

VIVA HOMES ESTATE SUBDIVISION EXPENSE MANAGEMENT SYSTEM

A Project Proposal Presented to the
Faculty of the College of Arts and Sciences
Information Technology Education Department

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In Partial Fulfillment of the Requirements
Capstone and Research 2

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CHAPTER I

THE PROBLEM AND ITS BACKGROUND

Introduction:

Viva Homes State Subdivision is a plot of land divided into two or more parcels. On a single piece of land, there are numerous homes and industrial buildings. The Homeowners Association (HOA) officers use spreadsheets, paper-based invoicing and receipt tracking, and manual data entry for spending management as their primary methods of expense tracking and reporting.

Traditional expense management systems rely more heavily on paper documentation, human assistance, manual data input, and expense tracking, and reporting. These operations are time-consuming, ineffective, and expensive to business over time. However, automated expense management systems have a lot to offer. It serves a number of roles, including boosting efficiency, delivering real-time updates with less employee help, and reducing operating expenses.

Background of the Study:

Viva Homes Estate Subdivision is situated in Salawag, City of Dasmariñas, and Province of Cavite. It is close to schools, churches, shopping malls, places of work, and restaurants.

According to the Housing and Land Use Regulatory Board (2017), association dues are recurring fees assessed to

members and are entirely designed to pay administrative budgets. Amounts charged to members and saw or beneficial users pay for other necessary and appropriate costs for the security, peace, and maintenance of the subdivision or condominium, as well as for the protection of the association's integrity care so that it can do its duties and functions. According to an article by Palabrica (2017), HOA authorities and members often have differing views over collecting payments from residents of gated communities, housing developments, and residential condos.

According to Sheth (2018), expense management refers to the systems used by an association to process, pay, and audit its expenditures. It simplifies evaluating expenses by providing a clear presentation and precise data visualization.

By eliminating paper from the process, accounting no longer requires manual data entry (Sheth, 2018). According to the senior product marketing manager of Oracle / NetSuite, Marc Holliday, it enhances operational effectiveness by decreasing processing time and expenses. It also makes operations more efficient and frees staff time to focus on more vital responsibilities. Visibility was also enhanced by using dashboards that show information such as spending by category and the time required to approve expense reports.

Project Context:

Generally, this study aims to have knowledge of the expenditures of Viva Homes' Homeowners Association.

Specifically, the study aims to:

1. To determine the demographic profile of the participants based on:

a) Age

b) Determine the length of their residency in the Viva Homes Subdivision.

2. Identify whether or not they are paying association dues.

3. Verify their knowledge regarding the proceeds of expenditures.

Purpose and Description:

This research aims to standardize the recording of expenditures. It will also increase operational efficiency by reducing the manual labor performed by administrative personnel. It will offer managers and homeowners visibility and access. The expense management system will provide payment logs, purchase histories, and accounting breakdowns.

APPENDIX 1.

Conceptual Framework:

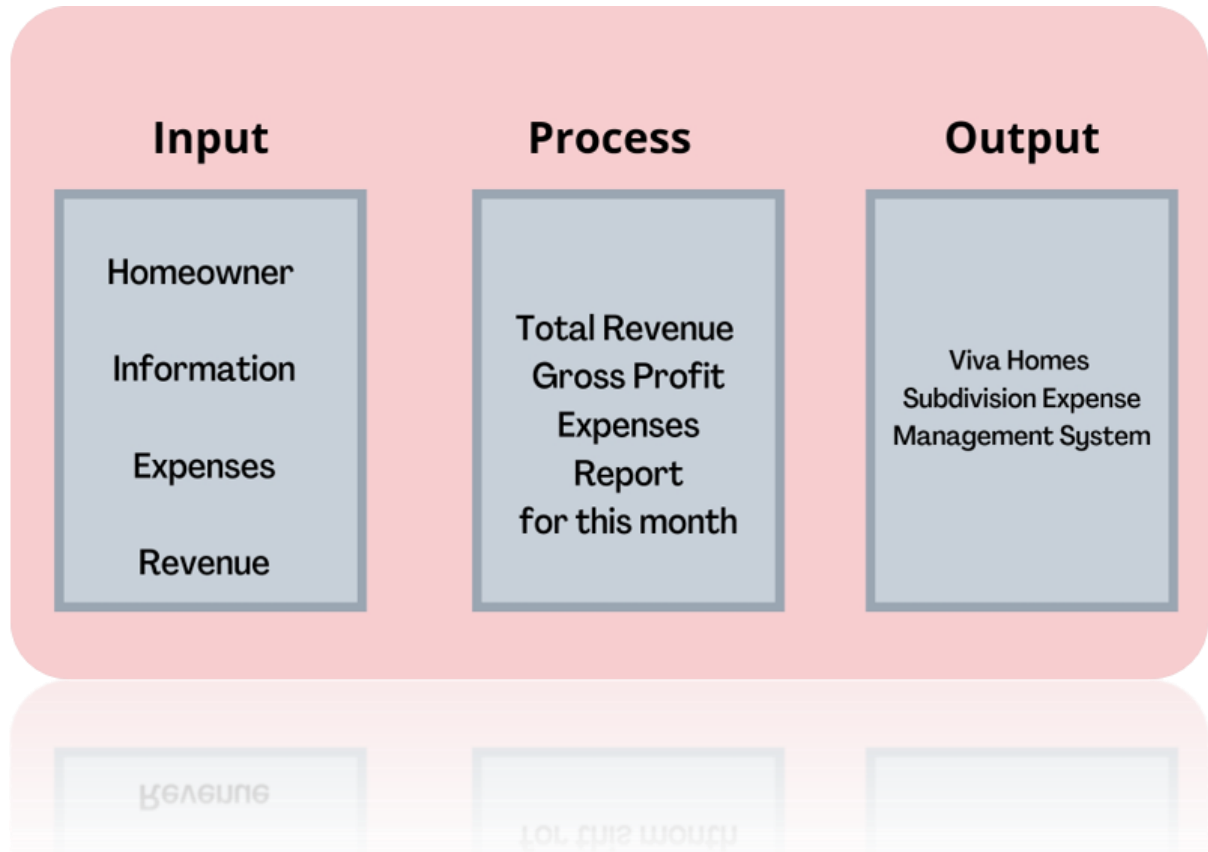


Figure 1: Conceptual Framework

Objectives:

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Significance of the Study:

This study will be a significant endeavor in Viva Home's Expenses Management System. This result of the study will benefit the following:

1. Enhanced Accountability - Self-service enables your staff to assume responsibility for the overall expense reporting process and to do it from their computer or mobile device.

2. Homeowners - Expense management also removes the human mistakes that often result in financial losses, such as overpayment or miscalculation, due to the manual processing of expenses data.

3. Viva Homes- They manage their funds smoothly. A system expense with management capabilities allows them to quickly record expenditures.

Scope and Limitation of the Study:

This study will mainly focus on the Viva Homes Estate Subdivision expense management system. The expense management system will be capable of displaying homeowner demographics, recording and processing online payments, and sending SMS notifications for payment reminders. However, this research is limited from June 2022 to future data, nor will the expense management system be automated. The primary participants in this study are homeowners aged 40 to 50 who have lived in Viva Homes for five to ten years.

Definition of Terms:

To aid understanding of the research, the following terminology were defined:

Accounting. It is the process of documenting a business's financial transactions. This involves summarizing, evaluating,

and reporting these transactions to oversight authorities, regulators, and tax collecting entities (Fernando, 2022). Operationally, it refers to summarization of Viva Homes expenditures.

Expense Management. It describes the systems an organization uses to handle, pay, and audit its expenses (Sheth, 2018). Operationally, it refers to tracking the expenditures and transactions made. Expenses.

Homeowners Association. It is an organization inside a subdivision, planned community, or condominium structure that establishes and enforces property and resident regulations (Chen, 2021). Operationally, it refers to the group of individuals responsible for ensuring the wellbeing of the community.

Management. The process of administering and controlling the affairs of the organization, irrespective of its nature, type, structure and size. (Jargons, 2022).

Manager. A person inside an organization is responsible for implementing the work of others or the distribution of resources. Consequently, a manager is someone who engages in management operations (Gordon, 2022). Operationally, it refers

to the individual accountable for recording association fees and monitoring expenditures.

Expenses. A particular kind of outlay that appears on the income statement and is subtracted from revenue to determine net income. Because of the accrual principle in accounting, costs are recorded as incurred rather than always as paid for. (CFI,2022).

Payments. Payment is the exchange of money, goods, or services for goods and services in an acceptable amount to both parties and has been agreed upon in advance. You can pay with cash, a check, a wire transfer, a credit card, a debit card, or even cryptocurrency. (Benneth,2022).

Subdivision. It is a parcel of land that has been divided into smaller units known as lots. Subdivisions can be large and small. The land is usually bought by a developer who will sell lots to other builders or build on the lots themselves. (Gassett, 2021).

CHAPTER II

REVIEW OF RELATED WORKS

This chapter presents a review of materials that are relevant in conducting the study, specifically it aims to find the process, the meaning and the components of the variables that are significant to the process of the study.

Expense Management

Expense management refers to the procedures used by an organization to process, pay, and audit employee-incurred expenditures. These expenditures include, but are not limited to, travel and entertainment expenses. Expense management is the technique by which a business may considerably cut transaction costs and enhance management control when recording, calculating, and processing corporate expenditures (Sheth, 2018). Not only does expense management monitor employee expenditures, but it also defines how the firm will compensate the expenses spent. In addition, it implements the methods and rules required to regulate this sort of expenditure (Beaver, 2020). Additionally, according to the senior product marketing manager, Scott Beaver, expense management is a multi-step process that involves documenting and reporting expenditures, which may entail: filing reimbursement claims, approving or refusing those claims,

scheduling the claims for payment, and, lastly, reimbursing the employee.

The primary goals of expense management are precise record-keeping and financial planning. For owners and managers, it is about progress, efficiency, corporate governance, and cost savings (Kaki, 2020)

Expense Management System

According to Scott Beaver, a senior cr product marketing manager, a web-based expense management system simplifies and decreases the need for paper, lowers the amount spent managing costs, and reduces the number of mistakes.

A system for managing expenses also offers interpretive tools that enable the organization to make more informed future expenditure choices and policy revisions. The system facilitates compliance and accountability by correctly reporting all expenditures.

Utilizing a cost management system with an enterprise resource planning (ERP) or accounting system offers further advantages. It removes the need for accounting personnel to upload or manually input expenditure report data, saving time and decreasing the chance of mistakes.

The combination of expenditure report data with ERP data results in a more thorough study of all spend categories, as well as by region, brand, or other business segment. For

instance, integration enables service organizations to more readily link costs to specific projects, thereby removing issues over the allocation of expenses. (Beaver, 2020).

Homeowners Association

According to Chen (2021), homeowner associations (HOAs) are often established in communities or neighborhoods with single-family houses or multiple-unit dwellings (such as condominiums). Typically, a HOA is created to develop and enforce regulations for the properties under its control. An HOA consists of and is managed by the community's inhabitants. Membership is often required to purchase a house in a neighborhood where a HOA has been created.

A homeowner association (HOA) is the entity responsible for establishing and implementing the rules and regulations for a subdivision, planned community, or condominium structure. A homeowner association is comprised of residents in a subdivision, neighborhood, or building; in some regions, membership is mandatory for people who buy property in the subdivision or condominium. Homeowner associations (HOAs) are typically administered by a board of directors and charge monthly or annual fees for community maintenance and facility upkeep. Homeowner associations (HOAs) may impose fines on noncompliant homeowners. In certain circumstances, the consequences vary from fines to compelled compliance or even lawsuits (Chen, 2021).

Association Fees

According to Palabrica (2017), homeowners associations (HOA) leaders and its members often disagree over the collection of payments from residents of gated communities, housing developments, and residential condos.

Chen (2021) defined homeowners association fees as the monthly cost that some residential property owners are required to pay to their homeowners associations (HOAs). These fees are collected to help the organization with property maintenance and enhancement. HOA fees are generally typically assessed on condominium owners, however they may also be applicable in certain single-family districts.

Chen added that these fees cover irrigation and waste disposal, which may also be included in the cost of living. If the association's reserve funds are insufficient to support a major repair, such as a new elevator or roof, special assessments may be charged. In some communities, these fees may also apply to single-family homes, particularly townhomes, especially if there are common facilities such as tennis courts, community clubs, or neighborhood parks to maintain. Depending on the property or neighborhood, HOA fees might vary significantly.

Advantage of E Payment

According to Green (2018), customers are able to pay for the products and services they purchase without having to use

cash when they make use of electronic payment methods such as credit cards, mobile phones, or the internet. It provides a variety of advantages, including cost and time savings, increased sales, and reduced transaction expenditures, among other benefits.

E-payment is far more convenient than traditional payment methods such as cash or checks; however, it is vulnerable to online fraud and may increase business expenses. Your customers no longer need to wait in line to do transactions with you since it is now feasible to make payments for items or services purchased online at any time of the day or night and from any location in the United States or anywhere else in the globe. Neither of those statements is accurate; in order to get the cash essential for shopping, they need to wait for a check to be validated by the bank first.

Payment methods are required for expeditions to the store as well as checks. Swiping your credit card or making a payment online, on the other hand, often results in no fees or very little fees. Consumers and businesses alike may be able to save tens, hundreds, or even thousands of dollars by using electronic payment methods.

Definition of E Payment

According to S Fatonal et al (2018), A cash-based payment system is being phased out in favor of an electronic payment alternative. E-payment refers to a system that equips users with the means to pay for services or goods acquired over the internet. A secure and efficient electronic payment system might also deliver faster payments, enhanced monitoring, more transparent and open business transactions, a decrease in the amount of time spent on transactions, cost savings, and an improvement in buyer and seller confidence.

The electronic value transfer of a payment from the payer to the consumer through an electronic payment method is one example of an electronic payment. The web-based user interface that comes with the online payment service provides customers with access to their bank accounts and the ability to manage their transactions even when they are not physically present. In a postmodern society, e-payment refers to the usage of electronic payment methods in the context of Internet-based e-commerce transactions. Cashless payment is an additional definition of electronic payment.

Payment Reminders

According to Moore (2019), sending payment reminders to consumers manually is a difficult and time-consuming procedure. Not only does it consume valuable time, but if a

payment reminder is lost in the mail or forgotten by a client, your cash flow will be delayed. Due to the fact that automatic payment reminders are delivered through email and text message, consumers get their notifications instantly.

- **Increased Speed** - Automated payment reminders sent through email and SMS guarantee that the message reaches your customers instantly.
- **Cost Savings** - Sending payment reminders by standard mail is cost-effective, particularly when you consider all of your clients and any repeating reminders you may need to send. Although there are ink, paper, envelope, and postal costs. Adding expedited or registered delivery will result in additional fees. Not only can automated payment reminders save you time, but they can also save you money in the long run.
- **Convenience** - Automated payment reminders are much easier and quicker to handle. They may be simply scheduled to come a certain number of days before or after the due date and at a time when your consumers are likely to be reading their email.
- **Customer Satisfaction:** Automated communications provide consumers with the flexibility to view their messages on the go and the opportunity to instantly access the

communication at their fingertips, as opposed to hunting for a letter tucked away in a file cabinet.

Admin Approval

According to R. Sheeja et al (2020), If a user requests for registration after joining, he or she may see the contents in his or her distribution list. If the user wants the record, he or she must send an invitation to the administrator; if the user belongs to the same organization group as the file, only that request will be granted. If the administrator says yes, the user will be able to see the page with the private key on it.

Cashless Payment

According to Yang et al (2021) A new e-commerce application, cashless payment via digital technologies, is a smart payment option used in a number of emerging nations to obtain long-term economic advantage. New methods of life have been influenced by consumer behavior, which has been significantly influenced by digitalization. Electronic payments have grown increasingly dependable as a result of the growing use of online services, as well as the increase in

product offerings from suppliers and the size of their delivery networks.

Synthesis of the Related Works

Expense management refers to the procedures used by an organization to process, pay, and audit employee-incurred expenditures. These expenditures include, but are not limited to, travel and entertainment expenses. Expense management involves filing reimbursement claims, approving or refusing those claims, scheduling the claims for payment, and reimbursing the employee. The primary goals of expense management are precise record-keeping and financial planning.

A system for managing expenses also offers interpretive tools that enable the organization to make informed future expenditure choices and policy revisions. Utilizing a cost management system with an enterprise resource planning (ERP) or accounting system offers further advantages. The combination of expenditure report data with ERP data results in a more thorough study of all spending categories.

Homeowner associations (HOAs) are often established in communities or neighborhoods with single-family houses or multiple-unit dwellings. A homeowner association comprises residents in a subdivision, area, or building; in some regions, membership is mandatory for people who buy property

in the subdivision or condominium. Homeowner associations (HOA) may impose fines on noncompliant homeowners.

HOA fees are generally typically assessed on condominium owners. However, they may also be applicable in certain single-family districts and gated communities. Depending on the property or neighborhood, HOA fees might vary significantly. These fees may apply to townhomes and other residential properties in some communities. HOA fees are generally typically assessed on condominium owners. However, they may also be applicable in certain single-family districts.

A cash-based payment system is being phased out in favor of an electronic payment alternative, according to S. Fatonal et al. (2018). E-payment refers to a system that enables consumers to pay for services or items purchased through the internet. A safe and efficient electronic payment system may also provide speedier payments, improved monitoring, more transparent and open business transactions, reduced time spent on transactions, cost savings, and increased buyer and seller trust.

An example of electronic payment is the electronic value transfer of a payment from the payer to the consumer using an electronic payment mechanism. The web-based user interface with the online payment service gives consumers access to their bank accounts and the ability to manage their transactions regardless of their physical location. E-payment

refers to electronic payment mechanisms in the context of internet-based e-commerce transactions in a postmodern culture. Electronic payment is also defined as "cashless payment." Moore (2019) states that manually sending payment reminders to customers is a complex and time-consuming process. Not only does it cost the necessary time, but if a customer needs to remember or lose a payment reminder, her cash flow will be delayed. Because automated payment reminders are sent via email and text messages, customers get these notices immediately.

Enhanced Velocity: Automated payment reminders delivered through email and SMS ensure that your message reaches your clients immediately.

Cost-effectiveness: Sending payment reminders via regular mail is cost-effective, especially considering all your customers and the possibility of sending repeated reminders. Even though there are ink, paper, envelope, and mailing fees, The inclusion of expedited or registered shipping will incur extra costs. In addition to saving you time, automatic payment reminders may save you money in the long term.

Automated payment: reminders are far more straightforward and faster to manage. They may be set to arrive a particular number of days before or after the deadline and at a time when your customers are likely to be checking their email.

Customer satisfaction: Automated communications allow customers to read their messages on the move and have immediate access to the contact instead of searching for a letter buried in a file cabinet.

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According to Yang et al. (2021), a new e-commerce application, cashless payment using digital technology, is an

intelligent payment alternative employed by several developing countries to gain long-term economic benefits. Consumer behavior, which has been profoundly impacted by digitization, has inspired the development of new ways of living. Electronic payments have become more reliable due to the expanding usage of online services, the expansion of product offerings from suppliers, and their delivery networks.

CHAPTER III

RESEARCH METHODOLOGY

Technical Background:

The project proponents had gathered all relevant research and brainstormed about which technologies would be employed. Since the project is still in progress, the proponents will continue looking for tools and software to aid the system's development. The Integration of Expenses Management is intended to process pay, audit, and expenditures. Transparency is a watchword in management logs, purchases, histories, and accounting breakdowns.

The project will be IT-related research, and there will be phrases only IT students and professionals would comprehend. CSS, Server-client, Apache, Php, MySQL, Database, Functionality, Sqlite, Web application, and PhpMyAdmin are some of the technical words used by the project proponents. Some of the terminology mentioned above is also the technology utilized by the project proponents.

The proponents will employ ISO25010 software to predict the effect of subsequent interactions when a product is used in a specific situation. This system concept applies to the entire human-computer system, encompassing computer systems and software products.

Approaches and Techniques:

Methodology:

The first phase is planning. The researchers survey the residents of Viva Homes Subdivision in Salawag, Dasmariñas, Cavite, to gather data. Our group found that the administrative personnel of the subdivision performed manual transactions to manage the expenditures. Our proposed system will help managers and homeowners to have visible access to the records of expenses. The expense management system will provide payment logs, purchase histories, and accounting breakdowns. The second phase is design. Visual design and the architectural framework of the app are the two design strategies used at this stage. The database and conceptual framework interface were created so that users may learn more about the system. The third phase is Develop. The development phase of the software development process entails writing code and turning design documentation into usable software. Since it serves as the basis for the entire procedure, this stage of the SDLC takes the longest. The fourth phase is Testing. Testing is where project respondents utilize the system to see if it is dependable, efficient, triumphant in its applications, and more advanced than their manual system. The Testing to be used by the proponents is regression testing. The Fifth phase is Release. During this phase, the proponent tested the system to ensure that there were no notable

software errors and that it met the requirements of our beneficiaries. The last phase is Feedback; it allows us to improve our work.



Requirement Analysis:

This study's beneficiaries are homeowners and homeowners' associations (HOA). The researchers gathered information from the homeowners will and noticed that they greatly needed a system that manages the recording of expenditures. All expenditures should be fully revealed and clear. The system's primary goals are precise record-keeping and financial planning. It involves documenting and reporting payments.

Population, Sample size and Sampling Techniques:

According to Reddy and Ramasamy (2018), Purposive sampling is a non-probability sampling technique, sometimes referred to as judgmental sampling, selective sampling, or subjective sampling. In quantitative research, we must choose a predetermined group of individuals best positioned to provide the information required for the study. Purposive sampling refers to your assessments of which individuals can provide the information that will help you achieve your research goals. This sampling technique is more common in qualitative research.

This study has 71 participants in total. There are 50 homeowners, 11 homeowners' association officers, and ten experts. Only 50 homeowners are chosen due to data privacy. The researchers select the experts because they are knowledgeable regarding system development. The participants are preferred due to the availability of resources and time of the researchers.

Description of Respondents:

Homeowners - Respondents that own or control any affected property, including the Viva Homes, see their expenses.

HOA - The Home Owners Association will send information about the appointment and a cost or a budget to homeowners, tenants, and others.

Research Instrument:

In this study, the researcher will be using a questionnaire. The questionnaire is a list of questions that have been precisely prepared to be answered by a group of individuals and is intended to gather data and facts. It consists of a consent form and a data privacy act form to ensure they are willing to participate in this particular experiment. The first part of the questionnaire is about the respondents' personal information and demographic profile.

The second part of the questionnaire is the evaluation. After using it, the responders must rate the system's capabilities by marking the column corresponding to their assessment.

To indicate the respondent's level of agreement with the statement, the researchers used the Multiple-Choice Grid Method in their survey questionnaire. One (1) expert validated the survey instrument. (See. Appendices)

Data Gathering Procedures:

The researchers obtained secondary sources from books, articles, and journals related to homeowners, homeowners' associations (HOA), expense management, association fees, and expense management systems. The primary sources are obtained through survey questionnaires and interviews. The gathered data included the respondents' demographic profile, length of residency, and age. After establishing the validity and reliability of how to collect data, formulating questions appropriate for the study, and making all necessary modifications to the chosen respondent, The researchers performed an interview and survey questionnaire at Viva Homes State Subdivision located at Salawag, City of Dasmariñas, Province of Cavite. An interview guide with open-ended questions was created to collect data for 40-50 homeowners who have lived in Viva Homes for five to ten years. No questionnaire was distributed without the participant's permission, reassuring them that the information gathered was only for research purposes.

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Statistical Treatment of Data:

System Requirements:

To be used efficiently, all computer software needs certain hardware components or other software resources to present on a computer. The following are the specific requirements needed by a system

Hardware

- Intel Core i5-6500 3.2 GHz Quad-Core Processor
- Use memory RAM 4gb
- Mouse
- Keyboard
- Monitor
- Epson TM-T88VI Thermal Printer
- Back-up Lenovo Portable Hard Driver

Software Requirement

- Windows 10 ultimate/Professional
- Visual Studio
- PHP, MYSQL ,APACHE
- MYSQL, Database and MYSQL utilities

Peopleware

- I.T Specialists/Database Administrators

Network

- Broadband Router
- Broadband Internet

Dataware:

The homeowners information will be saved in the MySQL database, which will be used to automate the system.

CHAPTER IV

Results and Discussion

Requirements Documentation

- Data Flow

DATA FLOW DIAGRAM FOR VIVA HOMES ESTATE SUBDIVISION

EXPENSE MANAGEMENT SYSTEM

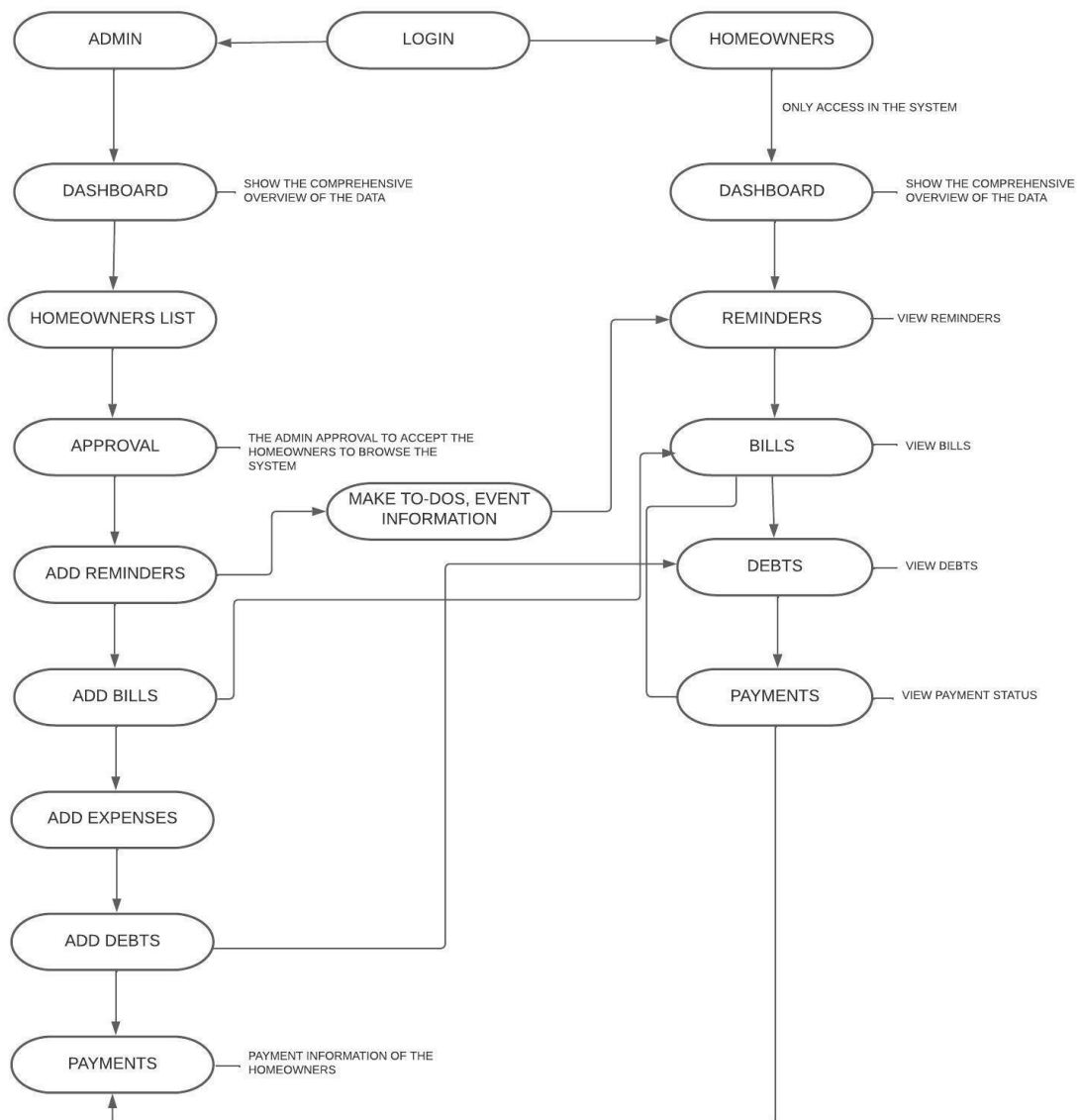


Figure 2. Data flow Diagram

The data flow from source document through data entry to processing to final reporting. Data changes format and sequence (inside a file) as it flows from program to program. A data flow diagram (DFD) depicts the information flow for any process or system. It shows data inputs, outputs, storage sites, and the pathways between each destination using predetermined symbols such as rectangles, circles, arrows, and brief text labels.

- **System Flowchart**

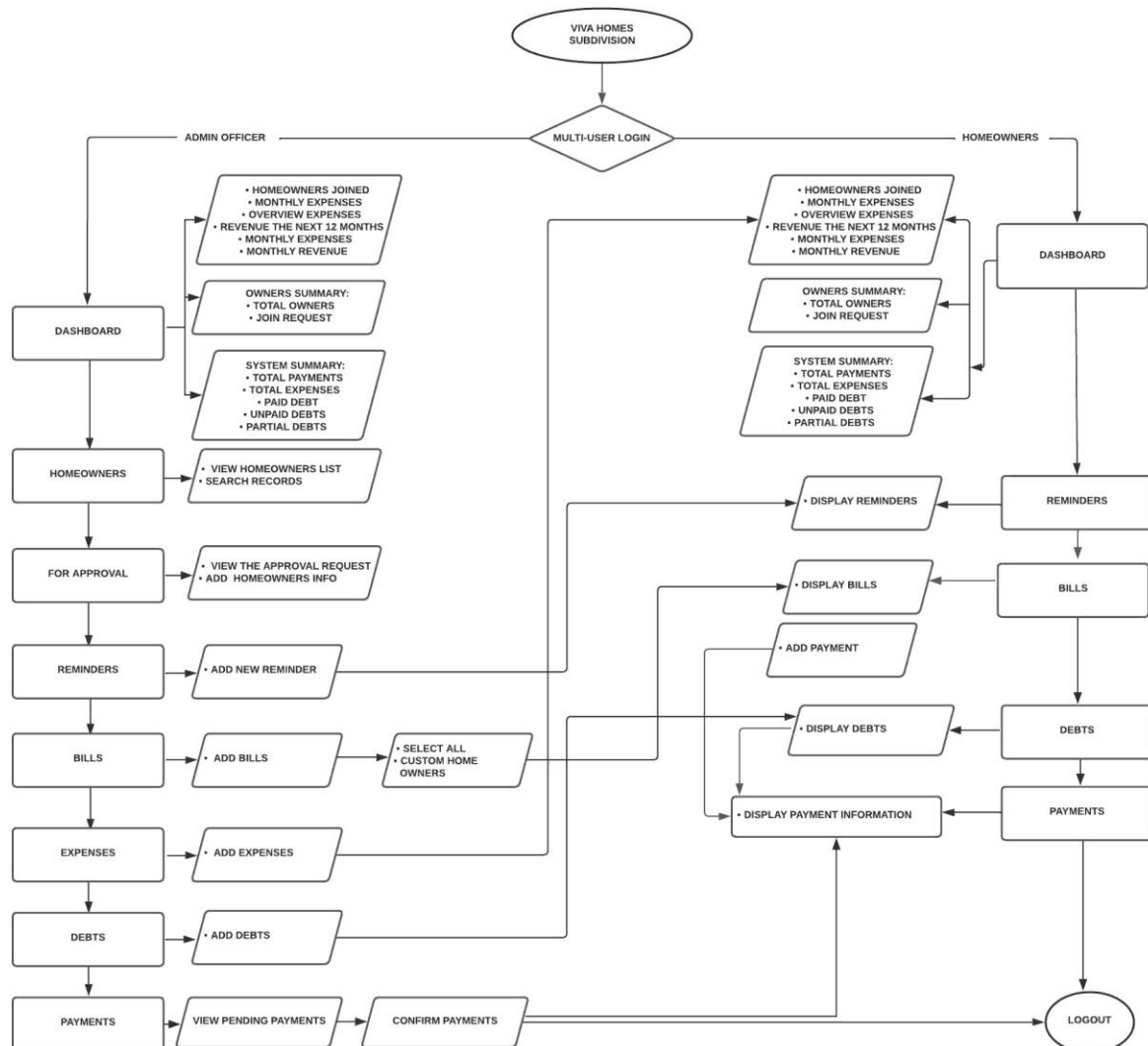


Figure 3. System Flowchart

System flowcharts are a diagram that depicts data flow and how decisions impact the events around it. Like other types of flowcharts, system flowcharts are made up of start/end terminals, processes, and choices linked by arrows that depict the flow and how data travels through it.

- **Use Case Diagram**

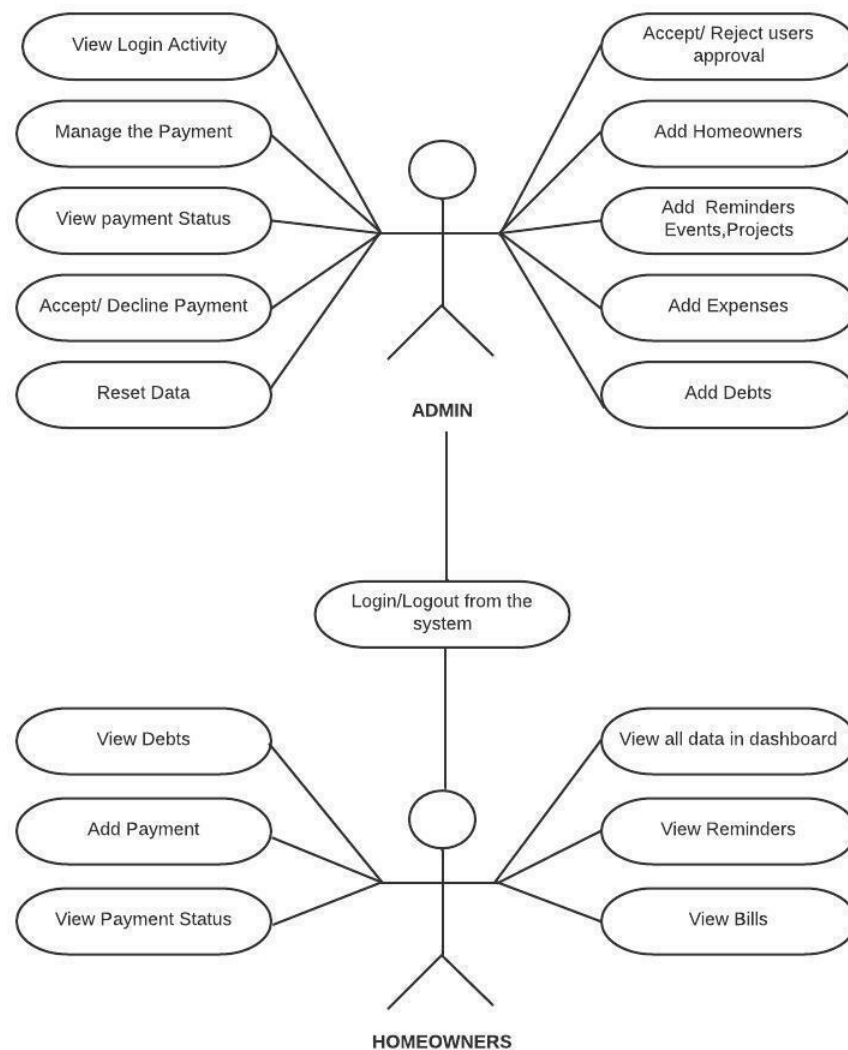


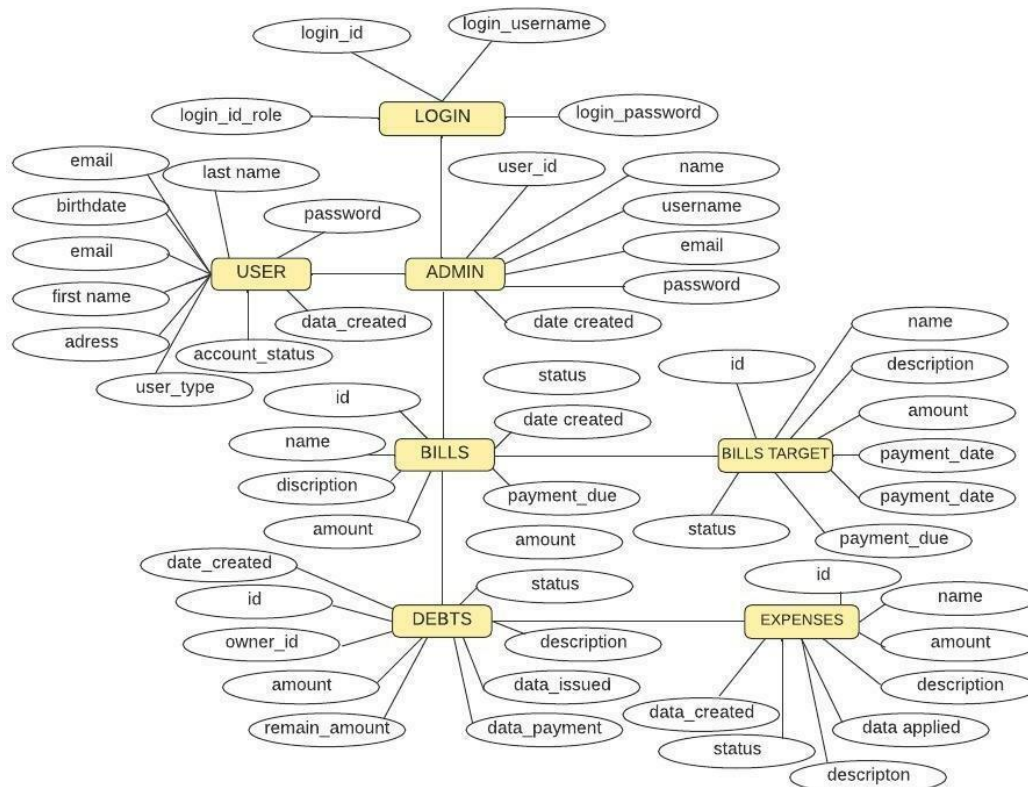
Figure 4. Use Case Diagram

A use case diagram is a method of summarizing information about a system and its users. It is often depicted as a graphical representation of interactions between various

system parts. Use case diagrams define the events in a system and how they flow, but they do not describe how those events are implemented.

Design of Software or System

- Entity Relationship Diagram



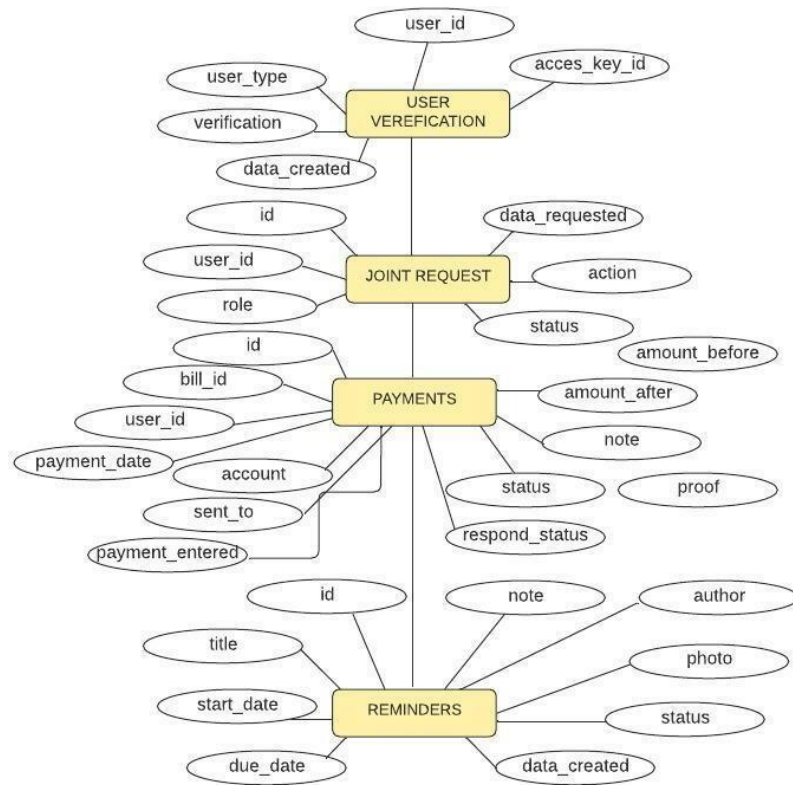


Figure 5. Entity Relationship Diagram

An entity relationship diagram, or entity-relationship model, is a graphical depiction of the relationships between people, things, locations, concepts, or events in an information technology (IT) system.

- **Data Dictionary**

TABLE: user

COLUMN	TYPE	COMMENT
user_id	Integer (Auto Increment)	User ID
firstname	Varchar (100)	User Firstname
lastname	Varchar (100)	User Lastname
email	Varchar (100)	User Email
address	Text	User Address
password	Varchar (255)	User Password
birthdate	Date	User Birthdate
user_type	Integer (11)	User Type Either Home Owner or Admin, 1 if Homeowner 2 if Admin
account_status	Integer (11)	Account Status Either Pending, Confirmed or Declined

Table 1. User

TABLE: admin

COLUMN	TYPE	COMMENT
user_id	Integer (11, Auto Increment)	User ID
name	Varchar (150)	User Firstname
username	Varchar(150)	Admin Username
email	Varchar (150)	Admin Email
password	Varchar (150)	Admin Master Password
date_created	Timestamp (Current Timestamp)	Timestamp of entry
	Timestamp (Current Timestamp)	

Table 2. Admin

TABLE: bills

Column	Type	Comment
id	Integer (11, Auto Increment)	Bill ID
name	Varchar (150)	Bill Name
description	Varchar (255)	Bill Descriptions, Comments
amount	Double	Bill Total Amount
payment_date	DateTime	Bill Supposed To Pay
payment_due	DateTime	Bill Limit Date To Pay
status	Integer (11)	Bill Status, 1 = UnPaid, 3=Paid, 2=Partial
date_created	Timestamp (Current Timestamp)	Timestamp of entry

Table 3. Bills

TABLE: bills_target

Column	Type	Comment
id	Integer (11, Auto Increment)	Bill Target ID
bill_id	Varchar (150)	Reference to a specific Bill
owner_id	Integer (11)	HomeOwner ID
remain_before	Float	The last balance of Homeowner
remain_amount	Float	The Balance to Pay
penalty	Float	Penalty Due to Late payment
status	Integer (11)	Bill Status, 1 = UnPaid, 3=Paid, 2=Partial
assign_date	Timestamp	Timestamp of entry

Table 4. bills_target**TABLE: debts**

Column	Type	Comment
id	Integer (11, Auto Increment)	Bill Target ID
owner_id	Integer (11)	HomeOwner ID
amount	flaot	The Total Debt Amount
remain_amount	float	Debt Balance
status	Integer (11)	Bill Status, 1 = UnPaid, 3=Paid, 2=Partial
description	Text	Description about the Debt Proccess
date_issued	DateTime	Date and Time of Debt
date_payment	DateTime	Date and Time where homeowners successfully pay
date_created	Timestamp	Timestamp of entry

Table 5. debts**TABLE: expenses**

Column	Type	Comment
id	Integer (11, Auto Increment)	Bill Target ID
name	Varchar (255)	Expense name
description	Text	Description or note about the expenses
date_applied	DateTime	Date and Time of expense
status	Integer (11)	Status of Expense
date_created	Timestamp	Timestamp of entry

Table 6. expenses

TABLE: homeowners

Column	Type	Comment
id	Integer (11, Auto Increment)	Bill Target ID
name	Varchar (255)	Name of target home owner
address	Text	Address of home owner
residency	Text	How long does home owner lived
date_created	Timestamp	Timestamp of entry

Table 7. Homeowners**TABLE: join_request**

Column	Type	Comment
id	Integer (11, Auto Increment)	Bill Target ID
user_id	Integer (11)	HomeOwner ID
role	Integer (11)	Homeowner type
action	Integer (11)	The Action that homeowner does, 1 = Login, 2 = Register
status	Integer (11)	Status of Request
date_requested	Timestamp	Timestamp of entry

Table 8. Join_request**TABLE: payments**

Column	Type	Comment
id	Integer (11, Auto Increment)	Bill Target ID
bill_id	Integer (11)	Specific ID of Bill Target
user_id	Integer (11)	HomeOwner ID
account	Varchar (150)	Gcash Account for payment
sent_to	Varchar (150)	Witnesses of Event
amount	Float	Total Amount of Payment
amount_before	Float	Amount balance before paying
amount_after	Float	Amount balance after paying
note	Text	Description of payments, notes...
proof	Varchar (255)	Image, Proof of Payment
status	Integer (11)	Payment Status
respond_status	Integer (11)	Is payment accepted or declined
payment_date	DateTime	Specific date of payment
payment_entered	Timestamp	Timestamp of entry

Table 9. Payments

TABLE: reminders

Column	Type	Comment
id	Integer (11, Auto Increment)	Bill Target ID
title	Varchar (255)	Reminder Title, or Subject
start_date	DateTime	Datetime of event starting
due_date	DateTime	Datetime of event ending
note	Text	Description about Reminder
author	Integer (11)	Who is the one made the event, or reminder
photo	Text	Background photo of reminder
status	Integer (11)	Status of Reminder, waiting, Happening, Done
date_created	Timestamp	Timestamp of entry

Table 10. Reminders**TABLE: user_password_verifications**

Column	Type	Comment
access_key_id	Integer (11, Auto Increment)	Bill Target ID
user_id	Integer (11)	HomeOwner ID
user_type	Integer (11)	User Type Either Home Owner or Admin, 1 if Homeowner 2 if Admin
verification	Integer (11)	Verification Code sent by email
date_created	Timestamp	Timestamp of entry

Table 11. User_password_verification

A Data Dictionary collects names, definitions, and properties for data components utilized or contained in a database, information system, or research project. It defines the meanings and goals of data items in the context of a project and gives direction on interpretation, acceptable meanings, and representation. Metadata about data items is also provided via a Data Dictionary. A Data Dictionary's metadata may help define the scope and properties of data items and the rules for their usage and application.

Development and Testing

USER ACCEPTANCE TESTING

TEST NO.	ACCEPTANCE REQUIREMENTS	CRITICAL NO/YES	TEST RESULT ACCEPT/REJECT	DEFECT/COMMENTS
DASHBOARD				
1	LOG IN / LOG OUT	No	Accept	Login and logout the system sucessfully
2	MONTHLY EXPENSES	No	Accept	
3	OVERVIEW EXPENSES	No	Accept	
4	REVENUE THE NEXT 12 MONTHS	No	Accept	
5	MONTHLY EXPENSES	No	Accept	
6	MONTHLY REVENUE	No	Accept	
REMINDERS				
7	VIEW REMINDERS	No	Accept	Display and view certain tasks, projects, events
BILLS				
8	VIEW BILLS DESCRIPTION	No	Accept	Invoice recieved from officer
9	PAYMENT DATE	No	Accept	Scheduled to be paid
10	PAYMENT DUE	No	Accept	Last day of billing cycle
PAYMENT				
11	ADD PAYMENT	No	Accept	Enter amount
12	MONTHLY REVENUE	No	Accept	Send screenshot of reference id
13	VIEW STATUS	No	Accept	Monitor and verify payment status

Table 12. User Acceptance Testing

Implementation Plan

A. Introduction

A.1 purpose

An implementation plan aims to identify specific activities or actions that must be completed so that researchers can give comprehensive solutions to meet the project effectively. It acts as a blueprint for how the project will be carried out.

A.2 System Overview

The overview of the system, which describes the project implementation process, explains how the information system will be deployed, installed, and transformed into an operating system. The researcher will set up and prepare the necessary procedures to complete the study within a specific time frame. The researcher will subsequently give the interview questions to the project recipient to finish the examination. The researcher's role in the project will be to discuss the main problems the project's beneficiary is encountering and create a complete solution. The researcher will be provided with specific tools and equipment, including the device they will use to make the project and the programming language they will use, such as PHP, to create the project.

B. Implementation Plan

B.1 Implementation Activities

By ensuring compliance with the implementation plan: The beneficiary's setup and preparations for the multi-platform system should satisfy or fulfill the standards for the tools and equipment mentioned in the scope and delimitation of chapter 1 and the goals. The project aims to create a secure web-based platform to automate record management, reminder adding, online payment processing, invoice preparation, and SMS alerting for payment reminders. Beneficiaries may also conveniently track and pay their invoices, debts, and costs.

C. Technological Infrastructure

The project's technology infrastructure provides the tools and resources required to finish it. Understanding technological infrastructure is a requirement for understanding this chapter. The hardware, software, and other resources necessary to develop a project are established and specified. To create more value for the company, every IT executive must first understand who their client is and how to best serve them with the infrastructure, applications, and tools they provide. The first party to be considered is the external, or "real," client. What are the needs and desires of these people? The second customer is the company itself and how they employ technology to perform its functions. These people naturally desire "larger" and "faster" technology, but what do they need strategically? Understanding the company's objectives is an excellent place to start when developing a strategy and future state design to ensure that you are facilitating any priorities that leadership has already stated. Consider the experience that customers will have after identifying their demands. Consider a range of end-user behaviors, such as mobile teams and remote workers. Can these users use SaaS-hosted products, or do they need VPN access? Does the amount or type of data they access daily necessitate further adjustments? Do they regard contemporary technologies like video conferencing as valuable? How do users

interact with your systems, and what portions of the procedure have you streamlined?

Knowing the solutions to these questions will be very helpful for your technological infrastructure design. As you collect information from the client and the business about their requirements for the design and development, take post-implementation into account. The worth and success of whatever IT supports or maintains should be assessed. To establish accountability, IT leaders must work with the business to determine the performance benchmarks for tools and systems. The company's and the customers' interests should be considered while defining these Key performance metrics. The actual design of the infrastructure can begin once the relevant inputs have been gathered. System architects are the best individuals to manage this iterative process because they are familiar with the objectives, requirements, and market-ready solutions. Choosing the appropriate technologies includes "generating value" in two ways for the CIO. Start by selecting tools that can be rapidly added and are widely used in the industry to ensure that your design is future-proof. Second, refrain from producing anything whose costs outweigh its benefits. This system requires comparing the total cost of ownership against the organization's intrinsic value.

Implementation Result

Table 13

Assessment of respondents in Functional Suitability

Indicators	User		Expert		Composite	
	WM	VI	WM	VI	WM	VI
The system addresses all of the tasks and user objectives that were provided.	3.56	SA	3.70	SA	3.58	SA
The system produces accurate results with the required accuracy.	3.53	SA	3.50	SA	3.53	SA
The system facilitates the accomplishment of specified tasks and objectives.	3.60	SA	3.80	SA	3.63	SA
Overall Mean	3.56	SA	3.67	SA	3.58	SA

Note: *WM* means *Weighted Mean*, *VI* means *Verbal interpretation*

Point	Range	Verbal Interpretation	Symbol
4	3.50-4.0	Strongly Agree	SA
3	2.50-3.49	Agree	A
2	1.50-2.49	Disagree	D
1	1.00-1.49	Strongly Disagree	SD

Table 13 presents the assessment of respondents in Functional Suitability. It was revealed that the respondents strongly agreed that the system facilitates the accomplishment of specified tasks and objectives (WM=3.63). Furthermore, the respondents strongly agreed that the system addresses all of the tasks and user objectives that were provided (WM=3.58). Likewise, the respondents strongly agreed that the system produces accurate results with the required accuracy (WM=3.53).

Overall, the respondents strongly agreed on the functional suitability (WM=3.58) of the system.

Table 14
Assessment of respondents in Performance Efficiency

Indicators	User		Expert		Composite	
	WM	VI	WM	VI	WM	VI
ie system's response and processing times and through put rates when performing its functions meet requirements.	3.50	SA	3.50	SA	3.50	SA
he system's amounts and types of resources used when performing its functions, meet requirements.	3.70	SA	3.70	SA	3.54	SA
ie system's maximum limits of parameter meet requirements.	3.70	SA	3.70	SA	3.50	SA
Overall Mean	3.70	SA	3.63	SA	3.52	SA

Table 14 presents the assessment of respondents in Performance Efficiency. It was revealed that the respondents strongly agreed that the system amounts and types of resources used when performing its functions, meet requirements (WM=3.54).

Furthermore, the respondents strongly agreed that the system response and processing times and through put rates when performing its functions meet requirements (WM=3.50). Likewise, the respondents strongly agreed that the system maximum limits of parameter meet requirements (WM=3.50).

Overall, the respondents strongly agreed on the functional suitability (WM=3.52) of the system.

Table 15.**Assessment of respondents in Compatibility.**

Indicators	User		Expert		Composite	
	WM	VI	WM	VI	WM	VI
ie system can perform its required functions efficiently while sharing a common environment and resources with other products, without detrimental impact on any other product.	3.48	A	3.80	A	3.53	SA
ie system can exchange information and use the information that has been exchanged.	3.48	A	3.60	A	3.50	SA
ie system can perform its required functions efficiently while sharing a common environment and resources with other products, without detrimental impact on any other product.	3.48	A	3.70	A	3.51	SA
Overall Mean	3.51	A	3.51	A	3.51	SA

Table 14 presents the assessment of respondents in Compatibility.

It was revealed that the respondents strongly agreed that the system can perform its required functions efficiently while sharing a common environment and resources with other products, without detrimental impact on any other product (WM=3.53).

Likewise, the respondents strongly agreed that the system can perform its required functions efficiently while sharing a common environment and resources with other products, without detrimental impact on any other product (WM=3.51). Furthermore, the respondents strongly agreed that the system can exchange information and use the information that has been exchanged (WM=3.50).

Overall, the respondents strongly agreed on Compatibility (WM=3.51) of the system.

Table 4.**Assessment of respondents in Usability**

Indicators	User		Expert		Composite	
	WM	VI	WM	VI	WM	VI
ie system allows users to recognize if it is appropriate for their needs.	2.95	A	3.60	A	3.04	A
ie system can be used by specified users to achieve specified goals of learning to use the application with effectiveness, efficiency, freedom from risk and satisfaction in a specified context of use.	3.00	A	3.80	A	3.11	A
ie system has attributes that make it easy to operate and control.	2.97	A	3.70	SA	3.07	A
he system protects users against making errors.	2.89	A	3.50	SA	2.97	A
ie system's user interface enables pleasing and satisfying interaction for the user.	2.97	A	3.70	SA	3.07	A
ie system can be used by people with the widest range of characteristics and capabilities to achieve a specified goal in a specified context of use.	2.98	A	3.60	SA	3.07	A
Overall Mean	2.96	A	3.65	SAA	3.06	A

Table 4 presents the assessment of respondents in Functional Suitability. It was revealed that the respondents agreed that the system can be used by specified users to achieve specified goals of learning to use the application with effectiveness, efficiency, freedom from risk and satisfaction in a specified context of use that were provided (WM=3.11). Furthermore, the respondents strongly agreed that the system can be used by people with the widest range of characteristics and capabilities to achieve a

specified goal in a specified context of use (WM=3.07). Still, the respondents agreed that the user interface enables pleasing and satisfying interaction for the user (WM=3.07). Moreover, the respondents agreed that the system has attributes that make it easy to operate and control. (WM=3.07). Additionally, the respondents agreed that the system protects users against making errors (WM=2.97). Likewise the respondents agreed that the system allows users to recognize if it is appropriate for their needs (WM=3.04)

Overall, the respondents agreed on the Usability (WM=3.06) of the system.

Table 5.**Assessment of respondents in Reliability**

Indicators	User		Expert		Composite	
	WM	VI	WM	VI	WM	VI
ie system meets the needs for reliability under normal operation.	3.44	A	3.80	A	3.49	A
he system is operational and accessible when required for use.	3.42	A	3.60	A	3.44	A
ie system operates as intended despite the presence of hardware or software faults.	3.39	A	3.60	A	3.42	A
he system can recover the data directly affected and re-establish the desired state.	3.37	A	3.50	A	3.39	A
Overall Mean	3.40	A	3.63	A	3.43	A

Table 5 presents the assessment of respondents in Reliability. It was revealed that the respondents agreed that the system meets the needs for reliability under normal operation (WM=3.49). Still, the respondents agreed that the system is operational and accessible when required for use (WM=3.44). Besides, the respondent operates as intended despite the presence of hardware or software faults (WM=3.42). Moreover the respondents agreed that the system can recover the data directly affected and re-establish the desired state (WM=3.39).

Overall, the respondents agreed on the Reliability (WM=3.43) of the system.

Table 6.
Assessment of respondents in Security

Indicators	User		Expert		Composite	
	WM	VI	WM	VI	WM	VI
ie system ensures that data are accessible only to those authorized to have access.	3.35	A	3.70	SA	3.40	A
ie system prevents unauthorized access to, or modification of, computer programs or data.	3.39	A	3.70	SA	3.43	A
ie system can be proven to have taken place, so that the events or actions cannot be repudiated later.	3.39	A	3.80	SA	3.44	A
ie system can be traced uniquely to the entity.	3.47	A	3.50	SA	3.47	A
ie system can be proved to be the one claimed.	3.44	A	3.70	SA	3.47	A
Overall Mean	3.41	A	3.68	SA	3.44	A

Table 6 presents the assessment of respondents in Security. It was revealed that the respondents agreed that the system can be proved to be the one claimed (WM=3.47). Still, the respondents agreed that the system can be traced uniquely to the entity (WM=3.47). Moreover the respondents agreed that the system can be proven to have taken place, so that the events or actions cannot be repudiated later (WM=3.44). Besides, the respondent agreed that the system prevents unauthorized access to, or modification of, computer (WM=3.43). Likewise, the respondents agreed that the system ensures that data are accessible only to those authorized to have access (WM=3.40).

Overall, the respondents agreed on the Security (WM=3.44) of the system.

Chapter 5

Conclusion and Recommendation

Summary of Findings

Conclusion

One of the problems is that false receipts and exaggerated reimbursement claims replace traditional expense management. Officers of Viva Homes track and report expenses manually, enter data, and rely heavily on paper records and human assistance. These procedures take time, could be more effective, and cost the company money. The homeowners must also visit the HOA office to pay their monthly dues. Our beneficiary, Viva Homes Estate Subdivision, implements a manual management system, which means that almost all record-keeping is done by hand without the assistance of a computer or other automated methods. Transactions in this system are recorded in journals, from which data is manually collected to create a set of financial statements.

Recommendation

This part of the study will discuss the benefit of the findings to its target groups. Based on the conclusion of this research study, the researchers highly recommend these people listed below.

As the primary process of online expense reports, an expense management system must be implemented that allows homeowners to file and manage their spending entries from wherever they are,

whenever they want. An automated system that helps to increase compliance, reduce delays and errors, and improve expense visibility. Maintenance is performed monthly. The administrator should receive computer and software training.

For homeowners, to facilitate the payment of their monthly dues

For homeowners, they can see their paid and future bills.

For homeowners, they can observe how their money is spent.

For the Homeowners Association, the collection of monthly dues will be easier and more systematic.

For the homeowners association, to facilitate data collection and record keeping.

For Future IT students, can guide them on the appropriate programming language to utilize.

For future researchers, more recent and updated versions of the references

For future researchers, population wise plan ahead of time the total number of participants and be attentive of the respondent's demographic profile as it may affect how they answer questionnaires and interviews.

For future researchers, this study can provide useful information. It may be used as a reliable source for their study

with the related topic. This can serve as a conceptual or theoretical framework for other researchers.

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Survey Questionnaires

PERSONAL INFORMATION

Name:

Age:

Work:

Type of Respondents:

EVALUATION

Please log on to vivahomes.online. After operating the capabilities of the system, evaluate the system features of the proposed system. Please rate the level by putting a mark on the column that corresponds to your assessment. Use the scale below.

Numeric Value Equivalent Rating

4 - Strongly Agree

3 - Agree

2 - Disagree

1 - Strongly Disagree.

How does the developed system comply with the ISO 25010 software quality standards in terms of the following factors:

A. FUNCTIONABILITY

	4 Strongly Agree	3 Agree	2 Disagree	1 Strongly Disagree
1. Functional Completeness. The system addresses all of the tasks and user objectives that were provided.				
2. Functional Correctness. The system produces accurate results with the required accuracy.				
3. Functional Appropriateness. The system facilitates the accomplishment of specified tasks and objectives.				

B. PERFORMANCE EFFICIENCY

	4 Strongly Agree	3 Agree	2 Disagree	1 Strongly Disagree

1. Time Behaviors'. The system's response and processing times and through put rates when performing its functions meet requirements.				
2. Resource Utilization. The system's amounts and types of resources used when performing its functions, meet requirements.				
3. Capacity. The system's maximum limits of parameter meet requirements.				

C. COMPATIBILITY

	4 Strongly Agree	3 Agree	2 Disagree	1 Strongly Disagree
1. Co-existence. The system can perform its required functions efficiently while sharing a common environment and resources with other products, without detrimental impact on any other product.				
2. Interoperability. The system can exchange information and use the information that has been exchanged.				

D. USABILITY

	4 Strongly Agree	3 Agree	2 Disagree	1 Strongly Disagree
1. Appropriateness Recognizability. The system allows users to recognize if it is				

appropriate for their needs.				
2. Learnability. The system can be used by specified users to achieve specified goals of learning to use the application with effectiveness, efficiency, freedom from risk and satisfaction in a specified context of use.				
3. Operability. The system has attributes that make it easy to operate and control.				
4. User Error Protection. The system protects users against making errors.				
5. User Interaction Aesthetics. The system's user interface enables pleasing and satisfying interaction for the user.				
6. Accessibility. The system can be used by people with the widest range of characteristics and capabilities to achieve a specified goal in a specified context of use.				

E. RELIABILITY

	4 Strongly Agree	3 Agree	2 Disagree	1 Strongly Disagree
1. Maturity. The system meets the needs for reliability under normal operation.				
2. Availability. The system is operational				

and accessible when required for use.				
3. Fault Tolerance. The system operates as intended despite the presence of hardware or software faults.				
4. Recoverability. The system can recover the data directly affected and re-establish the desired state.				

F. SECURITY

	4 Strongly Agree	3 Agree	2 Disagree	1 Strongly Disagree
1. Confidentiality. The system ensures that data are accessible only to those authorized to have access.				
2. Integrity. The system prevents unauthorized access to, or modification of, computer programs or data.				
3. Non-repudiation. The system can be proven to have taken place, so that the events or actions cannot be repudiated later.				
4. Accountability. The system can be traced uniquely to the entity.				
5. Authenticity. The system can be proved to be the one claimed.				

Survey Questionnaires

PERSONAL INFORMATION

Name:

Address:

1. Type of Respondents
 - ☐ Homeowner
 - ☐ Officer
2. What is your gender?
 - ☐ Male
 - ☐ Female
3. How old are you?
 - ☐ 18 – 24
 - ☐ 25 - 34
 - ☐ 35 – 44
 - ☐ 45 – 54
 - ☐ 55 – 64
 - ☐ 65 – 74
 - ☐ 75 or older
4. Do you have any children?
 - ☐ Yes, all 18 over
 - ☐ Yes, one or more under 18
 - ☐ None
5. How long have you lived in this subdivision?
 - ☐ Less than 1 year
 - ☐ 1 – 2 years
 - ☐ 2 – 5 years
 - ☐ 5 – 10 years
 - ☐ More than 10 years

EVALUATION

Please log on to vivahomes.online. After operating the capabilities of the system, evaluate the system features of the proposed system. Please rate the level by putting a mark on the column that corresponds to your assessment. Use the scale below.

Numeric Value Equivalent Rating

4 - Strongly Agree

3 - Agree

2 - Disagree

1 - Strongly Disagree.

How does the developed system comply with the ISO 25010 software quality standards in terms of the following factors:

G. FUNCTIONABILITY

	4 Strongly Agree	3 Agree	2 Disagree	1 Strongly Disagree
1. Functional Completeness. The system addresses all of the tasks and user objectives that were provided.				
2. Functional Correctness. The system produces accurate results with the required accuracy.				
3. Functional Appropriateness. The system facilitates the accomplishment of specified tasks and objectives.				

H. PERFORMANCE EFFICIENCY

	4 Strongly Agree	3 Agree	2 Disagree	1 Strongly Disagree
1. Time Behaviors'. The system's response and processing times and through put rates when performing its functions meet requirements.				
2. Resource Utilization. The system's amounts and types of resources used when performing its functions, meet requirements.				
3. Capacity. The system's maximum limits of parameter meet requirements.				

I. COMPATIBILITY

	4 Strongly Agree	3 Agree	2 Disagree	1 Strongly Disagree
1. <i>Co-existence</i> . The system can perform its required functions efficiently while sharing a common environment and resources with other products, without detrimental impact on any other product.				
2. <i>Interoperability</i> . The system can exchange information and use the information that has been exchanged.				

J. USABILITY

	4 Strongly Agree	3 Agree	2 Disagree	1 Strongly Disagree
1. <i>Appropriateness Recognizability</i> . The system allows users to recognize if it is appropriate for their needs.				
2. <i>Learnability</i> . The system can be used by specified users to achieve specified goals of learning to use the application with effectiveness, efficiency, freedom from risk and satisfaction in a specified context of use.				
3. <i>Operability</i> . The system has attributes that make it easy to operate and control.				
4. <i>User Error Protection</i> . The				

system protects users against making errors.				
5. User Interaction Aesthetics. The system's user interface enables pleasing and satisfying interaction for the user.				
6. Accessibility. The system can be used by people with the widest range of characteristics and capabilities to achieve a specified goal in a specified context of use.				

K. RELIABILITY

	4 Strongly Agree	3 Agree	2 Disagree	1 Strongly Disagree
1. Maturity. The system meets the needs for reliability under normal operation.				
2. Availability. The system is operational and accessible when required for use.				
3. Fault Tolerance. The system operates as intended despite the presence of hardware or software faults.				
4. Recoverability. The system can recover the data directly affected and re-establish the desired state.				

L. SECURITY

	4 Strongly Agree	3 Agree	2 Disagree	1 Strongly Disagree
1. Confidentiality. The system ensures that data are accessible only to those authorized to have access.				
2. Integrity. The system prevents unauthorized access to, or modification of, computer programs or data.				
3. Non-repudiation. The system can be proven to have taken place, so that the events or actions cannot be repudiated later.				
4. Accountability. The system can be traced uniquely to the entity.				
5. Authenticity. The system can be proved to be the one claimed.				

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