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Capstone Project Assignment 2

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# **INTRODUCTION**

The Solution Design Document gives a complete description of the proposed MortgageBotX Project solutions. This opening part tries to make the paper easily accessible and intelligible to all project stakeholders. Its goal is to provide readers with a clear and short preview of the document's content, allowing them to rapidly assess its relevance and determine whether it corresponds with their objectives and information needs.

## **Document Objective:**

This Solution Design Document serves as the MortgageBotX Project's key blueprint, describing numerous solution choices to satisfy the project's needs. It promotes informed decision-making by allowing stakeholders to select the best option that meets project goals and limits.

## **Intended Audience:**

The document is intended for a wide range of audiences, including project sponsors, developers, business analysts, quality assurance teams, and other project stakeholders. It is meant to give insights on the design, functionality, and possible influence on the project's success of the suggested solutions.

## **Document Structure:**

The Solution Design Document is organized to offer detailed information on three key solution possibilities. Among these alternatives are:

**AI Chatbot Solution-** This solution presents an AI-powered chatbot developed to properly answer client requests around the clock. It provides a high-level design, a low-level design, an impact analysis, risks and mitigation measures, and a description of out-of-scope issues.

**Social Media Chatbot with Manual Monitoring-** This system takes a unique approach by using AI for first talks and then handing over to Mortgage Specialists during office hours. A high-level design, a low-level design, impact analysis, risks and mitigation, and out-of-scope considerations are all part of it.

**Do Nothing Method-** As a baseline approach, this option comprises preserving RBC Mortgage Services' current status quo without adding new technologies. It shows a high-level design, a low-level design, and a mid-level design. It includes a high-level design, a low-level design, impact analysis, hazards, and mitigation measures, as well as a discussion of parts that are not included.

## **Benefits of the Document:**

The Solution Design Document has various advantages, including:

* Providing a comprehensive perspective of the recommended solutions, making it easy to choose the best method.
* Presenting thorough designs and impact evaluations to project stakeholders to facilitate straightforward communication.
* Identifying possible risks and mitigation techniques to solve project difficulties ahead of time.
* Setting clear expectations by outlining what is and is not within the scope of each solution.
* Assisting project teams in comprehending the design, usefulness, and viability of each option.

# **SUMMARY OF EXISTING FUNCTIONALITY**

This part of the Solution Design Document seeks to offer a complete description of the present condition of RBC Mortgage Services. It serves as the foundation upon which new requirements are constructed and assessed. Understanding the existing functionality allows project stakeholders to better grasp the context and background against which potential solutions are presented. This summary also permits the linking of new needs to old ones via external references, providing a smooth transition to the suggested solutions.

Existing Functionality's Key Elements:

**Customer Engagement:** Customers who use the existing RBC Mortgage Services navigate the RBC website, especially the Mortgage tab, to get answers to their mortgage-related questions. Customers have the choice of selecting "Want to buy a new home" or "Want to buy a new home and sell their current home."

**User Authentication:** Depending on if the consumer already an RBC account has, the system will either prompt them to input their login and password or gather personal information such as name, date of birth, email, phone number, and location.

**Mortgage Specialist Assignment:** Based on the client's information, the system assigns a Mortgage Specialist to call the consumer and answer their questions. This guarantees that potential borrowers receive individualized guidance.

**Hold and Follow-Up:** When a customer is unavailable, Mortgage Specialists place questions on hold and follow up with the consumer later.

**Decision Making:** After being contacted, the consumer decides whether to proceed with RBC Mortgage Services, so molding the result of the inquiry.

## **Integrating New Requirements with Existing Functionality:**

The overview of current capabilities sets a baseline of RBC Mortgage Services activities and interactions. This baseline serves as a starting point for assessing new needs and suggested solutions. We can efficiently relate new needs to the existing process by studying how the present system handles consumer questions.

Proposed solutions, for example, the AI Chatbot or the social media Chatbot, can be evaluated based on how successfully they duplicate, augment, or replace the current customer interaction process. The decision to keep the present state or introduce a new solution is based on how well these options correspond with the existing functionality and handle its constraints.

# **REQUIREMENT DETAILS**

This section gives a full analysis of the new MortgageBotX Project requirements. Each demand is followed by comments and discussions to ensure that the suggested features are fully understood. This section connects the identified needs with the offered solutions. By diving into the intricacies of the criteria, it becomes simpler to decide which of them are currently covered by the present system, which need to be omitted or adjusted, and which need to be clarified more.

## **New Requirements for MortgageBotX Project:**

* **AI Chatbot Implementation:** The project's goal is to build an AI Chatbot that can handle consumer questions about mortgage services. The Chatbot should respond in real time and deliver a consistent customer experience.

Comments and Discussion: The development of the AI Chatbot is a critical need, and its performance is critical to the project's success. The technologies chosen, the breadth of their capabilities, and their interface with current systems should all be extensively reviewed and documented.

* **Customer Data Privacy:** It is critical to ensure the security and privacy of customer data. The system must adhere to data security rules and secure sensitive consumer information.

Comments and Discussion: This criterion involves the development of a strong data security strategy as well as a conversation about how consumer data will be handled, kept, and safeguarded. It should also cover compliance with applicable legislation.

* **24/7 Availability:** The AI Chatbot should be always available to clients, allowing them to seek information and support whenever they need it.

Comments and Discussion: Obtaining 24/7 availability necessitates talks regarding system uptime, redundancy, and backup plans for outages or maintenance.

* **AI Learning Capabilities:** The Chatbot should be able to learn and improve its replies in response to client interactions.

Comments and Discussion: This requirement raises concerns regarding the learning algorithms, data sources, and training methods of the Chatbot. Discussions regarding user input and flexibility are also included.

* **Integration with Mortgage Specialists:** When a consumer inquiry requires human assistance, the system should smoothly pass the query to a Mortgage Specialist. This integration should be quick and painless.

Comments and Discussion: The interaction between the AI Chatbot and Mortgage Specialists, including the criteria for transferring questions and the procedure of passing over to human agents, should be explored.

* **Inquiry Handling:** The AI Chatbot should be able to handle a wide range of consumer requests, such as calculating mortgage rates, explaining terms, and offering general counsel.

Comments and Discussion: This criterion should indicate the scope of the Chatbot's questions and the depth of its replies. It might also include a discussion of the utilization of knowledge bases or other external resources.

* **Marketing Integration:** Based on consumer interactions, the Chatbot should aid in promoting RBC's mortgage products. It should provide suggestions and promote related offerings.

Comments and Discussion: Aligning the Chatbot's replies with marketing objectives necessitates talks about pushing items without jeopardizing the user experience.

## **Assessments of Requirements:**

**Requirements met:** The AI Chatbot implementation matches with the project's aims and fulfills various highlighted needs, such as enhanced inquiry handling and 24-hour availability.

**Excluded Requirements:** There are no criteria that are omitted in this phase because all of the above requirements are deemed important to the success of the MortgageBotX Project.

**Requirements Requiring Further Clarification:** Specifics of data protection measures, learning capabilities, integration with Mortgage Specialists, and marketing integration should be reviewed and explained further to ensure a clear understanding of their execution.

# **ASSUMPTIONS AND PREREQUISITES**

This section of the Solution Design Document plays a pivotal role in establishing the foundational elements of the design. By outlining the assumptions and prerequisites, it ensures that all stakeholders have a shared understanding of the project's fundamental requirements. Furthermore, this section serves as an early checkpoint for assessing the validity and acceptability of these assumptions, allowing for timely adjustments or reviews.

## **Assumptions:**

* **Data Privacy Compliance:** It is presumed that the firm already has data privacy procedures in place that are in accordance with statutory standards for protecting consumer data. Any adjustments necessary to fulfill the project's unique requirements will be made.

Assumption: The assumption is regarded reasonable, but a full examination of existing data privacy measures will be done to guarantee compliance with the standards of the new system.

* **Hardware Infrastructure:** It is believed that the existing hardware infrastructure will be sufficient to enable the deployment of the AI Chatbot. As needed, any hardware updates or alterations will be integrated into the project plan.

Assumption: The assumption is correct; however, a comprehensive evaluation of the present hardware will be performed to ensure its suitability for the suggested solution.

* **Marketing tools:** The project assumes that marketing tools and content for promoting RBC's mortgage products are easily accessible for integration with the AI Chatbot. Collaboration with the marketing department will ensure that promotional information is seamlessly integrated.

Assumption: This assumption is correct, and coordination with the marketing team is planned to ease content integration.

* **Customer Feedback process:** It is assumed that a process for collecting and evaluating consumer feedback already exists. On this basis, the project will develop to improve the AI Chatbot's learning capabilities.

Assumption: The assumption is correct, however the existing feedback systems will be reviewed to verify they are compatible with the Chatbot's criteria

## **Prerequisites:**

* **Access to Development Team:** Access to the essential software development resources for establishing and maintaining the AI Chatbot is required.

Assessment: This criterion has been found acceptable, and the development team is accessible and eager to contribute to the project.

* **Data Storage Solutions:** Access to adequate data storage solutions to store customer interactions, feedback data, and system logs is required.

Assessment: The organization's present data storage options are deemed adequate, and no more action is required.

* **Regulatory Compliance Team:** The project anticipates that a regulatory compliance team will be available to examine the system's data privacy and security safeguards.

Assessment: This criterion has been satisfied, and the compliance team is ready to ensure conformity to relevant regulations.

* **Marketing Collaboration:** Collaboration with the marketing team is required to achieve smooth integration of promotional materials with the AI Chatbot.

Assessment: The condition is deemed acceptable, and the marketing team is working on the project.

# **POSSIBLE SOULTION 1 : AI CHATBOT (MortgageBotX Project)**

## **High- Level Design:**

The MortgageBotX Project's AI Chatbot solution is intended to provide a smooth and efficient client experience by giving rapid solutions to mortgage-related issues. The design includes the following main aspects at a high level:

* **AI Chatbot Architecture:** To interpret and reply to client requests, the chatbot employs a modular design that mixes natural language processing (NLP) and machine learning techniques.
* **Customer Interaction:** Customers may engage with the Chatbot via a simple online interface or a dedicated mobile application. The user interface provides usability and accessibility.
* **Database Integration:** To obtain up-to-date information on mortgage products, interest rates, and client data, the Chatbot is linked to the central RBC database.
* **Security Measures:** To safeguard sensitive customer data and maintain the privacy and confidentiality of interactions, robust security mechanisms are included.
* **Communication Channels:** For a complete consumer reach, the Chatbot is built to function on numerous communication channels, including web chat, messaging applications, and phone conversations.

Benefits-

* **Improved consumer Engagement:** The Chatbot responds quickly to consumer inquiries, increasing engagement and satisfaction.
* **Efficient Query Resolution:** Routine inquiry automation speeds up the query resolution process,
* **Data Security:** Strict security procedures ensure that client data stays private.
* **Access via Multiple methods:** Customers may communicate with the Chatbot via a variety of communication methods.
* **Integration with Backend Systems:** The Chatbot communicates with RBC's database to retrieve correct information.

## **Low-Level Design:**

The low-level design goes into the AI Chatbot system's technological characteristics and component-level elements. It consists of the following elements:

* **Design of the Chatbot's Dialog Flow:** The Chatbot's dialog flow is methodically planned, laying out how it processes and responds to user inputs. This involves establishing conversational settings and responding to questions.
* **NLP Algorithms:** The low-level design describes the natural language understanding NLP algorithms, such as intent recognition, entity extraction, and sentiment analysis.
* **User Interface Elements:** Details about the visual design, user interaction aspects, and accessibility features of the online interface and mobile app are provided.
* **Database Structure:** The database structure is intended to store and retrieve customer data effectively, assuring peak performance.
* **Security Implementation:** The security protocols and encryption technologies are included in the low-level design.

Benefits-

* **User-Centric discussions:** The Chatbot's dialog flow guarantees that discussions are relevant and user-centric.
* **Understanding:** Advanced NLP algorithms improve the Chatbot's comprehension of user inputs.
* **Intuitive User Interface:** The design of the user interface encourages a smooth and intuitive consumer experience.
* **Efficient Data Management:** The database schema enables the storing of ordered and efficient data.
* **Strong Security:** Strict security measures safeguard consumer data and interactions.

## **Impact Analysis:**

The Impact Analysis assesses the implications and repercussions of adopting the AI Chatbot solution as part of the MortgageBotX Project. It considers both good and negative consequences for various stakeholders, the organization, and operational procedures.

Positive Effects:

* **Improved Customer Experience:** Customers benefit from quick and precise replies, which leads to higher levels of satisfaction.
* **Operational Efficiency:** Automation of common inquiries decreases the stress on human agents and speeds up query resolution.
* **Cost savings:** By automating regular queries, the firm may better deploy resources.
* **Data Accuracy:** By integrating with the central database, clients are guaranteed to obtain correct and up-to-date information.

Negative Effects:

* **Expenditures of Initial Implementation:** The development and deployment of the Chatbot incurs initial expenditures.
* **Learning Curve:** It may take some time for employees to adjust to the new system and its upkeep.
* **Technical faults:** Any technical faults or downtime may have an impact on the customer experience.
* **Data Privacy Concerns:** It is critical to ensure data privacy and regulatory compliance.

Benefits:

* **Customer Satisfaction Increased:** Immediate inquiry answers and user-friendly design lead to happy consumers.
* **Streamlining Operations:** Reduced burden for human agents and effective resource allocation.
* **Cost-Efficiency:** Automation aids in the management of operating expenses.
* **Data Reliability:** Data correctness is ensured by integration with the central database.

## **Risks and Mitigation:**

This section analyzes possible hazards related with the AI Chatbot solution's installation and outlines mitigating options.

Risks:

* **Technical challenges:** The Chatbot may encounter technical challenges, causing service outages.
* **Data Breach and Privacy problems:** Security flaws might lead to data breaches and privacy problems.
* **Customer Acceptance:** Customers may initially be hesitant to use the Chatbot, lowering adoption rates.
* **Regulatory Compliance:** It is vital to ensure that data protection regulations are followed.

Mitigation:

* **Technical Support:** A specialized technical support staff will monitor and respond to technical faults as soon as possible.
* **Strong Security Measures:** Strict security standards will protect consumer data.
* **User Training:** Chatbot adoption will be aided by user training initiatives.
* **Legal Compliance:** Data protection rules compliance is a high priority.

## **Out of Scope:**

This section describes the AI Chatbot implementation's bounds. It specifies what is not included in the project scope, ensuring project objectives are met.

Elements Out of the Scope:

* Integration with services that are not linked to mortgages.
* Beyond data privacy, legal and regulatory compliance

# **POSSIBLE SOULUTION 2: SOCIAL MEDIA CHATBOT WITH MANUAL MONITORING**

## **High- Level Design:**

The Social Media Chatbot's high-level concept comprises a collaborative approach in which early contacts with clients are automated using AI and subsequently Mortgage Specialists take over. Here are some major design elements:

* **Hybrid Chatbot Model:** The Chatbot operates in a hybrid approach, with AI addressing basic requests and human Mortgage Specialists taking more sophisticated issues during office hours.
* **Integration with Social Media sites:** The Chatbot is integrated with several social media sites, allowing consumers to communicate through their chosen methods.
* **Business Hour Availability:** Because the Chatbot is controlled by Mortgage Specialists, it is only available during ordinary office hours.
* **AI Assistance:** Based on client purpose and context, the AI component aids in directing questions to the right Mortgage Specialists**.**

Benefits-

* **Social Media Access:** Customers may interact with the Chatbot through their chosen social media sites.
* **Initial Automation:** Automation speeds up initial query processing.
* **Human Expertise:** Mortgage Specialists provide thorough and accurate replies.
* **Multichannel Engagement:** Engaging customers across different social media channels broadens their reach**.**

## **Low-Level Design:**

The low-level design delves into the Chatbot system's technological aspects, concentrating on AI integration, social media interactions, and human-agent handover.

* **Design of the Chatbot's Dialog Flow:** The Chatbot's dialog flow describes how AI begins discussions, determines user intent, and transfers to Mortgage Specialists.
* **AI Integration:** Specifications for AI components such as intent recognition, entity extraction, and context management are provided.
* **Social Media APIs:** The connection with social media sites is detailed, allowing the Chatbot and consumers to communicate seamlessly.
* **Procedures for moving interactions from AI to human agents:** The design defines procedures for transferring interactions from AI to human agents, guaranteeing a smooth transition.

Benefits-

* **User-Centered Conversations:** The dialog flow encourages natural user engagement.
* Advanced NLP algorithms improve the Chatbot's understanding of user inputs.
* **Integration with Social Media Platforms**: Integration with social media platforms facilitates multichannel interactions.
* **Effective Handover**: Protocols guarantee that AI and Mortgage Specialists move smoothly.

## **Impact Analysis:**

The Impact Analysis examines the consequences of deploying a Social Media Chatbot controlled by Mortgage Specialists:

Positive Effects:

* **Multichannel Engagement:** The Chatbot reaches out to consumers across social media channels, allowing for more connection.
* **Query Automation:** The first automation of ordinary inquiries decreases response times.
* Mortgage Specialists provide expert-level replies to complicated questions.
* **Social Media Visibility:** Increasing brand visibility via the use of social media channels.

Negative Effects:

* **Limited Availability:** The Chatbot is only available during business hours, which may affect clients outside of this time frame.
* **Allocation of Human Resources:** Mortgage Specialists demand specialized manpower and scheduling.
* **Transition Challenges:** To maintain a favorable user experience, the AI-to-human transition must be smooth.
* **Initial Development Costs:** The hybrid concept requires an initial investment.

Benefits:

* **Improved Customer Engagement:** Social media engagement strengthens customer connections.
* **Efficient Query Resolution:** Automation speeds up ordinary query resolution.
* Mortgage Specialists provide useful insights to customers.
* **Increased Brand Visibility:** Using social media expands the organization's online exposure.

## **Risks and Mitigation:**

This section addresses potential dangers and techniques for mitigating them:

Risks:

* Potential clients may be put off by the Chatbot's limited business hours.
* **Human Resource Issues:** Hiring, training, and scheduling Mortgage Specialists may be time-consuming and expensive.
* **Technical failures:** AI and social media platform faults may cause service interruptions.
* Quality control is critical for ensuring consistent and high-quality replies across human agents.

Mitigation:

* **Extended Availability:** In the future, consider extending Chatbot hours to accommodate a larger consumer base**.**
* **Resource Management:** Create effective processes for hiring, training, and scheduling Mortgage Specialists.
* **Technical Support**: Create a support structure for quick problem response.
* Quality Control: For Mortgage Specialists, provide continual training and quality control procedures.

## **Out of Scope:**

This section establishes the scope boundaries, stating what components of the project are not covered. It guarantees that the project's objectives are met.

Elements Outside of the Scope:

* Extended Chatbot Availability: Implementing 24/7 availability is outside the scope of the project.
* Complete Social Media Engagement: Complete social media campaigns and marketing are not included.
* Compliance that goes beyond data privacy rules is not addressed.
* Human Resources Expansion: This project does not include detailed HR processes for Mortgage Specialists.

# **POSSIBLE SOLUTION 3: DO NOTHING METHOD (CURRENT STATE)**

## **High- Level Design:**

The high-level design for RBC Mortgage Services' Current State depicts the existing system with no substantial modifications. Customer questions are still handled manually by Mortgage Specialists in a conventional style.

* **Manual Inquiry Handling:** In this system, client questions are handled manually by Mortgage Specialists who examine and reply to consumer queries.
* **Working Hours Operation:** The Mortgage Specialists' availability corresponds to conventional business hours, and client requests may be queued outside of these hours.
* **No AI Integration:** The design does not include AI Chatbot automation, and all customer contacts are handled by humans.
* **Status quo:** The major goal is to retain the current operating model with no substantial modifications to the procedures.

## **Low-Level Design:**

Without any AI integration, the low-level design gives additional technical data about the existing operating model:

* **Human Resource Allocation:** The roles, duties, and allocation of Mortgage Specialists are detailed.
* **Scheduling Business Hours:** The working hours and availability of Mortgage Specialists are indicated.
* **Manual Inquiry Handling:** This section describes the method for manually handling client questions.
* **No AI Component:** The lack of an AI Chatbot is highlighted.

Benefits-

* **Established Model:** The current operating model is maintained to provide consistency.
* **Experienced Mortgage Specialists:** Expert human representatives address client questions.
* **Business Hours**: The business hour schedule provides dependability.

## **Impact Analysis:**

The Impact Analysis examines the consequences of continuing RBC Mortgage Services in its current configuration without AI automation:

Positive Effects:

* **Human Expertise:** Mortgage Specialists respond to consumer inquiries at an expert level.
* **Personalization**: Customers are given individual attention.
* **Standard Business Hours:** Availability during business hours meets the expectations of customers.

Negative Effects:

* Customers may experience delays in receiving replies to inquiries outside of office hours.
* Manual handling requires a lot of resources, including hiring, training, and scheduling Mortgage Specialists.
* **Human Error**: Human agents may occasionally make mistakes or provide inconsistent replies.
* **Automation Benefits Are Overlooked:** The benefits of automation, such as speedier replies and 24-hour availability, are overlooked.

Benefits:

* **Human Expertise:** Mortgage Specialists offer valuable insights to customers.
* **Personalized Service:** A human touch enhances the customer experience.
* **Standard Business Hours:** Availability during business hours meets customer expectations.

## **Risks and Mitigation:**

This section highlights possible dangers and proposes mitigating techniques to keep the existing state:

Risks:

* Inquiries received outside of office hours may result in consumer discontent.
* Resource Difficulties: Managing a big staff of Mortgage Specialists may be time-consuming.
* Quality control is critical for ensuring consistent and high-quality replies across human agents.

Mitigation:

* Inform consumers about company hours and establish clear expectations.
* **Resource Management:** Create effective processes for hiring, training, and scheduling Mortgage Specialists.
* **Quality Control:** For Mortgage Specialists, provide continual training and quality control procedures.

## **Out of Scope:**

This section establishes the scope boundaries, stating what components of the project are not covered. It guarantees that the project's objectives are met.

Elements Outside of the Scope:

* **AI Integration:** This project does not include the implementation of an AI Chatbot.
* Extending operational hours or providing 24/7 availability is outside the scope of the project.
* **Comprehensive Automation:** Inquiry handling is not fully automated.
* **Marketing and promotion:** The project does not include marketing efforts or social media tactics.

# **COMPARING THREE POSSIBLE SOLUTIONS**

We may build a comparative chart to illustrate the important differences and benefits of each option for the MortgageBotX Project's three Possible Solutions (AI Chatbot, Social Media Chatbot, Current State).

|  |  |  |  |
| --- | --- | --- | --- |
| **Aspect** | **AI Chatbot** | **Social Media Chatbot** | **Current State** |
| High-Level Design | AI Chatbot automates inquiry handling, available 24/7. | Initial AI interaction with manual handover during business hours. | Manual inquiry handling by Mortgage Specialists during business hours. |
| Low-Level Design | AI-driven automation with real-time data access and chat history. | AI initiates conversations and transfers to human agents. | Human Mortgage Specialists manually handle inquiries. |
| Impact Analysis | Faster response times, 24/7 availability, reduced human errors. | AI-driven initial response, resource-efficient, but slower responses. | Consistent human expertise, personalized service, but limited hours of operation. |
| Risks and Mitigation | Requires AI training, potential issues with customer-AI interaction. | Human-agent hiring and training, slower inquiry resolution. | Resource-intensive human-agent management and potential for errors. |
| Out of Scope | Comprehensive automation, extended availability, and marketing efforts. | Comprehensive automation and extended hours beyond business hours. | AI integration, 24/7 availability, and automation beyond human agents. |
| Benefits | Enhanced customer experience, 24/7 availability, faster responses. | Initial AI interaction, resource efficiency, personalized service. | Human expertise, personalized service, resource-intensive operation. |

## **Costs Comparison of Three Possible Solutions:**

Here's a ballpark estimate for each possible solution:

|  |  |  |  |
| --- | --- | --- | --- |
| **Aspect** | **AI Chatbot** | **Social Media Chatbot** | **Current State** |
| Development Costs | $20,000 to $100,000 | $15,000 to $80,000 | $40,000 t0 $80,000 |
| AI Training Costs | $5,000 to $20,000 | - | - |
| Maintenance and Updates | 20-30% | 20-30% | - |
| Infrastructure Costs | $10,000 to $30,000 | ` | $10,000 to $30,000 |
| Marketing and Promotion | $10,000 to $50,000 | $10,000 to $50,000 | $10,000 to $50,000 |
| Human Resources | - | $40,000 to $60,000 | $40,000 to $60,000 |
| Data Storage | $2,000 to $5,000 | - | - |
| Staff Training | $2,000 to $5,000 | $5,000 to $10,000 | $5,000 t0 $10,000 |
| Operational Costs | - | - | $10,000 to $30,000 |
|  |  |  |  |
| Average Costs | $106,000 | $132,000 | $177,000 |

## **Benefits of MortgageBotX Project:**

The MortgageBotX Project intends to automate and improve the customer experience in mortgage services. Among the advantages of this initiative are:

* **Enhanced Customer Experience:** MortgageBotX provides an enhanced customer experience by automating questions and providing faster replies.
* **24/7 Availability:** The AI Chatbot is available 24 hours a day, seven days a week.
* **Faster Responses:** Automation shortens response times, allowing consumers to get answers to their questions quickly.
* **Resource Efficiency:** The Social Media Chatbot achieves resource efficiency in terms of recruiting and training.
* **Individualized Service:** Through AI-initiated interactions, both the AI Chatbot and the Social Media Chatbot deliver individualized service.
* **Human Resources Expansion:** This project does not include detailed HR processes for Mortgage Specialists

While the Current State has its advantages, it lacks the benefits of automation and expanded availability that the MortgageBotX Project provides. Overall, the project's use of AI Chatbot technology results in considerable gains in customer service and operational efficiency, making it the most favorable alternative.

# **CONCLUSION**

In conclusion, it is vital to underline the importance of this Solution Design Document for the MortgageBotX Project as a crucial blueprint for the effective deployment of the AI Chatbot solution. The paper is intended to assist stakeholders, such as project teams, developers, and decision-makers, in comprehending the proposed system's architecture, complexities, and possible effect.

This thorough paper contains crucial parts that offer a clear grasp of the project's background, goal, and system design complexities. The paper investigates existing functionality, outlining the connections between new needs and the existing system.

It gives a full description of required specifics, ensuring that all project stakeholders have a clear knowledge of the new needs, with detailed comments and conversations to clarify any misunderstandings.

The Assumptions and Prerequisites section is critical because it establishes a common foundation for the design. It ensures that everyone engaged understands the prerequisites and assumptions that underpin the project, allowing for a single vision and a well-coordinated approach.

The document also introduces the three possible MortgageBotX Project solutions, each with a high-level design, low-level design, impact analysis, risks and mitigation, and out-of-scope concerns. This knowledge is critical for making educated decisions.

Comparison tables make it easier to compare various options, highlighting the benefits of deploying the MortgageBotX Project as a superior solution that offers improved customer service, higher productivity, and a competitive advantage.

Furthermore, the paper includes anticipated prices for each option, giving stakeholders financial insight into the project's feasibility and possible return on investment.

Finally, this Solution Design Document serves not only as a reference for understanding the design and its consequences, but also as a compass for project execution. It promotes cooperation, openness, and a shared vision among stakeholders, allowing the MortgageBotX Project's aims to be realized successfully.

# **REFERENCES**

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