LEVERAGING TECHNOLOGY TO IMPROVE CUSTOMER EXPERIENCE

A PROJECT REPORT

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Under the guidance of,

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IN

COMPUTER SCIENCE AND ENGINEERING

At

GAIN MORE KNOWLEDGE
REACH GREATER HEIGHTS

PRESIDENCY UNIVERSITY

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PRESIDENCY UNIVERSITY

SCHOOL OF COMPUTER SCIENCE ENGINEERING

CERTIFICATE

This is to certify that the Project report **"Improve customer Experience software Insurance"** being submitted by "Sunkesula Muneera Begum, Peddaiah Gari Gowtham Kumar Reddy, Sannidhi Varun Nageshwar Gupta, and Niveda Sudeep" bearing roll number(s) "20211CSE0032, 20211CSE0018, 20211CSE0053 and 20211CSE0045" in partial fulfillment of the requirement for the award of the degree of **Bachelor of Technology in Computer** Science and **Engineering** is a bonafide work carried out under my supervision.

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DECLARATION

We hereby declare that the work, which is being presented in the project report entitled Leveraging technology to improve customer experience in partial fulfillment for the award of Degree of **Bachelor of Technology** in **Computer Science and Engineering**, is a record of our own investigations carried under the guidance of **Dr. Raghavendra T *S*, Associate Professor, School of Computer Science and Engineering, Presidency University, Bengaluru.**

We have not submitted the matter presented in this report anywhere for the award of any other Degree.

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ABSTRACT

The "Leveraging technology to improve customer experience" This project focuses on the features of a next-generation software platform that can leverage technology and operating model design to fundamentally improve the customer experience for an insurance company. The platform was painstakingly crafted on three base models—Admin, Company, and User—each with its unique set of functionalities to drive higher engagement, improved operational effectiveness, and enriched overall experience. The Admin module acts as a central control unit for administrators, allowing them to manage the company registrations, approve or reject requests, and access detailed profiles of insurance providers Pereira & Nascimento (2019). With a very careful Onboarding of Insurance companies and meting out supervision rightly, this feature allows the solution to be organized. The Company module enables insurance companies to register, manage, and update their profile upon approval. Companies will be able to upload and present policy details in several formats including text, video and audio allowing for more flexible database of prospects and clients to enable effective The Company module is designed to support an innovative and customer-centric approach when it comes to sharing information by offering variety ways How Information is displayed.

The User module emphasizes user experience, allowing users to simply register, login, and search information of various insurance providers. The platform's AI-powered chatbot is another feature that stands out, harnessing the power of Natural Language Processing (NLP) to gain quick, intelligent, and accurate answers to user queries, providing an added boost to customer service. Moreover, the platform comes with a multilingual translator that allows up to five languages for accessibility and inclusivity among so many different people Larios & Ochoa (2020). The result is a platform that is not only efficient but customer-friendly, streamlining the way customers interact with insurance and services through the AI-Powered assistance with voice recognition, multilingual support and a user-friendly interface. This integration of technology transforming the service model and paving way for a rich, immersive, and inclusive experience make this platform the new law of the land for giving that much-needed differentiator to the insurance business.

Keywords: Customer experience, Insurance software, Admin management, NLP techniques, Chatbot interaction.

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INTRODUCTION

1.1 Motivation:

The goal of this project is to tackle the communication challenges faced in the insurance industry, focusing on enhancing customer service and the performance of operational activities. This involves implementing AI-driven chatbots, offering multilingual customer support, and ensuring effective administrative management to boost user engagement and operational efficiency **Vance & Matzler (2021)**. Consequently, insurance services can be provided in a more streamlined manner.The system would allow people to file reports about cyberbullying, interact with others who share similar experiences and get help to resolve that problem. These reports are aimed at integrating machine learning algorithms for the prevention of cyberbullying through the detection of abusive behavior. The most important incentive is the creation of digital spaces where people will not be afraid to confront cyberbullying and thus be free to take part to build a more healthy online society.

1.2 Problem Statement:

It is now more than ever that insurance talks about building trust relationships with customers and more demand for more transparency. A lot of studies have shown that customers care a lot about transparency in their dealings with the industry, clear language, knowing what value they will receive, and an open and transparent relationship, however, the issue is that they seldom read their policy documents carefully and as a result are not completely aware of what the relationship entails. Can we build a solution to leverage technology (video, voice, QR) to inform them of most important features in a more accessible manner.

1.3 Objective of the Project:

The goal is to design and create an upgraded version of an advanced software package in the area of insurance: advanced company management and support via various languages together with an intelligent, AI-enabled chatbot support tool. Features: This kind of system allows improvement in user-friendliness and effectiveness on a more organizational and communicative level.

1.4 Scope of the Project:

The scope of the project will include developing a multi-functional platform with modules for Admin, Company, and User management. The integration of interactions through a chatbot using NLP techniques, multilingual support, and policy management are all in focus. The project is to enhance the customer experience and streamline processes within the insurance industry while encouraging more engagement.

1.5 Project Introduction:

The insurance industry has been plagued by customer engagement and operational inefficiencies for years because of outdated systems. This project introduces a modern platform with three core modernize Admin, Company, and User. The Admin Module allows administrators to manage insurance company registrations and profiles, ensuring trusted providers are added **Miller & Wilson (2018)**. The Company Module enables insurance firms to upload policy details in various formats (text, video, audio), offering greater flexibility and accessibility. The User Module has an AI-powered chatbot with NLP, providing real-time assistance and multilingual support to enhance customer experience. The platform is integrating advanced technology to modernize the insurance industry, improve customer satisfaction, and enhance service delivery.

CHAPTER-2

LITERATURE SURVEY

2.1. Customer Experience in the Insurance Industry:

The insurance industry has long grappled with the issue of customer experience improvement. Traditional systems have been characterized by slow performance, impersonal communication, and difficulty in using them. It is no wonder that customers feel frustrated due to long waiting hours, lack of personalization, and unclear information about their policies. According to recent studies, technology such as AI chatbots and personalized communication can greatly improve satisfaction and engagement. AI can help address common queries, streamline the buying process, and provide a more interactive and tailored experience for customers, thus reducing churn and increasing brand loyalty.**Jones et al. (2017):** In their article, "A Comprehensive Review of Cyberbullying Detection Systems," published in the Journal of Cybersecurity, Jones and co-authors reviewed a number of cyberbullying detection systems, methodologies, and challenges. They considered the need for text analysis coupled with sentiment detection to identify subtle bullying. Their research findings led to adopting advanced machine learning techniques in the proposed system for text analysis to detect emotional cues that indicate cyberbullying.

2.2. AI-Powered Chatbots for Customer Interaction:

AI-powered chatbots are more and more being used by the insurance industry to produce instant solutions and enhance customer satisfaction. As Vance et al. (2021) has revealed, with NLP-powered tools, AI-powered chatbots would not only deal with routine questions but also aid in filling out the forms and displaying simple policy information thereby helping human agents complete complex tasks. Studies have revealed that chatbots reduce wait time and increase the satisfaction of the user as they can support users all through the day and night and can interact with them in a conversational way. Chatbots also help to handle a high volume of queries to ensure customers' needs are addressed promptly and correctly.

2.3. Multilingual Support in Customer Service Platforms:

One of the major hindrances to communication in global markets is language barriers. According to **Matzler et al. (2020**), offering support in multiple languages is essential for businesses that cater to diverse customers. For the insurance industry, this means the provision of services in multiple languages so that customers from all walks of life are able to find information and access the system in a more efficient manner. The integration of multilingual features in customer service platforms has been shown to enhance accessibility and engagement, thus leading to better customer experience and retention.

2.4. Multimedia Policy Communication:

A study revealed that policy detail provision in formats such as video, audio, and interactive infographics can increase customers' understanding by a considerable level. According to Larios et al. (2020), the use of multimedia in communication with the client enhances customer's understanding of insurance policies and also reduces confusion and misunderstanding. Hence, an insurer who provides multiple formats for customers to understand and learn will better be able to gain their confidence and build up long-term relations. Hence, insurance firms could provide various formats for policy information to cater for different learning preferences and improve customer experience.

CHAPTER-3

SYSTEM ANALYSIS

3.1 EXISTING SYSTEM

The existing systems in the insurance industry rely heavily on traditional ways of interacting with customers, managing policies, and handling registration processes. This creates inefficiencies. The systems lack AI-driven assistance and multilingual support, which might limit customer engagement and satisfaction. Moreover, the existing platforms do not use NLP for better interactions with chatbots, which means that communication may not be fluid.

3.2 DISADVANTAGES

1) **Limited Engagement:** Many of the existing platforms still do not have personalized, AI-driven assistance, which leads to poor customer interaction. Most customer service systems are static, providing generic responses that fail to account for the unique needs of each individual. As a result, users may feel their inquiries are not being addressed effectively or that they are merely interacting with an automated system that cannot understand the nuances of their concerns **Vance & Matzler (2021)**. This limited engagement leads to frustration, poor customer experiences, and a diminished sense of connection with the platform. Furthermore, many platforms rely on traditional forms of support, such as email or phone, which are time-consuming and inefficient, further contributing to negative engagement.

2) **Language Barriers:** One major limitation is the lack of multi-lingual support, which significantly creates serious barriers in access to various users. For a platform that fails to support multiple languages, customers who don't speak the dominant language of the platform will be disadvantaged. Often, this situation leads to confusion, missed opportunities, and poor experiences for the users, especially within industries like insurance, whose content and terminology are fairly complex. The key information, terms, or instructions customers do not understand often frustrate them and maybe even cause them to drop the use of the platform altogether. In the global market, this also hampers the expansion of the same in a very effective way to reach more people.

3) **Inefficient Communication:** Traditional systems that depend solely on text-based communication are often not effective in passing on detailed or complex information. In the insurance industry, for example, policies are very intricate and full of terms and conditions,

which makes text alone too overwhelming and hard to understand **Pereira & Nascimento (2019)**. Customers may not be able to process large amounts of information presented in dense paragraphs, leading to misinterpretations or incomplete understanding of the services offered. Moreover, text lacks the emotional context and nuance that voice or visual communication can provide, which is essential for establishing trust and clarifying misunderstandings. Relying on text-only communication limits the effectiveness of conveying important policy details and answering questions in a way that feels personable and clear.

3.3 PROPOSED SYSTEM

The proposed system is an advanced insurance platform that integrates AI-driven chatbots multilingual support, and dynamic media options (text, audio, video) for company policies. It enhances customer engagement through personalized interactions, enables seamless admin and company management, and improves user experience by providing efficient, multilingual, and accessible services.

3.4 ADVANTAGES

1) **Improved Engagement:** The integration of AI chatbots and multilingual support will bring about better engagement with customers. AI chatbots are engineered to give users real-time personal assistance, such that for every query they post, they get relevant responses in no time. This is different because, unlike traditional customer service methods, AI chatbots can give attention to several inquiries at the same time so that customers do not experience long durations without getting the help they need. They can learn from every interaction-their responses become better, and their anticipation of the user's needs is improved. The users thereby experience a highly dynamic and interactive experience. Multi-lingual support breaks down barriers in language, so that the services provided are available to a different set of users **Zhou & Liu (2020)**. Translation services are offered in different languages so the customers are comfortable to interact with the platform in their own language-the clarity is improved while their comfort is enhanced. This combination of AI-driven engagement and multilingual capabilities fosters an inclusive environment, making it easier for customers from different backgrounds to connect, understand the services, and feel valued, ultimately leading to higher satisfaction and loyalty.

2) **Efficient Operations:** Streamlined administrative controls for company registration and approval are implemented, and by automating and simplifying these workflows, businesses

reduce time and effort to onboard new companies-in-a-smoother, faster pace for administrators and applicants alike. Centralized admin dashboards allow the easy tracking and management of registration requests, while automated approval systems ensure that fundamental regulatory compliance is met without manual intervention. This speeds up the entire registration process, minimizes errors, enhances consistency, and improves overall operational efficiency. This gives administrative teams clear visibility into each step of the process and allows them to respond quickly to any issues or requirements, ultimately creating a more agile and responsive business environment.

3) **Diverse Communication:** Diverse communication in the presentation of insurance policies involves providing the same information in multiple formats—text, audio, and video—so that customers can engage with the content in a way that best suits their preferences and learning styles. Text-based documents, such as detailed policy terms and conditions, can be read and referenced in detail. Audio formats cater to users who prefer listening to information, such as during commutes or while multitasking. Video formats can use visuals, animations, and narration to simplify complex concepts, making them easier to understand. The diverse formats of insurance policies offered by platforms enhance accessibility, clarity, and customer satisfaction. It enables users to understand their coverage and make the right decisions. Thus, it will cater to people with different needs, such as visual or hearing impairments, who also need to fully understand their policies.

4) **User-Friendly Design:** The design of an easy-to-use interface with the multilingual facility really enhances the customer experience. With a well-organized and intuitive interface, finding the information or service one seeks becomes effortless; therefore, no frustration and saves time. Good menus, few steps in the navigation path, and responsive design contribute to the seamless user experience, as even a technologically challenged person will be able to use the site properly. Multilingual options further expand accessibility, allowing users to choose their preferred language, making the platform more inclusive for a diverse audience **Matzler & Füller (2020)**. This not only improves the user experience for people from different linguistic backgrounds but also promotes customer engagement and satisfaction, as users are more likely to stay and interact with a platform that meets their specific language and usability needs.

5) **Smart Assistance:** The design of an easy-to-use interface with the multilingual facility really enhances the customer experience. With a well-organized and intuitive interface, finding the information or service one seeks becomes effortless; therefore, no frustration and saves time.

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3.5 WORK FLOW

The diagram depicts a flowchart for customer experience software in improving insurance processes. It divides the activities into three major roles: Admin, Company, and User, and details their respective workflows.For the Admin, the process begins with credential validation. If valid, the admin can log in to view company registrations and accept or reject them. For the Company, the process begins with registration, which requires admin approval. Once accepted, the company can log in to manage policy details and log out afterward. Upon successful login, the User workflow opens to support activities such as chatting with a bot, viewing company details, and using a language translator. Password recovery is also possible if needed. The diagram is designed to have a streamlined and interactive software system to better enhance the user, company, and admin experience in the insurance domain.

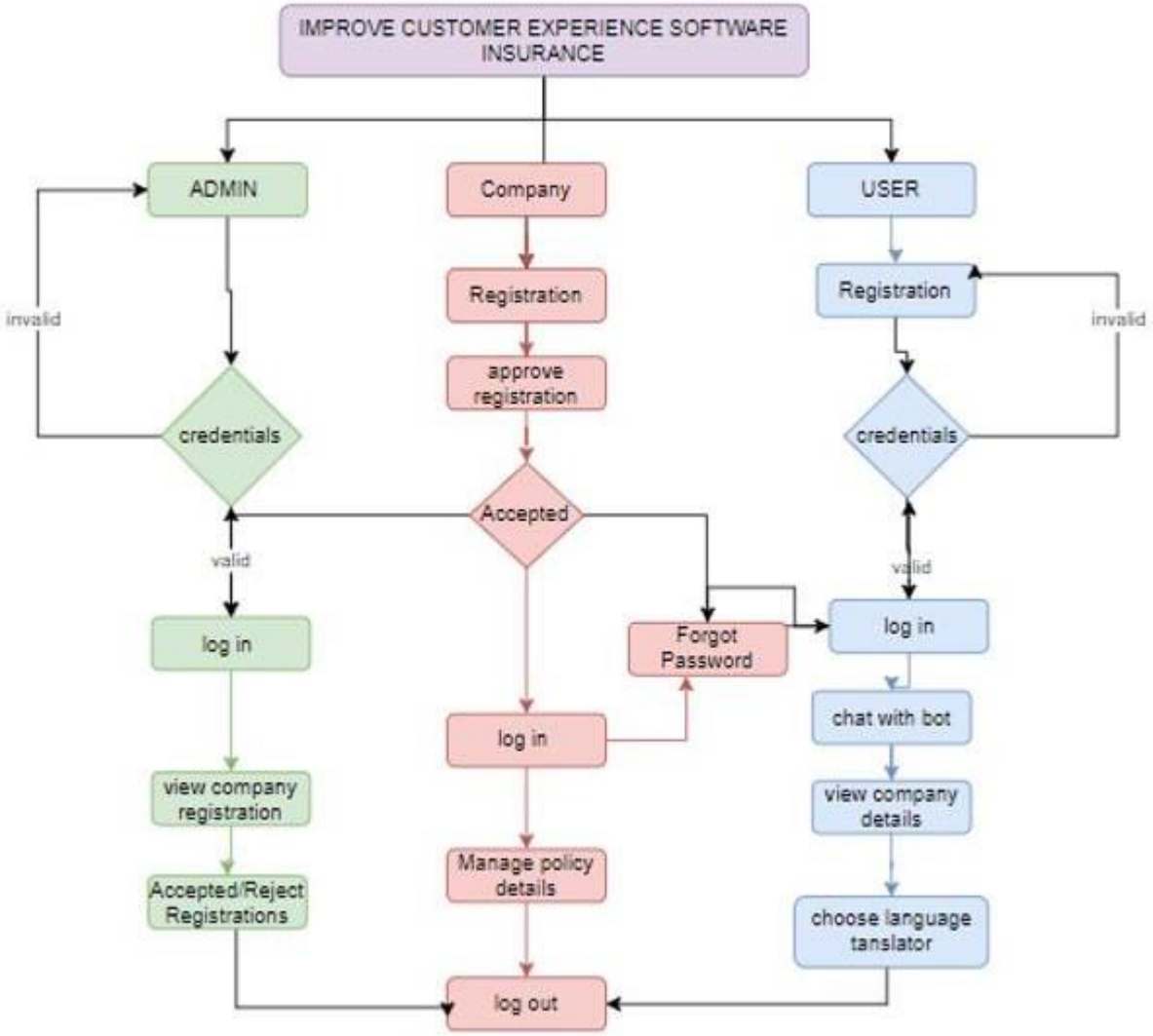

Fig3.1: WORK FLOW

CHAPTER-4

REQUIREMENT ANALYSIS

4.1 Functional and non-functional requirements

Requirement analysis is the most important and complex process to be used in determining whether the system or the software development project will be successful or not. It involves identification, understanding, and documentation of the specific needs and expectations of stakeholders, such as end-users, clients, and developers **Bawany et al. (2021)**. Requirement analysis provides a clear definition of what the system or software must achieve and ensures that everyone involved in the project has the same understanding of its objectives, hence reducing the possibility of costly misunderstandings, delays, or failure during development.

Requirements are categorized into two main categories: functional requirements and non-functional requirements

1. Functional Requirements These describe the specific behaviours, features, or functions that the system or software must perform to meet the needs of the users. Examples include user authentication, data processing, report generation, or any particular task that the system is expected to accomplish. Functional requirements describe the "what" of the system — the actions it must perform to fulfil its purpose.

2. Non-Functional Requirements: These define the quality attributes or constraints of the system that impact its performance, usability, and overall user experience. These include aspects such as system reliability, scalability, security, maintainability, and response time. Non-functional requirements are often referred to as "how" the system should perform its functions and address factors like efficiency, durability, and compliance with industry standards.

Functional as well as non-functional requirements shape up what the actual product should be designed, developed, and deployed. Through complete analysis and documentation, these requirements ensure that the end product not only serves its purpose but also delivers a high-quality user experience with the system working efficiently within its designated environment.

1. Functional Requirements

These are the requirements that the end user specifically demands as basic facilities that the system should offer. All these functionalities need to be necessarily incorporated into the system as a part of

the contract. These are represented or stated in the form of input to be given to the system, the operation performed and the output expected. They are basically the requirements stated by the user which one can see directly in the final product, unlike the non-functional requirements.

2. Non-Functional Requirements

Non-Functional Requirements:

These are basically the quality constraints that the system must satisfy according to the project contract. The priority or extent to which these factors are implemented varies from one project to other. They are also called non-behavioural requirements.

They basically deal with issues like:

Portability: Portability is defined as how easily the software can be moved and transferred and be used in another environment without considerable changes. The software has to be portable and adaptable to many operating systems or hardware configurations.

Security: Protects the system from unauthorized access, data breaches, and cyber threats. This ensures that sensitive information in the software is kept confidential, intact, and available.

Maintainability: Describes how easily the software can be updated or modified to fix defects, improve performance, or adapt to changes in requirements. High maintainability reduces long-term costs and effort.

Reliability: It measures the system's ability to perform its intended functions with accuracy and consistency over time. It ensures minimal downtime or errors, even under challenging conditions.

Scalability: This refers to the system's ability to handle an increasing number of users, data, or workloads efficiently without compromising performance. It ensures the software grows with user needs.

Performance: This measures the speed at which the system accomplishes work, processes data, and responds to the requests made by users. It considers issues such as response time and utilization of resources.

Reusability: Refers to how parts or subprograms of a software system may be reused within other systems or applications in order to save the time and effort spent in its development. This enhances modularity and efficiency.

Flexibility: That ease with which the system could be adapted toward changing requirements, business needs, or technology with less rework involved. This is how to future-proof software.

4.2 Hardware Requirements

Processor	- I3/Intel Processor
Hard Disk	- 160GB
Key Board	- Standard Windows Keyboard
Mouse	- Two or Three Button Mouse
Monitor	- SVGA
RAM	- 8GB

4.3 Software Requirements

Operating System	: Windows 7/8/10
Programming Language	: Python
Libraries	: Pandas, NumPy, scikit-learn.
IDE/Workbench	: Visual Studio Code.

CHAPTER-5

SYSTEM DESIGN

5.1 UML diagrams

- IUML is an abbreviation for Unified Modelling Language. UML is a standardized general-purpose modeling language in the field of Visualization and software engineering. The standard is managed, and was created by, the Object Management Group. The goal is for UML to become a common language for creating models of object-oriented computer software. In its current form UML is comprised of two major components: a Meta-model and a notation. In the future, some form of method or process may also be added to; or associated with, UML.
- Unified Modelling Language is a standard language used for specifying, Visualization, Constructing and documenting the artefact s of software system, as well as for business modelling and other non-software systems.

GOALS:

The Primary goals in the design of the UML are as follows:

Here is a more detailed description of each of these goals:

1. Give users a ready-to-use, expressive visual modeling language so that they can develop and exchange meaningful models:

UML is an attempt to provide a standardized and visually expressive toolset for developers and designers to model complex systems. These models act as a shared medium of communication of system design, architecture, and requirements that help teams and stakeholders understand each other and collaborate effectively.

2. Provide extendibility and specialization mechanisms to extend the core concepts:

UML design enables the users to adapt and extend its core concepts in accordance with a specific domain, industry, or project requirement **Sharma & Gupta (2020)**. Through features like stereotypes, profiles, and tagged values, UML provides flexibility and adaptability without changing its very basic structure.

3. Be independent of particular programming languages and development processes:

UML is kept platform-agnostic; hence one is not restricted to any one programming language or method of software development. This independence allows UML to be universally applicable, whether the project uses Java, C++, Agile, or Waterfall, making it a versatile tool for diverse development environments.

4. Provide a formal basis for understanding the modeling language:

UML features exact semantics and notations ensuring that models, though visually intuitive are also formally structured. This foundational form helps eradicate ambiguities or misinterpretation and ensures all teams and tools can understand a model in exactly the same manner.

5. To foster the OO tools market development:

UML promotes standardizing object-oriented (OO) modeling, and encourages the development and proliferation of software tools to support its use, which drives innovation and competition in the tool market, eventually delivering quality tools to the developers to utilize better.

6. Collaborations, frameworks, patterns, and components- higher level concepts of developments:

UML is intended to model more advanced development constructs, including design patterns, software frameworks, component-based systems, and collaborative interactions. Such support enables teams to work at a higher level of abstraction and to improve productivity, reducing the complexity of system design.

7. Best practices:

UML incorporates proven best practices from the software engineering field, especially from object-oriented programming and design. By embedding these practices into its structure, UML helps developers and architects follow industry standards, ensuring better quality and more maintainable systems.

5.1.1 Use Case Diagram:

A use case diagram in the Unified Modeling Language (UML) is a type of behavioral diagram defined by and created from a Use-case analysis. Its purpose is to present a graphical overview of the functionality provided by a system in terms of actors, their goals (represented as use cases), and any

dependencies between those use cases. The main purpose of a use case diagram is to show what system functions are performed for which actor. Roles of the actors in the system can be depicted.

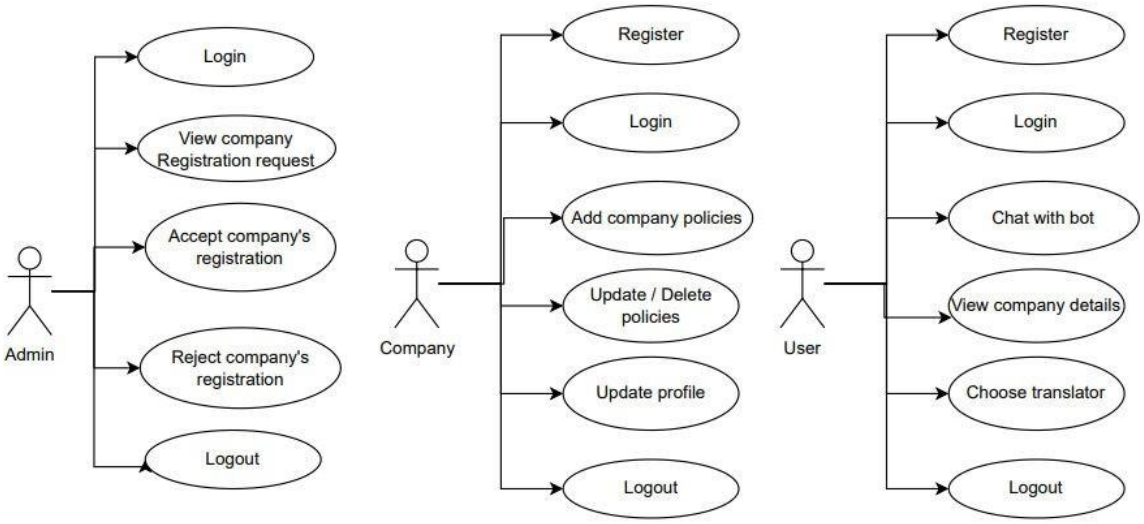

Fig5.1: USECASE DIAGRAM

The diagram depicts how technology can be utilized to improve the customer experience of an insurance management system by defining specific roles and streamlined workflows for Admin,Company, and User. It is a use case diagram that details specific functionalities for each role to ensure effective interaction with the system.

For the Admin, the system offers the possibility of logging in, viewing registration requests from companies, and either accepting or rejecting them according to predefined criteria. This functionality allows only legitimate companies to be allowed to interact with the system and thus maintain credibility and quality. Also, the admin can log out after completing their tasks, thereby ensuring secure access control.

The Company role has additional functionalities that deal with policy management and user interaction. Companies can register themselves on the platform, log in to manage their profile, and add, update, or delete policies. These enable companies to dynamically tailor their offerings so that customers always find relevant and updated policies. Companies can log out securely after conducting their operations just like the admin **Zhang & Li (2021).**

For the User, the system is developed with features that improve interaction and provide personalized services. Users can register and log in to access functionalities such as chatting with a bot for inquiries, viewing company details to explore available policies, and using a translator for language support. All these are designed to make the experience smooth and inclusive, reaching out to users from various

linguistic backgrounds. This would mean users could log out for the assurance of their security and confidentiality when using the user accounts.

As a whole, this diagram describes a technology-led system aimed to enhance customer experiences through automated workflow, streamlined interactions, and secure and tailored services for the stakeholders. Indeed, it gives a picture of how user-centric functionalities are integrated within the system and benefit administrators, companies, and even end-users alike.

5.1.2 Class Diagram:

In software engineering, a class diagram in Unified Modelling Language (UML) is a type of static structure diagram that describes the structure of a system by showing the system's classes, their attributes, operations (or methods), and the relationships among the classes. It explains which class contains information

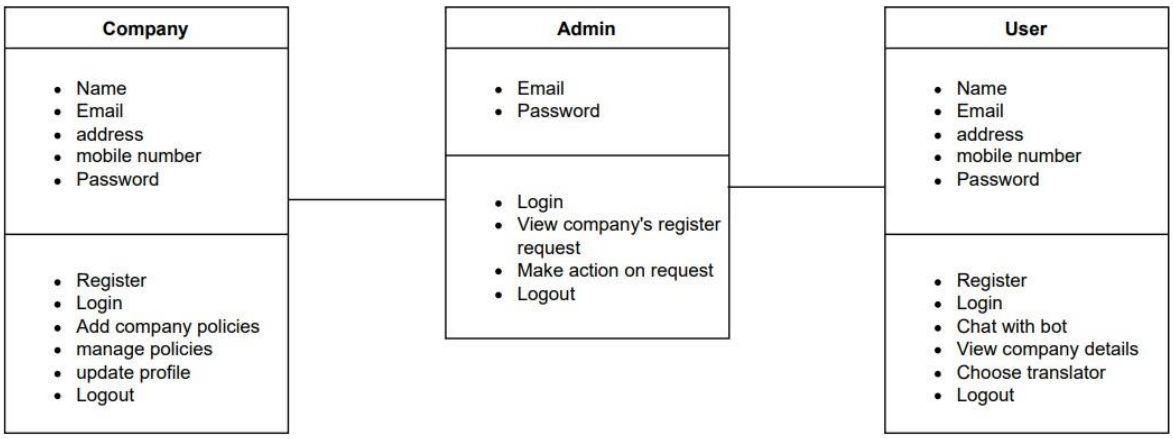

Fig5.2:CLASS DIAGRAM

The diagram illustrates how technology leverage enhances customer experience by structuring the system's functionality and data requirements for three key stakeholders: Company, Admin, and User. It shows the fields (data attributes) and actions (functionalities) available to each role, with a clear and structured approach to system interaction.

Company

The company module is designed to empower businesses to manage their policies effectively. Companies provide essential information such as their name, email, address, mobile number, and password during registration. Once registered, they can:

Register: Join the platform with their details to initiate participation.

Login: Access their account securely.

Add company policies: Introduce new insurance policies to attract customers.

Policy management: The existing policies can be updated or changed for better relevance and competitiveness.

Profile update: The company's details should always be current and accurate.

Log out: Proper exit from the system after all the work is done.

This way, the companies will be fully in control of their services. They will react immediately to customers' needs and be very responsive with high-quality service.

Admin

The admin module will form the back bone of the system ensuring it's intact and in operation. The administrators login through email and password, after which they will have access to the functionalities including;

Login authenticate themselves and allow access to administrative tools

View company's register request -they are supposed to check up new company registration, for authenticity.

Make action on request- They should either accept or reject requests from the newly registering companies.

Logout: Securely exit the system after performing administrative tasks. The admin monitors and controls the registration process so that only reputable companies join the system, which builds confidence and quality for the users.

User

The user module deals with making the user experience hassle-free and friendly for the end-users. The users fill out a form that requires personal details like name, email, address, mobile number, and password to register. Once registered, they can:

Registration: Registration allows users to access features offered by the system.

Login: User logins enable safe entry into accounts.

Chat with bot: Supports instantaneous inquiries or concerns with a chatbot.

Company details: Information about registered companies and their policies can be found here.

Translator: Select a translator to cater to different users and ensure that they can understand each other.

Logout: the user logs out safely after using services by the system.

This ensures usability of the system for users to conveniently use, resolve queries speedily, and access services according to their needs.

The diagram demonstrates a technology-driven framework that streamlines operations, ensures secure and seamless interactions, and provides the necessary tools for all stakeholders to enhance customer experience. It clearly defines roles and functionalities, which allows companies to manage policies effectively, admins to oversee operations reliably, and users to access services conveniently. The structure is built to establish trust, engage people, and deliver a superior customer experience through technology.

5.1.3 Sequence Diagram:

A sequence diagram in Unified Modelling Language is a type of interaction diagram that depicts how processes work with one another and in what order. It is a construct of a Message Sequence Chart. Sequence diagrams are sometimes called event diagrams, event scenarios, and timing diagrams.

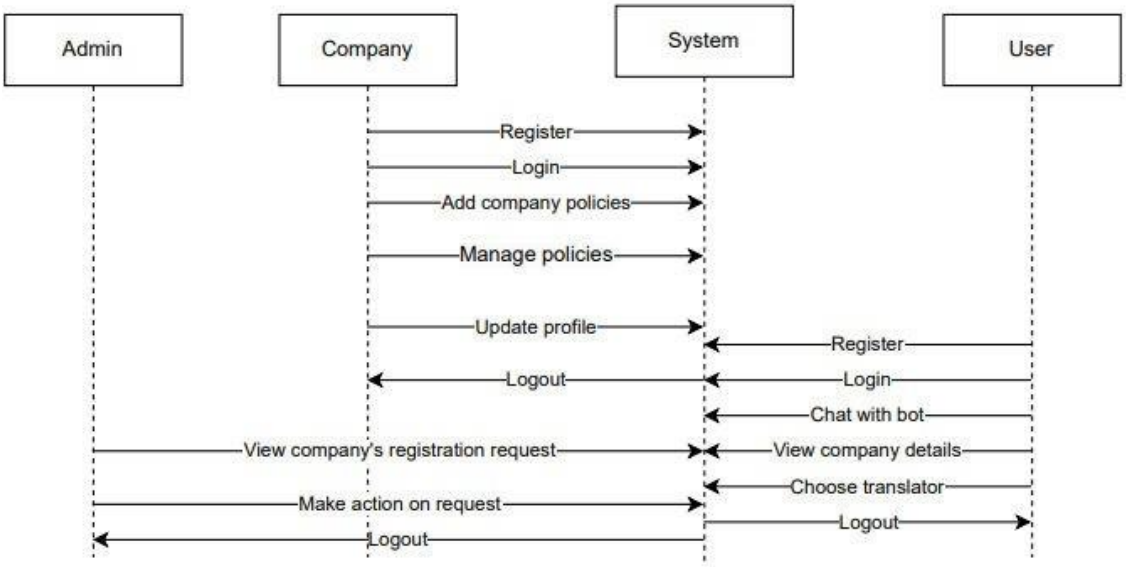

Fig5.3: SEQUENCE DIAGRAM

The diagram illustrates a sequence diagram that outlines how technology is leveraged to enhance customer experience by defining the interactions between different actors (Admin, Company, System, and User) and the system. Each action is depicted as a sequence of messages exchanged between the entities, showcasing the workflow and role-specific functionalities that collectively improve the customer experience.

Admin Interactions

The admin interacts with the system to manage company registrations: The administrator logs in to the system to authenticate and get an access for administrative functionalities. The system enables the admin to view company registration requests submitted by businesses. **Matzler & Füller (2020)**The administrator checks upon and decides on approval or rejection of such requests for only a credible and authentic company to be on-boarded. The admin logs out once he has completed his task, which further seals the system and upholds its integrity. This process ensures robust quality checking as the system inspires trust among its users and business.

Company Interactions The companies use the system to manage their profile and policies:

Companies have to register. Registration requires that the company submits some basic details, such as name, email, address, and password. They then log into the system upon registration. Companies are able to update or add any policies they are offering to stay relevant to their needs. They can also

update their profile with the correct and current information. After completing the tasks, the company logs out to secure its account and keep unauthorized access at bay. This cycle allows the companies to engage dynamically with the system, which means they are able to perform their duties appropriately for their customers.

User Interactions

The user interacts with the system to access services and information. Users register and provide their personal details to be able to open an account. They log in for secure access to their profile and interaction with the system. The users can communicate with a bot to resolve their queries for immediate and effective support. They can view company details to know the insurance policies and offerings available according to their needs. Users can select a translator for language support, and hence the system can be accessed by people belonging to different linguistic backgrounds. Lastly, they log out after the session for maintaining account security. This sequence prioritizes user convenience and accessibility, providing a personalized and inclusive experience.

System as a Central Entity

The system acts as the backbone, coordinating interactions between Admin, Company, and User. It handles registration, authentication, and data management tasks to streamline the processes for all stakeholders. The system's role is pivotal in enabling seamless communication, ensuring data integrity, and facilitating secure and efficient workflows.

5.1.4 Collaboration Diagram:

In collaboration diagram the method call sequence is shown by some numbering technique as given below. The number indicates how the methods are called one after another. We have to organization whereas the collaboration diagram shows the object organization The method calls are similar to that of a sequence diagram. But the difference is that the sequence diagram does not describe the object organization whereas the collaboration diagram shows the object organization.

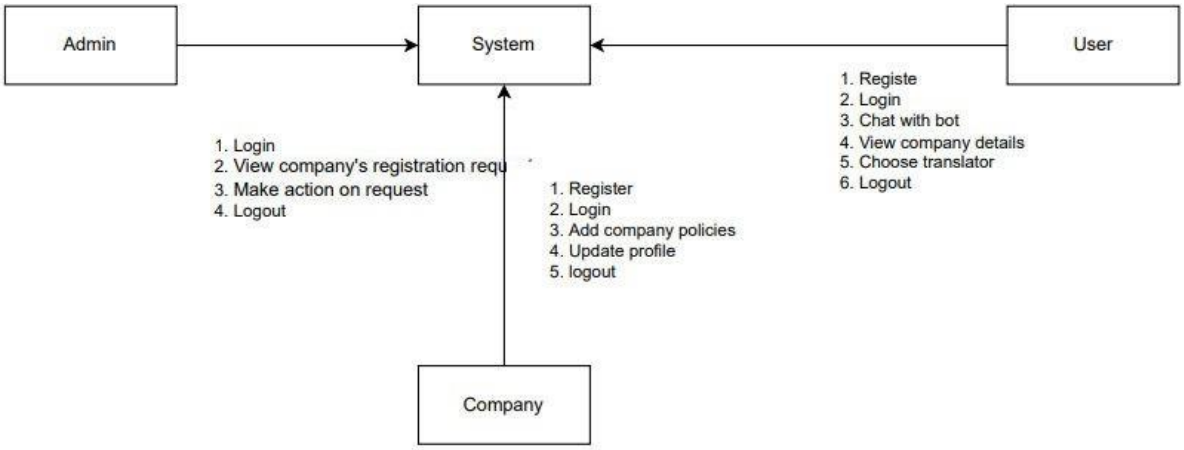

Fig5.4: COLLABORATION DIAGRAM

The diagram gives a contextual representation of how technology is leveraged to improve customer experience by outlining interactions between the Admin, Company, User, and the central System. The system acts as the core entity that facilitates and manages all interactions, ensuring efficient workflows and seamless operations.

Admin's Role

The admin is responsible for managing company registrations to maintain the integrity and quality of the platform. Admin interactions with the system include:

Login: Authenticate themselves to access administrative functionalities securely.

View company's registration request: Review registration requests submitted by companies to ensure their compliance with the policies of the platform.

Make action on request: Approve or reject based on the authentication process; only the credible companies become part of the system.

Logout: Securely log out from the system after finishing administrative jobs.

This workflow makes sure that the platform is well-regulated and trustworthy, which makes the service better for the user as only vetted companies can participate on the platform.

Role of Company

The company communicates with the system through its profile and policies. The features offered to the company are:

Register: Companies provide their details to register and to be part of the platform.

Login: Access the system securely to manage their services.

Company policies: Develop and distribute new policies to the users, and thereby, offer them appropriate insurance solutions.

Profile update: Maintain accurate and updated company information for transparency and credibility.

Logout: Securely end their session after completing their work.

This interaction enables companies to dynamically manage their offerings and interact with users in order to improve customer satisfaction and trust.

Role of User

The system benefits its users by giving them access to features that ease and enhance their experience. Some of the users' capabilities include:

Registration: Creating an account to access the platform and all its features

Login: Securing access to their accounts in order to interact with the system

Chat with bot: Making use of chatbot functionality to get immediate help and solve queries

View company details: Browse information about the registered companies and their policies for informed decisions.

Choose translator: Get translation services that provide access for a wide variety of users speaking different languages.

Logout: Logout of the system once they have finished their session

These functions emphasize the user experience by being seamless and personal in their treatment.

System Role

The system will act as a middle man for the admin, company, and user. The system is used to conduct registration, authentication, and exchange data for efficient and secure interactions. The centralized approach of the system guarantees the following:

Data integrity through handling and validation of all inputs and actions.

Scalability: accommodate more users and companies.

Security through proper mechanisms for login and logout.

5.1.5 Deployment Diagram

Deployment diagram represents the deployment view of a system. It is related to the component diagram. Because the components are deployed using the deployment diagrams **(Zhou & Liu, 2020)**. A deployment diagram consists of nodes. Nodes are nothing but physical hardware's used to deploy the application

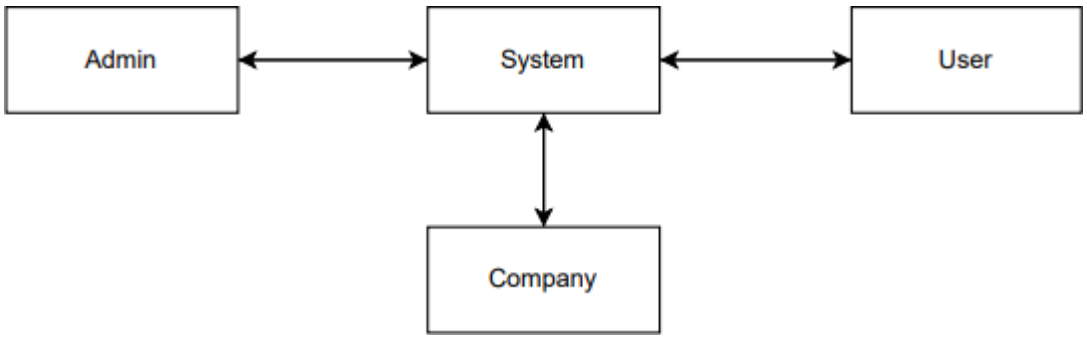

Fig5.5: DEPLOYMENT DIAGRAM

This diagram is a simplified view of how technology allows the Admin, System, Company, and User to interact with each other in a structure designed to improve customer experience through streamlined communication and service management.

System as the Central Hub:

It has the central unit that connects the Admin, Company, and User. It therefore acts as a middleman ensuring safe and smooth communications. This makes it possible for the system to have efficient flow of data and security, factors that are central to improving the customer experience. The system shall be responsible for managing actions that include:

Verifying user and company registrations

Supporting administrative tasks such as reviewing and accepting companies

It enables companies to manage policies.

It provides access to services and communication tools easily to the users.

Admin Interaction

The admin interacts with the system to supervise and control activities on the platform. The administration of company registration and appropriate response to requests made ensures that the platform upholds high standards of trust and quality. This is what makes users feel confident about the reliability of the companies and policies presented on the platform, hence improving their experience.

Company's Interaction

Company interacting with the system for:

- User registration and secured login to the site.
- Create, edit or manage policies
- update their profiles.

All these ways allow companies to easily present to the users various policies they propose. This ensures that the presented information is fresh and correct so that the customers can be more satisfied and believe in the offers made. The User's Interaction the User utilizes the system to Register and securely log in Explore the information of the companies and policies in place Use the chatbots on the system for queries and guidance Make available features like a translation tool, enabling inclusivity and accessibility Such features will resonate with diverse users' needs; hence, making the system pretty easy to use, highly responsive **Sharma & Gupta (2020)**. This is all about using the technology for achieving a superior customer experience by the user-centric approach.

5.1.6 Activity Diagram:

Activity diagrams are graphical representations of workflows of stepwise activities and actions with support for choice, iteration, and concurrency. In Unified Modelling Language, activity diagrams can be used to describe the business and operational step-by-step workflows of components in a system. An activity diagram shows the overall flow of control.

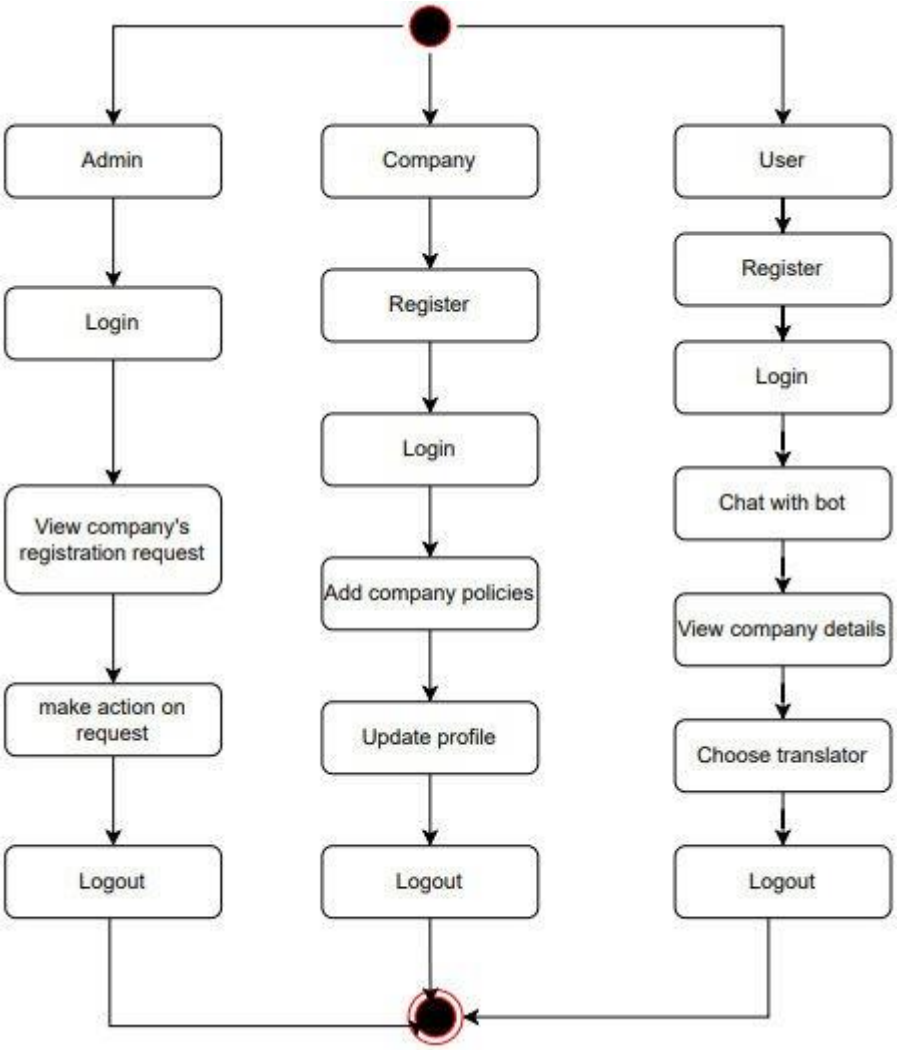

Fig5.6: ACTIVITY DIAGRAM

The diagram describes the flow of interactions in a system that makes use of technology to enhance customer experience. There are three primary users: Admin, Company, and User. Each of these has their roles and the respective flow within the system:

Admin Flow

- **Login:** Admin logs onto the system.
- **View company's registration request:** Admin can view requests from the companies wanting to get registered on the platform.
- **Action on request:** The admin accepts or rejects the registration request of the company.
- **Logout:** The admin logs out from the system.

Company Flow:

- **Register:** A company first registers itself with its details on the system.
- **Login:** Once registered, the company logs into the system.
- **Add company policies:** The company adds its policies, possibly for customers or in-house usage.
- **Update profile:** The company updates its profile details as necessary.
- **Logout:** The company logs out.
- **User Flow:**
- **Register:** A user registers on the website.
- **Login:** After registering in the application, a user logs in to access the system.
- **Chatbot:** The user chats with a chatbot, who would be able to reply or make suggestions about something.
- **Company Details:** The user can see details about different companies
- **Translator:** The translator has been chosen by the user, probably to act as a translator in case of language support or communication needs.
- **Logout:** The user logs out from the system.

5.1.7 Component Diagram:

A component diagram describes the physical components organization and wiring in a system. It is mostly used to help implement the modelling implementation details and to double-check whether every one of the details of the functions required for a system is covered by the planned development.

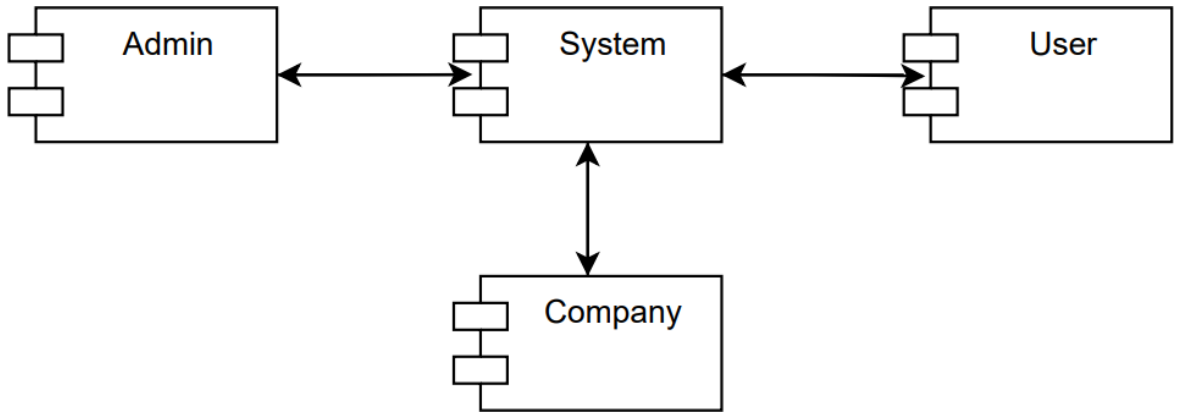

Fig5.7: COMPONENT DIAGRAM

The above diagram is a context-level flow diagram of the relationships and interactions between the primary entities involved in the project.

Components and Their Roles:

1. Admin:

The admin interacts directly with the system. Admin's role is usually associated with system administration and management, including reviewing requests for company registration, approving or rejecting them, and maintaining system integrity.

2. System:

The system is the central body that connects and facilitates communication between the other bodies: Admin, Company, and User. It processes data, manages interactions, and ensures smooth functionality.

3. User:

Users interact with the system in order to receive services, for example, talking to a bot, viewing the information about the company, or choosing a translator. The system acts as an intermediary, which would personalize services and increase the quality of the user's experience.

4. Company:

Companies create their profiles on the system and interact with it in order to update their policies, provide details for users, and maintain their profiles. The system allows companies to display their offerings, thereby making them visible and accessible to users.

Interaction Flow:

1. Admin ↔ System:

The admin will be in touch with the system regarding processes, which include company approvals, user management, and the general performance of the system.

2. User ↔ System:

The users communicate with the system, where the main features involved include viewing details regarding the companies, interacting with the chatbot, and making selections of translators. The system processes such activities by users and responds appropriately.

3. Company ↔ System:

Companies feed in the information like policies, profiles, and so on into the system and update it accordingly. The system ensures that such information is always available to users and the admin **Bolchini et al. (2009).**

4. System as the Hub:

The system acts as a central hub ensuring that all the actors communicate and collaborate freely. It processes the actions from the admin, offers user interaction, and manages the company information.

5.1.8 ER Diagram:

An ER model (Entity–relationship model) is described by using a diagram for structuring the structure of a database. The same diagram is referred to as Entity Relationship Diagram, or ER Diagram. An ER model is actually the design or blueprint of a database which can be further implemented in form of a database **Peter Chen (1976)**. There are two fundamental constituents of E-R model: entity set and relationship set.

An ER diagram exhibits the relationship between entity sets. An entity set is a group of similar entities and these entities can have attributes. In case of DBMS, an entity is a table or attribute of a table in

database, so by showing the relationship among tables and their attributes, ER diagram shows the whole logical structure of a database. Let's take a look at a simple ER diagram to understand this concept.

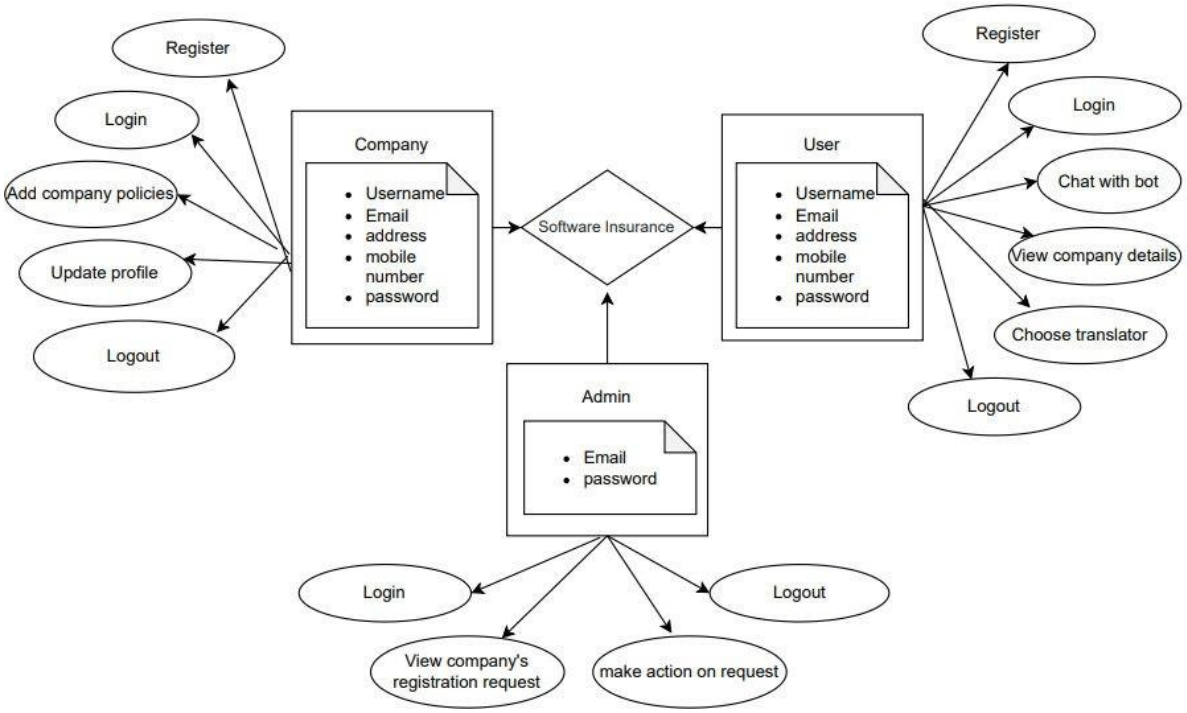

Fig5.8: ER DIAGRAM

The above diagram represents a system designed to better the customer experience with technology. It is built around three core entities: Admin, Company, and User, all linked together by a central "Software Insurance" system. Each of the entities has its own roles and attributes, explained by functionality. The Admin manages the system through login, viewing registration requests for companies, accepting or rejecting those requests, and then logout. This will give system oversight and controls, while keeping the integrity of the platform. Admin authentication will require an email and password.

The Company and User interact differently with the system. A company can register, log in, add policies, update profiles, and log out, credentials including username, email, address, mobile number, and password. These can include registration and login, as well as interacting with a chatbot and viewing company information, selecting translators, and logging out. Both of the entities are using the system to facilitate the communication and feature access that helps to improve the overall experience. The "Software Insurance" serves as the core intermediary between the three, ensuring smooth

functioning. Focus on streamlining workflows using technology as the central intent of offering personalized services in order to boost customer satisfaction.

5.1.9 DFD Diagram:

Data flow diagrams represent information flows in the system. Neat and clear DFD can represent a great deal of requirements graphically for a system. It may be manual or automated or a mixture of both. It indicates the information coming into the system and going out of the system, what transforms the information, and where the information is kept **Tom DeMarco (1978)**. A DFD is intended to represent the scope and boundaries of a system as a whole. It may be used as a communications tool between a systems analyst and any person who plays a part in the system that acts as the starting point for redesigning a system.

Context Flow Diagram:

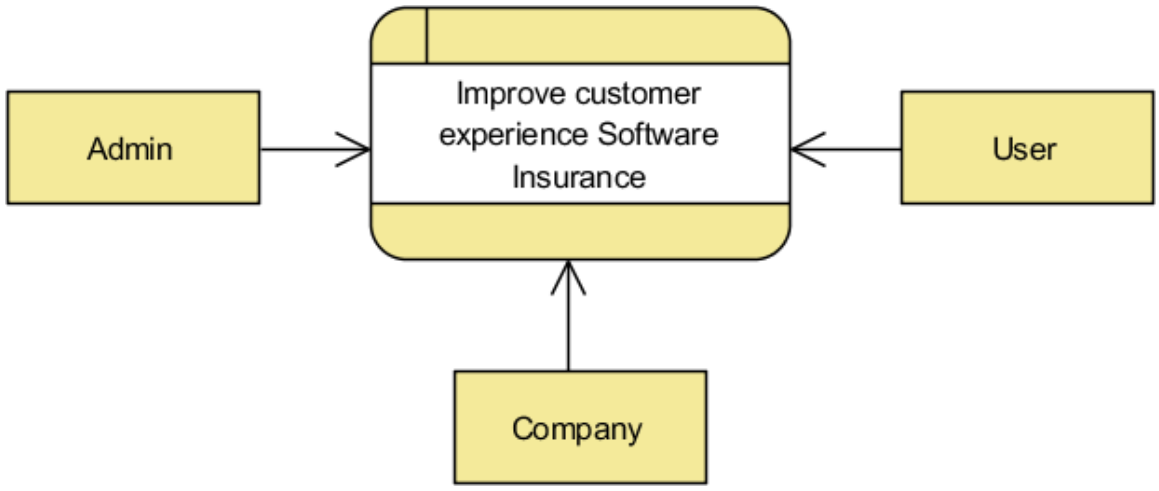

Fig5.9: CONTEXT FLOW DIAGRAM

This diagram is a top-level view of the system with the central entity: the "Improve Customer Experience Software Insurance" platform. The system is therefore the core intermediary between three key actors: Admin, Company, and User, each of which interacts with the platform to perform their respective tasks. The admin manages the platform through handling registrations, checking system activity, and ensuring the smooth running of the system. The company contributes by registering and providing necessary information, while the users access services and features that meet their needs, such as interacting with bots or accessing company details.

The central platform will allow for the smooth communication and interaction between the three entities so that all the actions are processed efficiently and accurately **Erl, Thomas (2005)**. The system works as a hub, taking the help of technology to make processes easier, accessible, and more personalized. The system empowers companies to update policies, while the platform gives users the ability to feature translators or even chatbots for an improved and more responsive customer experience. It is this modularity that defines the role of technology in an interconnected system which balances administrative control, company visibility, and user engagement.

Level 1 Diagram:

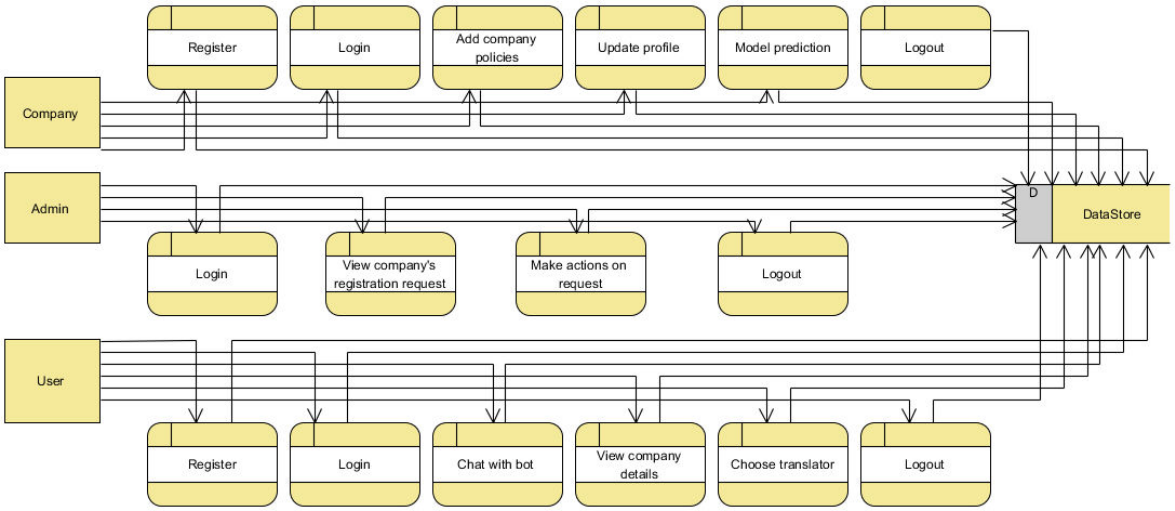

Fig5.10: LEVEL 1 DIAGRAM

The diagram illustrates the interaction and processes in the project titled "Leveraging Technology to Improve Customer Experience." It contains three main actors: Company, Admin, and User, all of whom will perform different operations in interaction with a central Datastore. All activities, such as registrations, policies, and user interactions, are done within the Datastore, which is the backbone of the system. Each actor performs specific tasks, contributing to the seamless operation of the platform.

Company: Companies register and log in to the system to manage their profiles, add company policies, and make updates. A key feature available to companies is Model Prediction, likely a machine learning or analytical tool that helps improve decision-making or customer service. All interactions are routed through the Datastore for centralized management and synchronization.

Admin: The admin logs in to view and process company registration requests and then performs the action of approval or rejection. This way, there is oversight and governance in the system. Admin actions are also stored and managed through the Datastore.

User Features: users sign up, login and access such features as chatting with a bot, company details, and selection of a translator. Such features boost customer satisfaction because of the provision of personal and direct services. In like manner, user interactions are linked to the Datastore for easier management of data.

This architecture will display a well-structured, modular system with Datastore that ensures all operations are supported and a unified flow of data. The system can utilize technology in its operations by providing functionalities such as model prediction for companies and chatbots for users to ensure high operational efficiency and customer satisfaction.

Level 2 Diagram:

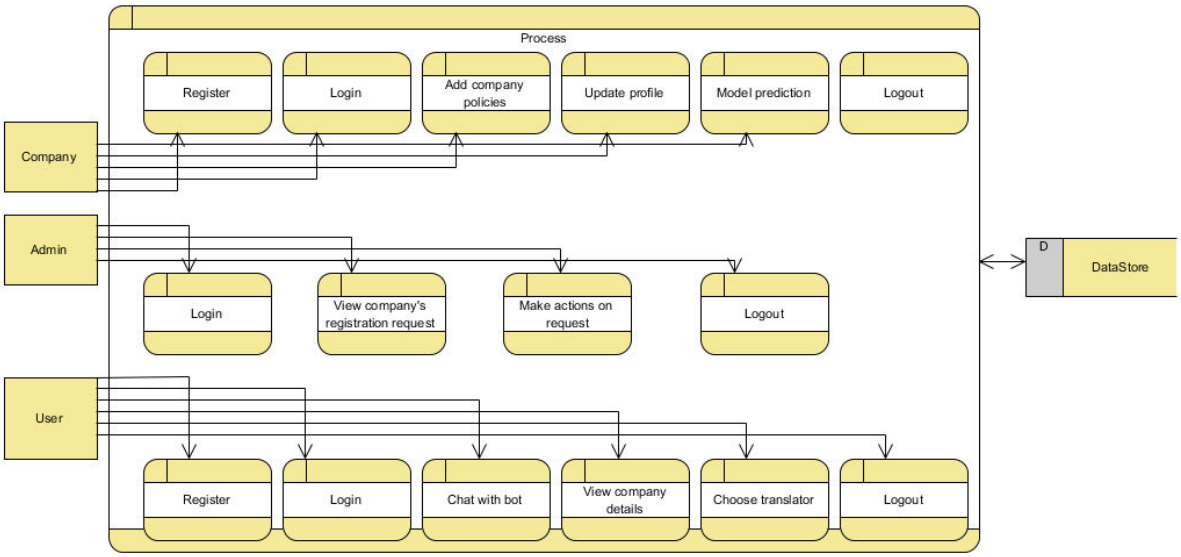

Fig5.11: LEVEL 2 DIAGRAM

The above diagram shows the second level of the system called "Leveraging Technology to Improve Customer Experience", which elaborates on the interactions and processes of each actor—Company, Admin, and User. Here, the Process layer is added connecting the actors to their respective operations while interfacing with the centralized Datastore. The modular representation shows the different responsibilities of each actor and ensures that all activities funnel into the Datastore for seamless data management.

For the Company, the most outstanding processes include registration, login, adding company policies, updating profiles, using model predictions, and logout. All these ensure that companies can efficiently run their activities and use analytical tools such as model predictions to understand customers better. Admin tasks are mainly on governance; logging in, viewing registration requests, taking action, and

logging out, to control the system and make appropriate decisions **Silberschatz, Korth, and Sudarshan (2019**). Similarly, user processes like registration, login, chatting with a bot, viewing company information, selecting translators, and logout are cantered on customer functions. All their communications and data exchange are funnelled through the Datastore, hence ensuring safe, centralized, and efficient data handling.

This second-tier diagram gets into the core processes and gives a finer view of how the platform works. It shows how the combination of administrative oversight, company management, and user services puts the technology in a better position to deliver on the customer experience. Datastore is at the centre of all processes while still scalable, with data consistency and efficient data retrieval for the actors and their tasks.

CHAPTER-6

IMPLEMENTATION AND RESULTS

6.1 Modules:

1. Admin Module

- **Company Registration Management:** The Admin can oversee all company registration requests. After reviewing, the Admin approves or rejects company registrations.

  Explanation: This ensures only valid and trustworthy insurance companies are added to the platform.

- **View Detailed Company Information:** The admin can view information about each registered company, including its policies, history, and submitted documents. Explanation: This provides the Admin with a comprehensive understanding of each insurance company on the platform, aiding decision-making and regulation.

2. Company Module

- **Company Registration:** Insurance companies can register on the platform providing necessary details and documents.
- **Upload Policy Details:** Companies can upload their policy details in various formats, such as text, video, and audio.
- **Manage Profile and Account:** Once approved, companies can update their profiles, manage account details, and review their policy submissions.
- **Interactive Interface:** The company interface allows companies to interact with the platform, submit updates, and manage customer inquiries.

3. User Module

Company Registration: Users can create an account on the platform, log in to access services, and update their profiles as needed.

View Company Details: Users can explore detailed information about registered insurance companies, such as policies and services.

Multilingual Translator: The user module allows users to interact with the policy details in their preferred language, supporting up to five languages.

AI-Powered Chatbot Interaction: Users can interact with a chatbot to get assistance with questions about policies, companies, or general inquiries.

Forgot Password: Users can reset their passwords if they forget them, ensuring easy access to their accounts.

CHAPTER-7

SYSTEM STUDY AND TESTING

7.1 Feasibility Study

The feasibility study determines if the proposed solution is feasible with regard to technology, resources, and time. It ensures the project is practical and worthwhile. Three important considerations involved in the feasibility analysis are

- Economical feasibility
- Technical feasibility
- Operational Feasibility
- Legal Feasibility

Economical Feasibility

Analyze the costs of developing and deploying the system, including cloud hosting, AI integration, and mobile app development, against the expected benefits, such as increased customer engagement, reduced customer service load, and increased trust.

Technical Feasibility

Determine whether the technological support for hosting videos, interacting with voice assistants, mobile apps integration, the generation of QR codes, as well as support for databases will be available and scalable.

Operational Feasibility

Determine whether the solution can be smoothly integrated into existing business operations, including the workflow of insurance providers and customer service teams.

Legal Feasibility

Assess compliance with relevant laws and regulations, such as data privacy laws (GDPR, CCPA) and accessibility standards (ADA).

System Testing

The purpose of testing is to discover errors. Testing is the process of trying to discover every conceivable fault or weakness in a work product. The software system meets its requirements and user expectations and does not fail in an unacceptable manner. There are several types of test **Armbrust et al. (2010)**. Each type of test addresses a specific testing requirement.

7.2 Types of Tests

7.2.1 Unit testing

The process of unit testing is basically meant to test isolated components or modules of the system to ensure that each piece functions correctly in its own environment. This ensures the building blocks work well before integrating into larger systems.

For instance, you may test one feature like the QR code generation, and make sure that it is unique, correct, and points to the correct policy page. You may test a particular function of the voice assistant and confirm whether it is giving the correct response depending on what the user asks.

7.2.2 Integration testing

Integration testing essentially tests how well the various parts of the system fit together. It will determine if components, when integrated, will communicate correctly, share data accurately, and behave as expected when combined **Boehm's Spiral Model (1988)**.

For instance, in case you have different systems for hosting the video, generating the QR code, and the interface to be displayed in the mobile application integration testing would ensure that when a user scans the QR code, it takes them to the right video content hosted on the server, and that everything runs smoothly.

Test Results: All the test cases mentioned above passed successfully. No defects encountered.

Acceptance Testing

User Acceptance Testing is a critical phase of any project and requires significant participation by the end user. It also ensures that the system meets the functional requirements.

Test Results: All the test cases mentioned above passed successfully. No defects encountered.

7.2.3 Functional testing

Functional testing ensures that the system meets all specified functional requirements. The goal is to verify that the system behaves as expected, including providing accurate and complete responses to user actions.

Tests:

Video Content Test**:** Ensure that video content plays correctly across multiple devices (mobile, tablet, desktop).

Voice Assistant Test: Verify that the voice assistant can understand user queries and provide accurate responses.

QR Code Test: Confirm that QR codes correctly link to the intended policy details or video content.

Feedback Mechanism Test: Test that feedback forms or collection systems store data correctly and display it as expected.

7.2.4 Usability Testing

Usability testing emphasizes how user-friendly and intuitive the system is to the target audience. This implies that it's the assessment of how easily the users can work with the system and accomplish what they want to do.

Tests:

Ease of Access: Test whether users can easily find the information they need (via the app, voice assistant, or QR codes).

User Experience (UX): User test sessions should be conducted to confirm that the system is intuitive and provides a seamless experience, for example, to watch a video, scan a QR code, or interact with a voice assistant.

Accessibility: Test the system's compliance with accessibility standards (such as screen reader compatibility or text-to-speech functionality).

7.2.5 Performance Testing:

Performance testing evaluates the performance of a system under varied conditions, mainly when multiple users are interacting with it at one time. This ensures that even when the load is heavy, the system should be responsive, stable, and reliable.

Tests:

Load Testing: Simulate a high number of users to see how the system will handle increased traffic. For instance, how does the system perform with many users accessing videos or interacting with voice assistants at the same time?

Stress Testing: Test the system beyond its normal operational capacity to observe how it behaves under extreme conditions. This could determine the maximum extent at which its systems may break.

Scalability Testing: Check if the system can scale effectively as user demand increases or as new features are added.

7.2.6 : Security Testing:

Security testing ensures that the system is secure, protecting user data from unauthorized access or breaches. It ensures that the system follows best security practices and safeguards sensitive information.

Tests:

Authentication & Authorization: Only authorized users should be able to access policy data or video content, and permissions should be set up properly.

Data Encryption: Ensure that sensitive customer information is encrypted both at rest (in databases) and in transit (during communication).

Vulnerability Testing: Test for common security vulnerabilities, such as SQL injection, cross-site scripting (XSS), and cross-site request forgery (CSRF).

CHAPTER-8

CONCLUSION

In conclusion, the insurance industry is changing by giving in to the super/in-depth technology of making it more customer-friendly as well as operationally efficient. This whole project is aimed at removing the issues such as low customer engagement, language issues, and the unavailableness of old communication media by integrating AI-driven chatbots, multi-lingual support, and multimedia forms like text, audio, and video for policy communication **2022 McKinsey Report**. The NLP-powered chatbots and multilingual capabilities make the system accessible to a larger audience, and streamlined admin and company management ensure effective operations. All in all, this platform uses technology to bridge gaps within the insurance industry, improving customer satisfaction and forging stronger relationships.

FUTURE ENHANCEMENT

Although the current version of the platform is better at enhancing the experience of the customers in the insurance industry, further improvements in the future would bring about better functionality and engagement. Voice-activated AI assistants will make the platform more accessible, especially for those users who prefer voice interactions. The mobile app would increase accessibility on the go with the same features of the web platform and push notifications **PWC's AI Predictions 2023**. Digitalization through cross-platform integration with applications such as social media and mobile wallets could facilitate a comprehensive picture of personal funds. Multilingual capabilities would be necessary to reach people from different geographical locations and demographics. These new features will further keep the insurance platform innovative, user-centric, and efficient while adapting to a changing landscape of insurance.

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APPENDIX-A

PSUEDOCODE

App.py Code:

ADMIN CODE:

```
DEFINE route '/admin'
   RETURN 'admin.html' template


DEFINE route '/admin_login', methods=["GET", "POST"]
   IF request method is POST
      GET email and password from form
      IF email and password are valid (hardcoded admin credentials)
         REDIRECT to '/admin_home'
      ELSE
         RETURN 'admin.html' template with "Invalid credentials" message
   ELSE
      RETURN 'admin.html' template


DEFINE route '/admin_home'
   RETURN 'admin_home.html' template


DEFINE FUNCTION 'retrieve_company_details1'
   QUERY to fetch all companies with "pending" status
   INITIALIZE empty request list
   FOR each company in retrieved data
```

```
        APPEND company details to request list
    RETURN request list

DEFINE route '/company_request'
    CALL 'retrieve_company_details1'
    RETURN 'company_request.html' template with request data

DEFINE route '/accept_company_requests/<company_id>'
    UPDATE company status to "accepted" for given company_id
    CALL 'retrieve_company_details1'
    RETURN 'company_request.html' template with updated request data

DEFINE route '/reject_company_requests/<company_id>'
    UPDATE company status to "rejected" for given company_id
    CALL 'retrieve_company_details1'
    RETURN 'company_request.html' template with updated request data

DEFINE route '/admin_company_details'
    QUERY to fetch all companies
    INITIALIZE empty company list
    FOR each company in retrieved data
        APPEND company details to company list
    RETURN 'admin_company_details.html' template with company data
```

```
DEFINE route '/admin_user_details'
    QUERY to fetch all users
    INITIALIZE empty user list
    FOR each user in retrieved data
        APPEND user details to user list
    RETURN 'admin_user_details.html' template with user data
```

COMPANY PANNEL:

```
DEFINE route '/company'
    RETURN 'company.html' template

DEFINE route '/company_register', methods=["GET", "POST"]
    IF request method is POST
        GET company details from form
        CHECK if password matches confirm password
            FETCH existing company emails
            IF email is not in existing emails
                INSERT new company details with "pending" status
                RETURN 'company_login.html' template with success message
            ELSE
                RETURN 'company_register.html' template with "Email already exists" message
        ELSE
            RETURN 'company_register.html' template with "Passwords do not match" message
```

```
    ELSE
        RETURN 'company_register.html' template

DEFINE route '/company_login', methods=["GET", "POST"]
    IF request method is POST
        GET email and password from form
        FETCH company details for given email
        IF company exists
            IF company status is "accepted"
                IF password matches
                    SET session variables for company details
                    REDIRECT to '/company_home'
                ELSE
                    RETURN 'company_login.html' template with "Invalid password" message
            ELSE
                RETURN 'company_login.html' template with "Not approved by admin" message
        ELSE
            RETURN 'company_login.html' template with "Email does not exist" message
    ELSE
        RETURN 'company_login.html' template

DEFINE route '/company_home'
    RETURN 'company_home.html' template
```

```
DEFINE route '/add_policy', methods=["GET", "POST"]
    IF request method is POST
        GET policy details and uploaded files
        SAVE files to 'static' directory
        INSERT policy details into database
        RETURN 'add_policy.html' template with success message
    ELSE
        RETURN 'add_policy.html' template


DEFINE route '/manage_policy', methods=["GET", "POST"]
    INITIALIZE message as None
    GET company_id from session
    IF request method is POST
        GET policy details and optional uploaded files
        UPDATE policy in database based on provided details
        SET message to "Successfully updated"
    FETCH all policies for given company_id
    INITIALIZE empty policy list
    FOR each policy in retrieved data
        APPEND policy details to policy list
    RETURN 'manage_policy.html' template with policy data and message
```

DATABASE INTERACTION FUNCTIONS:

DEFINE FUNCTION 'retrivequery1(query, values)'

EXECUTE provided query with values

RETURN retrieved data

DEFINE FUNCTION 'retrivequery2(query)'

EXECUTE provided query

RETURN retrieved data

DEFINE FUNCTION 'executionquery(query, values)'

EXECUTE provided query with values

COMMIT changes to database

APPENDIX-B

RESULTS

Fig12.1: WELCOME PAGE

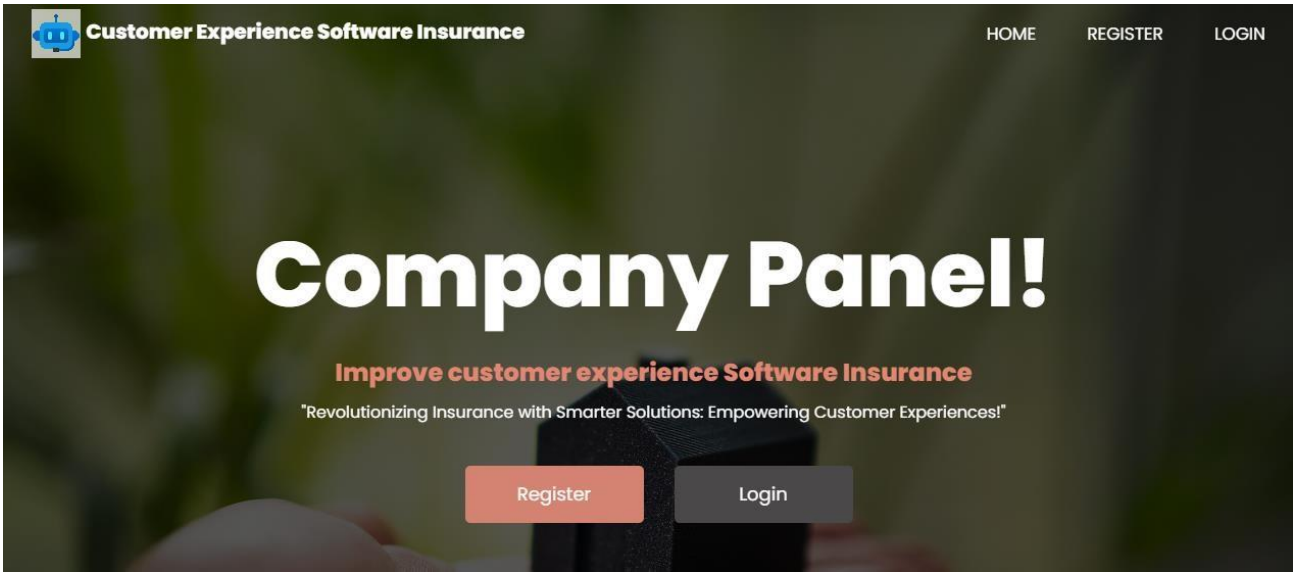

Fig12.2: COMPANY PANNEL PAGE

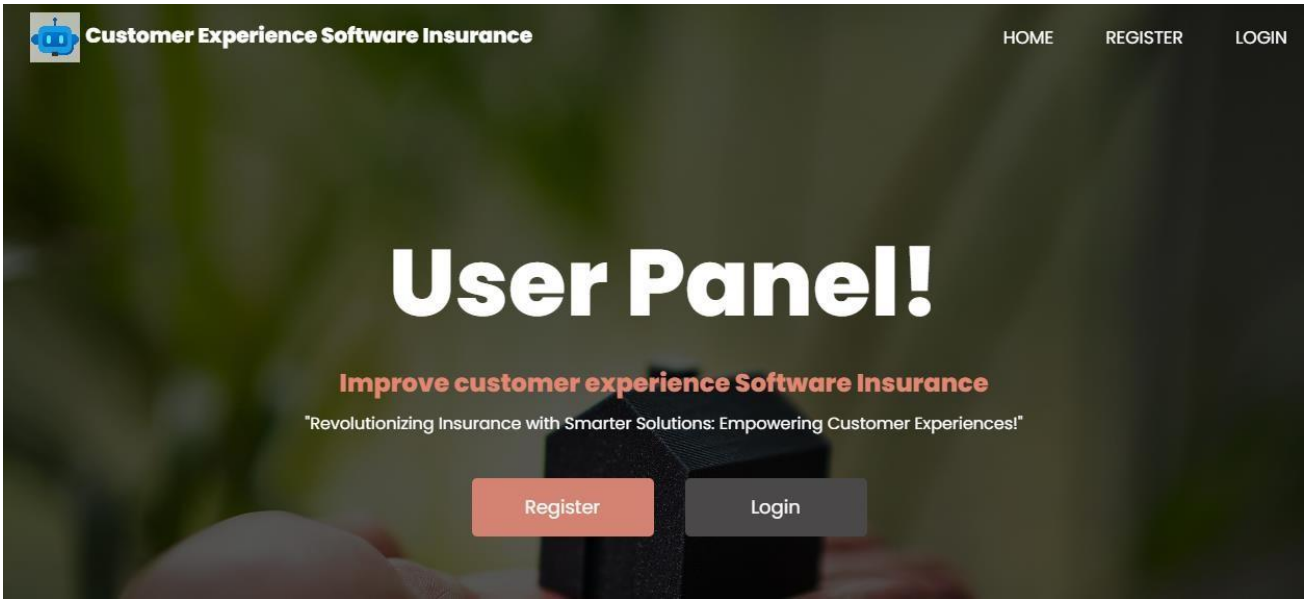

Fig 12.3:USER PANNEL PAGE

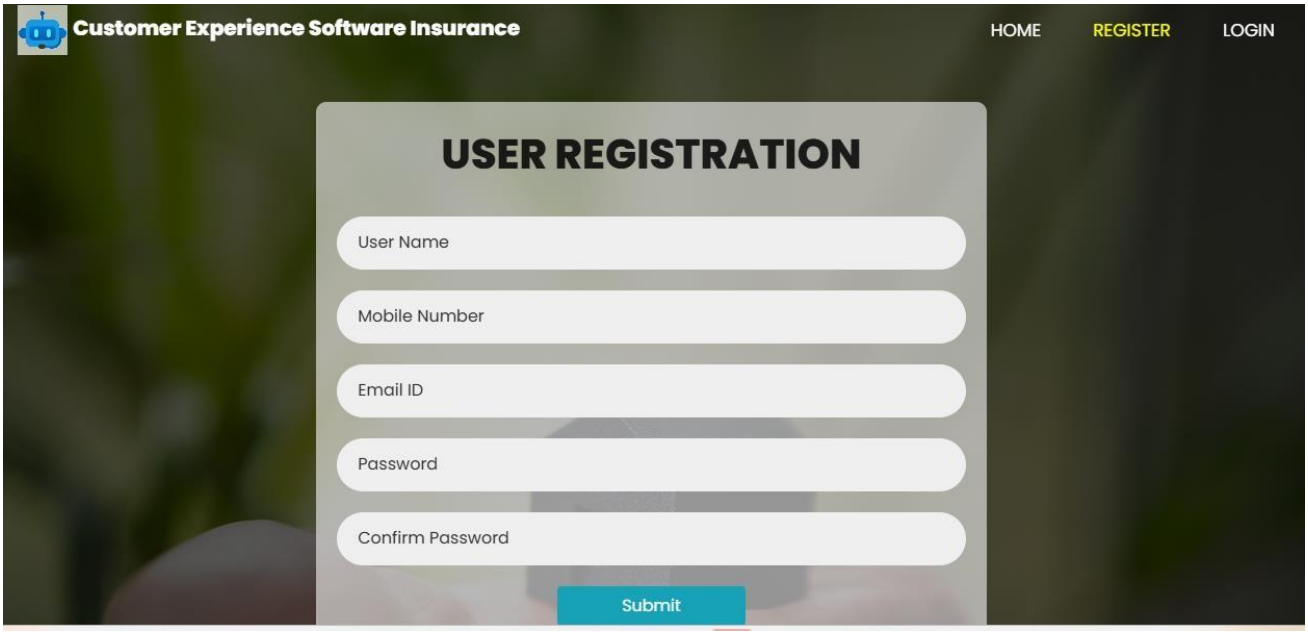

Fig 12.4:USER REGISTRATION PAGE

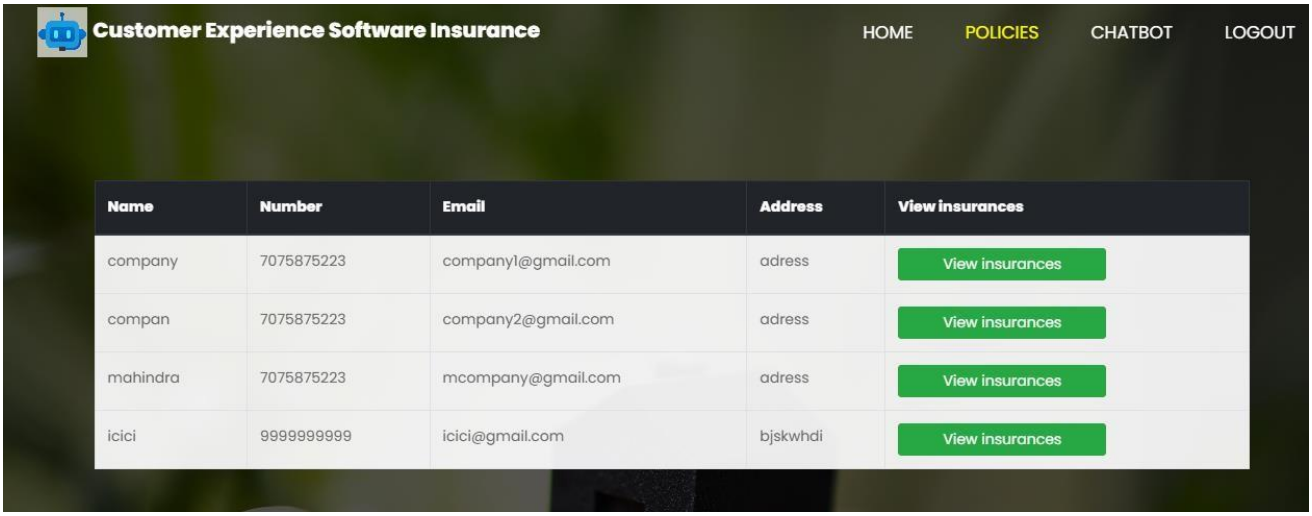

Fig12.5: POLICIES PAGE

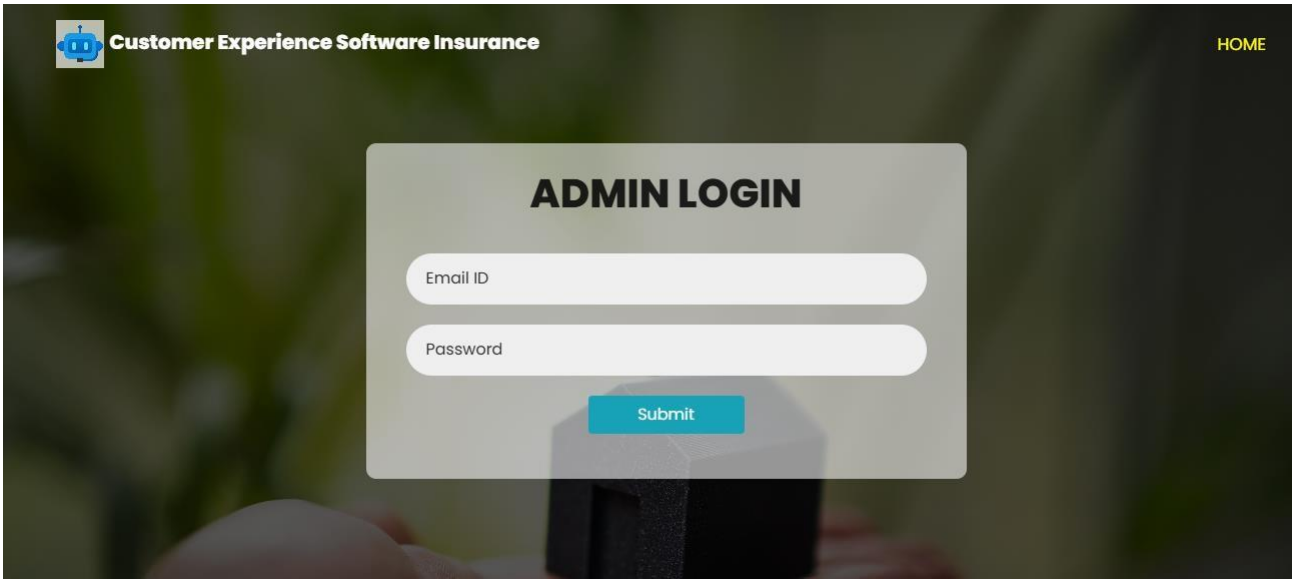

Fig 12.6: ADMIN LOGIN PAGE

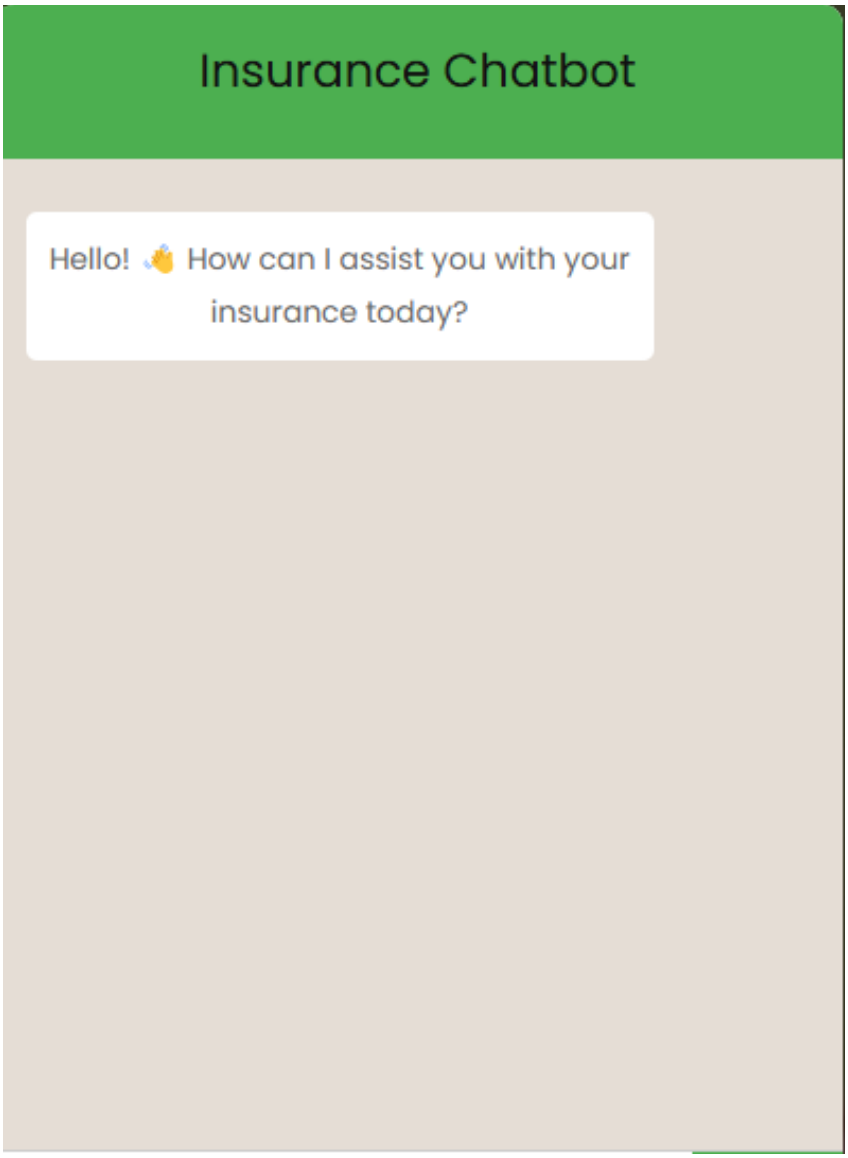

Fig12.7: CHATBOT PAG

APPENDIX-C

ENCLOUSERS

1. Journal publication/Conference Certificates of all students.

ISSN: 2582-3930

ACCEPTANCE CERTIFICATE

Impact Factor: 8.448
DOI Prefix: 10.55041

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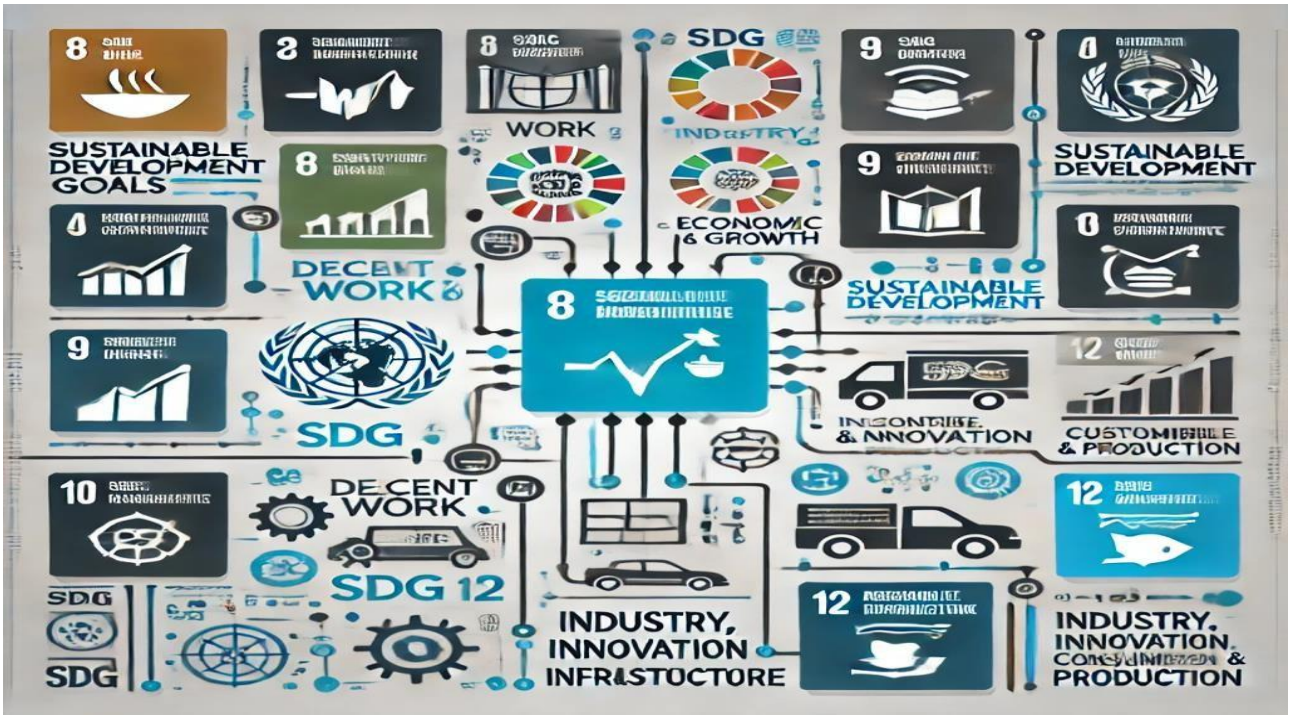
3. Building a Sustainable Future with Technology to Enhance Customer Experience



In today's rapidly evolving world, technology plays a critical role in shaping customer experiences. By aligning technology-driven initiatives with the United Nations Sustainable Development Goals (SDGs), businesses can achieve economic growth, foster inclusivity, and promote sustainability. Here's how leveraging technology to improve customer experience can contribute to a better and more sustainable future.

1. The Key SDGs for the Project

Goal 9: Industry, Innovation, and Infrastructure

What it means: Building innovative, reliable, and resilient infrastructure to support a sustainable future.

- **How it applies:** Advanced technologies like artificial intelligence (AI), the Internet of Things (IoT), and cloud computing can create customer service tools like chatbots, recommendation engines, and seamless platforms that meet modern expectations.

- **Impact:** These innovations drive efficiency, reduce downtime, and provide superior experiences while laying the foundation for a robust technological ecosystem.

Goal 8: Decent Work and Economic Growth

What it means: Fostering economic growth through innovation and skill development.

• **How it applies:** Technology-driven customer experiences can boost productivity for businesses while opening up new employment opportunities in tech-oriented roles. By training individuals, especially youth, in digital skills, the project reduces unemployment and improves livelihoods.

• **Impact:** This creates a win-win scenario where businesses grow, employees thrive, and customers are satisfied.

Goal 10: Reduced Inequalities

What it means: Ensuring equal access to services and opportunities for all.

•How it applies: Inclusive technologies like voice assistants, multilingual apps, and digital kiosks can cater to differently-abled individuals and underserved communities, breaking barriers in access.

•Impact: Everyone, regardless of background, can engage with businesses and services, fostering a more inclusive society.

Goal 12: Responsible Consumption and Production

What it means: Encouraging sustainable business practices and informed consumer choices.

• **How it applies:** Integrating transparent product information—such as carbon footprints or ethical sourcing—into digital platforms helps customers make eco-friendly decisions.

• **Impact:** Businesses embrace sustainability, and customers become active participants in creating a greener future.

Goal 17: Partnerships for the Goals

What it means: Strengthening collaboration among organizations to drive innovation and shared progress.

•How it applies: By working with tech companies, governments, and NGOs, businesses can create scalable and inclusive solutions to enhance customer experiences globally.

•Impact: Partnerships amplify the reach and effectiveness of technological solutions, benefiting a broader audience.

2. Real-Life Use Cases

1. Smart Retail Platforms (Goals 9 & 12):

An AI-powered app recommends sustainable products based on customer preferences, encouraging eco-friendly purchases.

2. Inclusive Banking Services (Goal 10):

A digital banking platform designed for differently-abled customers offers voice, text, and visual interactions for accessibility.

3. Employee Training Programs (Goal 8):

Free digital training courses help youth, particularly in underserved regions, build skills for tech-enabled roles in customer service.

4. Collaborative AI Systems (Goal 17):

Partnerships with tech companies create shared AI tools for small businesses to improve customer engagement affordably.

3 . A Sustainable Vision for Customer Experience

By leveraging technology, businesses can not only enhance customer satisfaction but also contribute to global sustainability. This project ensures:

- **Inclusivity:** Technology empowers everyone, regardless of their circumstances, to access services and opportunities.
- **Innovation:** Advanced tools make businesses more efficient, resilient, and ready for the future.
- **Sustainability:** Transparent and eco-friendly practices promote responsible consumption and production.
- **Collaboration:** Partnerships create shared solutions that benefit all stakeholders.

With this approach, improving customer experience becomes more than a business goal—it becomes a step toward a sustainable and equitable future for everyone.