviews using supervised learning. *Computers, Materials & Continua*, *70*(2), 3189–3204. https://doi.org/10.32604/cmc.2022.019625

Amat-Lefort, N., Barravecchia, F., & Mastrogiacomo, L. (2022). Quality 4.0: big data analytics to explore service quality attributes and their relation to user sentiment in Airbnb reviews. *International Journal of Quality & Reliability Management*, *40*(4), 990–1008. https://doi.org/10.1108/ijqrm-01-2022-0024

Arta, K. N., Sudana, A. a. K. O., & Putri, G. a. A. (2022). Workshop marketplace system using Rajaongkir API, Leaflet API and Midtrans Payment Gateway. *International Journal of Natural Science and Engineering*, *6*(1), 1–7. https://doi.org/10.23887/ijnse.v6i1.44033

Bushara, M. A., Abdou, A. H., Hassan, T. H., Sobaih, A. E. E., Albohnayh, A. S. M., Alshammari, W. G., . . . Elsaied, M. A. (2023). Power of social media marketing: How perceived value mediates the impact on restaurant followers' purchase intention, willingness to pay a premium price, and E-WoM? *Sustainability*, *15*(6), 5331. https://doi.org/10.3390/su15065331

Chatterjee, S. (2019). Explaining customer ratings and recommendations by combining qualitative and quantitative user generated contents. Decision Support Systems, 119, 14-22. https://doi.org/10.1016/j.dss.2019.02.008

Costa, C., Ha, J., & Lee, S. (2021). Spatial disparity of income-weighted accessibility in Brazilian Cities: Application of a Google Maps API. Journal of Transport Geography, 90, 102905. https://doi.org/10.1016/j.jtrangeo.2020.102905

Dhiraj Lahoti, & Atharva Panse. (2022, May-June). Implementing big data analytics in business management. International Journal of Scientific Research in Computer Science, Engineering and Information Technology, 8(3), 107-110. [IJSRCSEIT] https://doi.org/10.32628/CSEIT228324

Diaz, J., Viray, A., Dela Cruz, L., and Tabudlong, J. (2022). Factors affecting customer satisfaction on mobile money services (GCash,PayMay, and CoinsPH) in general Santos City, Philippines. *Zenodo (CERN European Organization for Nuclear Research)*. https://doi.org/10.5281/zenodo.8330019

Do, Q. H., Hosseyni, P., Kusters, R., Schmitz, G., Wenzler, N., and Wurtele, T. (2022, May 1). A Formal security analysis of the W3C Web Payment APIs: Attacks and verification. IEEE Conference Publication | IEEE Xplore. https://ieeexplore.ieee.org/abstract/document/9833681

Ert, E., & Fleischer, A. (2019). The evolution of trust in Airbnb: A case of home rental. Annals of Tourism Research, 75, 279-287. https://doi.org/10.1016/j.annals.2019.01.004

Fernandez, S. M. (2022). Dormitory Management Information System with SMS Notification and Biometric Security. Indian Journal of Science and Technology, 15(26), 1296–1305. https://doi.org/10.17485/ijst/v15i26.1578

Fielbaum, A., & Jara-DíAz, S. (2021). Assessment of the socio-spatial effects of urban transport investment using Google Maps API. Journal of Transport Geography (Print), 91, 102993. https://doi.org/10.1016/j.jtrangeo.2021.102993

Ghasemaghaei, M. (2019). Does data analytics use improve firm decision making quality? The role of knowledge sharing and data analytics competency. Decision Support Systems, 120, 14–24. from https://doi.org/10.1016/j.dss.2019.03.004

Grepon, B. G., Margallo, J., Maserin, J., & Dompol, R. A. (2023, July 1). RUI: A Web-based Road Updates Information System using Google Maps API. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4497296

Hassan, A., Shukur, Z., & Hasan, M. K. (2020). An efficient secure electronic payment system for E-Commerce. *Computers*, *9*(3), 66. https://doi.org/10.3390/computers9030066

Hamzah, Muhammad Akram, Mustika, Nur , Mustapa, Mahmud, Rahmah, Ummiati
(2022). Application of Boarding House Rental Location Search System
Based on Android from
http://eprints.unm.ac.id/32270/1/Hamzah_2022_Ceddi_Application%20of%20Barding%20House%20Rental%20Location%20Search%20System%20Based%20on%20Android%20.pdf

Hossain, R., Sarker, D., Meem, S. S., & Amin, M. (2020). Analysis of Centralized Payment Eco-System: A Systematic Review on E-Payments. *ResearchGate*. https://www.researchgate.net/publication/344223983_Analysis_of_Centralized_Payment_Eco-System_A_Systematic_Review_on_E-Payments\

Ikuomola, A. J., & Asefon, M. P. (2020). A secured mobile cloud-based house rental management system. In *Proceedings of 3rd International Conference on Applied Information Technology (AIT)* (pp. 1-17). Retrieved from https://www.researchgate.net/publication/340926278_A_Secured_Mobile_Cloud-Based_House_Rental_Management_System

Iu, C. S., & Mohd Zaki Mohd Salikon. (2022). Room Renting Management System. *Applied Information Technology And Computer Science*, *3*(2), 1451–1469. Retrieved from https://publisher.uthm.edu.my/periodicals/index.php/aitcs/article/view/7471

Jorda, R. L., Fernandez, E. O., Velasco, J. S., Padilla, M. V. C., Agoylo, S. M. P., Bultron, M. J. A., Clamor, A. J. O., Monzaga, J. K. M., Rosales, C. R. R., Salvador, C. S., & Tolentino, L. K. S. (2021). Development of a web-based land-use mapping. International Journal of Advanced Technology and Engineering Exploration, 8(75), 221–235. https://doi.org/10.19101/ijatee.2020.762153

Leona, R. F., Manantan, K. K. M., Puzon, J. M. D., Guiling, J. L. A., Nelmida, C. J. V., Espiritu, B. P., & Olipas, C. N. P. (2023). Development and assessment of AppStay: a Web-Based Room, dorm and apartment reservation system. Traektoriâ Nauki, 9(8), 6007–6013. https://doi.org/10.22178/pos.95-16

Li, X., Cheng, S., Lv, Z., Song, H., Jia, T., & Lü, N. (2020). Data analytics of urban fabric metrics for smart cities. *Future Generation Computer Systems*, *107*, 871–882. https://doi.org/10.1016/j.future.2018.02.017

Linina, Iveta. (2023). Problems and Solutions of Multi-apartment Housing Management in Latvia. European Integration Studies. 1. 210-221. 10.5755/j01.eis.1.17.34128. Retrieved from https://www.researchgate.net/publication/373974447_Problems_and_Solutions_of_Multi-apartment_Housing_Management_in_Latvia

Misyam, M. R., & Selamat, N. (2021, November 30). House Rental Management System. Applied Information Technology And Computer Science, 2(2), 1745-1754.https://publisher.uthm.edu.my/periodicals/index.php/aitcs/article/view/2488

Mokhsin, M., Shahuddin, A. Z., Zainol, A. S., Som, M. H. M., & Hazemi, N. B. (2020). A prototype of high rise residential management systems in Malaysia: A case study for Seroja Apartment. IJIES (International Journal of Innovation in Enterprise System), 4(01), 1–11. from https://doi.org/10.25124/ijies.v4i01.43

Monteverde, A. L., Maderazo, J. J. S., Cruz, K. C. M., & Magnaye, N. A. (2023). A web-based rental house smart finder using rapid application development basis for evaluation of ISO 205010. *International Journal of Metaverse* (IJM), 1(1), 1-12. https://doi.org/10.54536/ijm.v1i1.1464

Muñoz-Villamizar, A., Solano-Charris, E. L., Azad, M., & Reyes-Rubiano, L. S. (2021). Study of urban-traffic congestion based on Google Maps API: the case of Boston. IFAC-PapersOnLine, 54(1), 211–216. https://doi.org/10.1016/j.ifacol.2021.08.079

Muñoz-Villamizar, A., Faulín, J., Reyes-Rubiano, L. S., Henríquez-Machado, R., & Solano-Charris, E. L. (2024). Integration of Google Maps API with mathematical modeling for solving the Real-Time VRP. Transportation Research Procedia, 78, 32–39. https://doi.org/10.1016/j.trpro.2024.02.005

Nurdin, N., Pettalongi, S. S., & Mangasing, M. (2021). Implementation of Geographic Information System base on Google Maps API to determine bidikmisi scholarship recipient distribution in Central Sulawesi Indonesia. Journal of Humanities and Social Sciences Studies, 3(12), 38–53. https://doi.org/10.32996/jhsss.2021.3.12.5

Olipas, C. N., & Esperon, R. (2020). The Design and Development of a Cashless Payment System with an Automatic Identification and Data Collection (AIDC) Technology. *International Journal of Scientific and Technology Research*, *9*(3). https://files.eric.ed.gov/fulltext/ED622603.pdf

Oneto, L., Buselli, I., Lulli, A., Canepa, R., Petralli, S., & Anguita, D. (2019). A dynamic, interpretable, and robust hybrid data analytics system for train movements in large-scale railway networks. *International Journal of Data Science and Analytics*, *9*(1), 95–111. https://doi.org/10.1007/s41060-018-00171-z

Pak, W., Kim, I., & Choi, J. (2021). Proposal of the energy consumption analysis process for the residential houses using big data analytics technique. *Journal of Computational Design and Engineering*, *8*(6), 1591–1604. https://doi.org/10.1093/jcde/qwab063

Paul, J. (2022). The Rental Zone (House Renting Website). International Research Journal of Modernization in Engineering Technology and Science, 4(8), 2243-2248. https://www.irjmets.com/uploadedfiles/paper/issue_8_august_2022/29592/final/fin_irjmets1662125360.pdf

Ramadhan, Y., & Belgiawan, P. F. (2023). Implementation of the trial strategy in driving Purchase Intention on YouTube Premium. *Journal of Consumer Studies and Applied Marketing*, *1*(1), 28–36. https://doi.org/10.58229/jcsam.v1i1.46

Rastogi, R., Jain, R., Mishra, P., & Prateek. (2023). Rental House Management System: An Empirical Approach with Simulation. *Acta Scientific COMPUTER SCIENCES*, *5*(4). Retrieved from https://actascientific.com/ASCS/pdf/ASCS-05-0434.pdf

Rathod, Ashish , Kumar, Pawan (2022). Apartment Management System: a review. IJRASET. from https://www.ijraset.com/research-paper/apartment-management-system

Setty, Y. (2020) Management System for an Apartment. Opus Open Portal to University Scholarship. https://opus.govst.edu/cgi/viewcontent.cgi?article=1542&context=capstones

Shao, C., Yang, Y., Juneja, S., & GSeetharam, T. (2022). IoT data visualization for business intelligence in corporate finance. Information Processing and Management, 59(1), 102736. from https://doi.org/10.1016/j.ipm.2021.102736

SOPHIA, A., & ANILKUMAR, A. (2023, March). A STUDY ON THE IMPACT OF COVID-19 ON SUBSCRIPTION BASED BUSINESS MODEL AND PROMOTIONAL STRATEGIES OF NETFLIX AND SPOTIFY. Retrieved from

http://117.239.78.102:8080/jspui/bitstream/123456789/2763/1/UG%20sem%206%20project__%20Ardra%20Anilkumar%2C%20Ann%20Sophia.pdf

Shi, Z., Silvennoinen, H., Chadzynski, A., Von Richthofen, A., Kraft, M., Cairns, S., & Herthogs, P. (2022). Defining archetypes of mixed-use developments using Google Maps API data. Environment and Planning B: Urban Analytics and City Science, 50(6), 1607–1623. https://doi.org/10.1177/23998083221141428

Sunico, R. J. A., Argana, E. S., Golo, M. a. T., & Aniñon, M. A. (2020). Vulca Loc A Mobile Application for Finding Vulcanizing Shops embedding GPS. International Journal of Recent Technology and Engineering, 9(3), 648–652. https://doi.org/10.35940/ijrte.c4685.099320

Tanamee, D., Thanabordeekij, D., Witchawanitchanun, K., & Pornkongcharoen4, N. (2021, December). Factors Influencing Generation Z's Subscription Intention of Video Streaming During the Pandemic in Thailand. Retrieved from https://so06.tci-thaijo.org/index.php/aseanplus/article/view/259657/175013

Rathore, K., Syed, A., & Patel, R. (2021). Rental house management system. *International Research Journal of Modernization in Engineering Technology and Science*, 3(5), [1098]. https://www.irjmets.com/uploadedfiles/paper/volume3/issue_5_may_2021/10054/1628083403.pdf

Palkar, Shoumik(n.d.-e). Evaluating End-to-End Optimization for Data Analytics Applications in Weld from https://spiral.imperial.ac.uk/my.policy

Thangamuthu, A. P. (2020). A survey on various online payment and billing techniques. *Shanlax International Journal of Arts, Science and Humanities*, *7*(3), 86–91. https://doi.org/10.34293/sijash.v7i3.1374

Thevaraju, Devi Priya, Zakaria, Zalmiyah, Sukrib, Khairul Amin Mohamad, Kasimb, Shahreen (2019) View of Vista Angkasa Apartment Management System. https://ijasce.org/index.php/IJASCE/article/view/4/61?fbclid=IwAR2LnvMNJxKLtHIpPyXaj0W0-Av_O7sXrcHnBdI9MluY1ubpHrouuaOXBlM

Voumick, D. , Deb, P. , Sutradhar, S. and Khan, M. (2021) Development of Online Based Smart House Renting Web Application. *Journal of Software Engineering and Applications*, **14**, 312-328. doi: 10.4236/jsea.2021.147019.

Yulianto, H., & Oroh, A. N. H. (2021). The effects of social value, value for money, app rating, and enjoyment on the intention to purchase the premium service of the Spotify app. *KnE Social Sciences*. https://doi.org/10.18502/kss.v5i5.8815

Zheng, Z., Xia, H., Ambinakudige, S., Qin, Y., Li, Y., Xie, Z., Zhang, L., & Gu, H. (2019). Spatial accessibility to hospitals based on web mapping API: an empirical study in Kaifeng, China. Sustainability, 11(4), 1160. https://doi.org/10.3390/su11041160