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# AI BASED DISCOURSE FOR BANKING INDUSTRY

IBM–DOCUMENTATION

UNDER THE GUIDANCE OF

Industry Mentor(s)Name : Durga Prasad

Faculty Mentor(s)Name : S.Ramesh

TEAM ID : PNT2022TMID38899

SUBMITTED BY:

Gowtham S	421319104007
Keerthivasan S	421319104012
Umar Farook J	421319104039
Vijay M	421319104043



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

KRISHNASAMY COLLEGE OF ENGINEERING AND TECHNOLOGY

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# **1. INTRODUCTION**

## **1.1 PROJECT OVERVIEW**

In order to analyze user queries and understand user messages, artificial algorithms are used to build banking bot projects. Users can ask any bank-related inquiries, such as questions related to loans, accounts, policies, etc., on the system, which was created for banks. The system detects the user's inquiry, comprehends what he is trying to say, and concurrently provides the right response. Users may ask questions in whatever format they like. Users can ask questions in whatever format they choose. The integrated artificial intelligence system recognizes user needs and gives appropriate responses to the user. It is built to be the overall virtual assistant that can facilitate customers to ask banking- related questions without visiting the bank or calling up customer service centres as well as providing them with relevant suggestions.

## **1.2 PURPOSE**

- Increasing client satisfaction is the primary goal of chatbots in banking. However, they also assist the personnel and avoid uncomfortable situations that can happen when dealing with clients directly.
- Bank staff undergoes a lot of stressful situations when communicating with clients directly. Such situations can be avoided gracefully by using chatbots.
- Banks may benefit greatly from Conversational AI and increase customer engagement to improve the customer experience and retention by providing customers with 24/7 access to help.
- It essentially tries to eliminate the purpose of visiting a banking for basic queries and procedures.

## **2. LITERATURE SURVEY**

### **2.1 EXISTING PROBLEM**

It makes it possible for voice or written messages to be exchanged between a human and a machine. A chatbot is made to function effectively without the help of a human operator. The AI chatbot responds to queries in normal English, just like a human person would. In banking people don't have time to wait a line in a bank and complete tasks in today's fast-paced society. Even checking a few details might take up an entire day, automated service solutions enable users to save time, money, and effort. You may now communicate with your consumers at any time, from any location in the world.

### **2.2 REFERENCES**

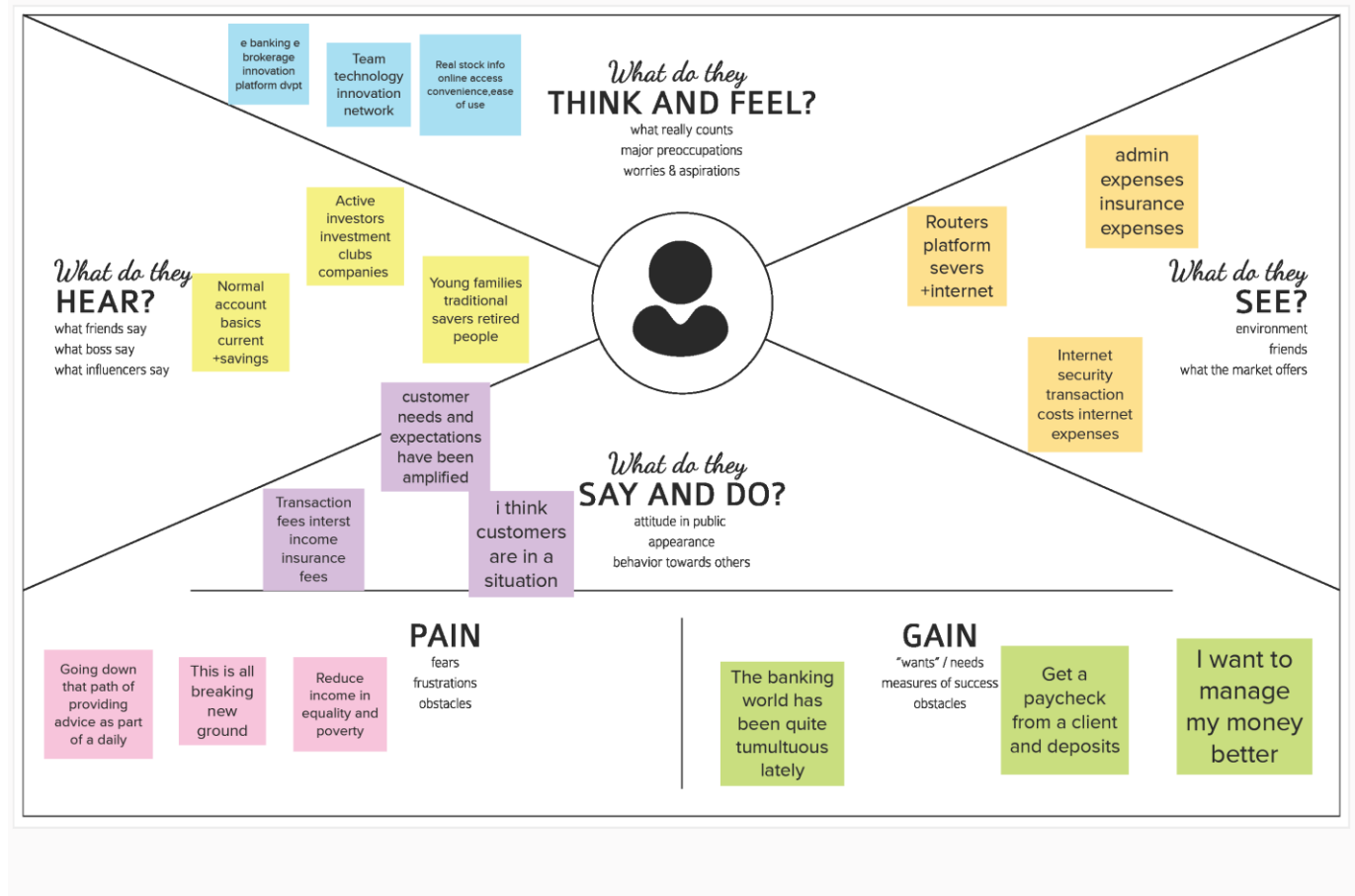
- I. Geetha. A (2021) "A STUDY ON ARTIFICIAL INTELLIGENCE (AI) IN BANKING AND FINANCIAL SERVICES" International Journal of Creative Research Thoughts (IJCRT) Volume 9, Issue 9.
- II. Dr. Simran Jewandah (2018) "How Artificial Intelligence Is Changing the Banking Sector – A Case Study of top four Commercial Indian Bank" International Journal of Management, Technology and Engineering Volume 8, Issue 7.
- III. Dr.C.Vijai (2019) "ARTIFICIAL INTELLIGENCE IN INDIAN BANKING SECTOR CHALLENGES AND OPPORTUNITIES" Int. J. Adv. Res. 7(5).
- IV . Ritu TuliSameer Salunkhe (2019) "Role of Artificial Intelligence in Providing Customer Services with Special Reference to SBI and HDFC Bank" International Journal of Recent Technology and Engineering (IJRTE) Volume-8 Issue-4.

### **2.3 Problem Statement Definition**

Today's bank customers are already deeply immersed in a digital lifestyle. Whether ordering a cheque book or checking their account balance, consumers are generally choosing banks that interact with them online and through their mobile devices. In response, most banks have adopted digital platforms to meet the increasing demand for convenient and flexible banking mostly by their retail customers (PWC 2015). Additionally, as most people now own mobile phones, banks have introduced mobile banking to cater for customers who are always on the move. It has been debated that this is objectively to ease transaction processing and enhance customer experience by bringing the customer closer to their banks.

### 3. IDEATION & PROPOSED SOLUTION

#### 3.1 Empathy Map Canvas



## 3.2 IDEATION & BRAINSTORMING

[illegible]

### 3.3 PROPOSED SOLUTION

S. No	Parameter	Description
1.	Problem Statement (Problem to be solved)	<ul style="list-style-type: none"><li>• In the banking sector, they need to provide 24*7 service to customers.</li><li>• Humans cannot provide personalized services to all customers.</li><li>• One of the biggest customer service challenges for banks is when their service executives are not able to resolve a problem, atleast, not instantly.</li></ul>
2.	Idea / Solution description	<ul style="list-style-type: none"><li>• AI banking Chatbots help customers in many ways. AI-based chatbot service for the financial industry is one of the significant use cases of AI in the banking sector.</li><li>• With a chatbot handling all of the simple customer requests, you could take the load off your employees.</li><li>• AI chatbots in banking are providing a better customer experience.</li></ul>
3.	Novelty/Uniqueness	<ul style="list-style-type: none"><li>• Our main aim is to create a chatbot that provides 24/7 service and personalized services to the customer.</li><li>• Banks can make great use of Conversational AI and improve customer engagement to enhance the experience and improve retention.</li></ul>



### 3.4 Problem Solution Fit

<b>1. CUSTOMER SEGMENT(S)</b> <span>CS</span> <ul style="list-style-type: none"> <li>- Bank Account Holders</li> <li>- Net Banking Users</li> <li>- Students</li> <li>- Loan borrowers</li> <li>- Workers</li> <li>- Businessmen</li> </ul>	<b>6. CUSTOMER CONSTRAINTS</b> <span>CC</span> <ul style="list-style-type: none"> <li>- Customer should hold a Bank Account.</li> <li>- Customer should have install Banking Application.</li> <li>- Have knowledge about using chatbots.</li> <li>- The customers must be above the age of 18</li> </ul>	<b>5. AVAILABLE SOLUTIONS</b> <span>AS</span> <ul style="list-style-type: none"> <li>- Customers can reach out help 24/7 at contact us.</li> <li>-customer service is the most popular option for service companies all over the world.</li> </ul>
<b>2. JOBS-TO-BE-DONE / PROBLEMS</b> <span>J&amp;P</span> <ul style="list-style-type: none"> <li>- Banks cannot be available 24*7 Instant Access cannot be done directly through banks.</li> <li>-To help in creating an account, view balance, answer some basic queries.</li> <li>-Humans cannot provide personalized services to all customers.</li> </ul>	<b>9. PROBLEM ROOT CAUSE</b> <span>RC</span> <ul style="list-style-type: none"> <li>-Due to this delay in response, the customer leaves the service providers.</li> <li>-Human executives can't able to provide 24*7*365 services.</li> <li>-Customers don't want to visit bank every time for bank related functions.</li> </ul>	<b>7. BEHAVIOUR</b> <span>BE</span> <ul style="list-style-type: none"> <li>-The Customer seek for the help in Contact us section.</li> <li>-Bank Consumes more time for providing banking functionalities.</li> <li>-Customer use bank chatbot.</li> </ul>
<div>Identify strong TR &amp; EM</div> <b>3. TRIGGERS</b> <p>Banking customers wants to make their life easier, save time from manual banking, chatbot reminder that it will solve all your banking queries.</p> <b>4. EMOTIONS: BEFORE / AFTER</b> <p>Before requesting assistance, the customers are confused. However, people now feel comfortable with banking after utilising the chatbot.</p>	<b>10. YOUR SOLUTION</b> <p>Artificial intelligence in the banking industry, which makes banks effective, reliable, helpful and more understanding, is to give solution to the issue. In this digital age, it is enhancing the competitive edge of modern banks. The expanding influence of AI in banking reduces operational costs, enhances customer service and automates more processes.</p>	<b>8. CHANNELS of BEHAVIOUR</b> <p><b>8.1 ONLINE</b> Banks may save money on operating expenses by using chatbots, and they can also increase customer satisfaction by expediting interactions.</p> <p><b>8.2 OFFLINE</b> Customers can go to the bank and fix their difficulties there right away.</p>

## 4. REQUIREMENT ANALYSIS

### 4.1 FUNCTIONAL REQUIREMENTS

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	<b>Savings Account Related Actions</b>	<ul style="list-style-type: none"><li>• Type of Savings Account Creation Details</li><li>• Interest Rate</li><li>• Minimum Balance</li><li>• Debit Card</li><li>• Credit Card</li></ul>
FR-2	<b>Current Account Related Actions</b>	<ul style="list-style-type: none"><li>• Type of Company</li><li>• Current Account Closure Steps</li><li>• Update GSTIN</li><li>• Zero Balance Current Account</li></ul>
FR-3	<b>Loan Account Related Actions</b>	<ul style="list-style-type: none"><li>• Type of Loan</li><li>• How long for approval</li><li>• Available Loan Amounts</li><li>• Loan Status</li><li>• Joint Loan</li></ul>
FR-4	<b>General Queries Related Actions</b>	<ul style="list-style-type: none"><li>• Bank Working Days</li><li>• List of Branches</li><li>• Storage Locker Facility</li><li>• Currency Conversion Facility</li><li>• CIBIL</li><li>• Find a nearest branch</li></ul>
FR-5	<b>Net Banking Related Actions</b>	<ul style="list-style-type: none"><li>• Login Steps</li><li>• Change Net Banking Password</li><li>• Daily Limit</li><li>• Types of Fund Transfer</li><li>• Add Beneficiary</li></ul>

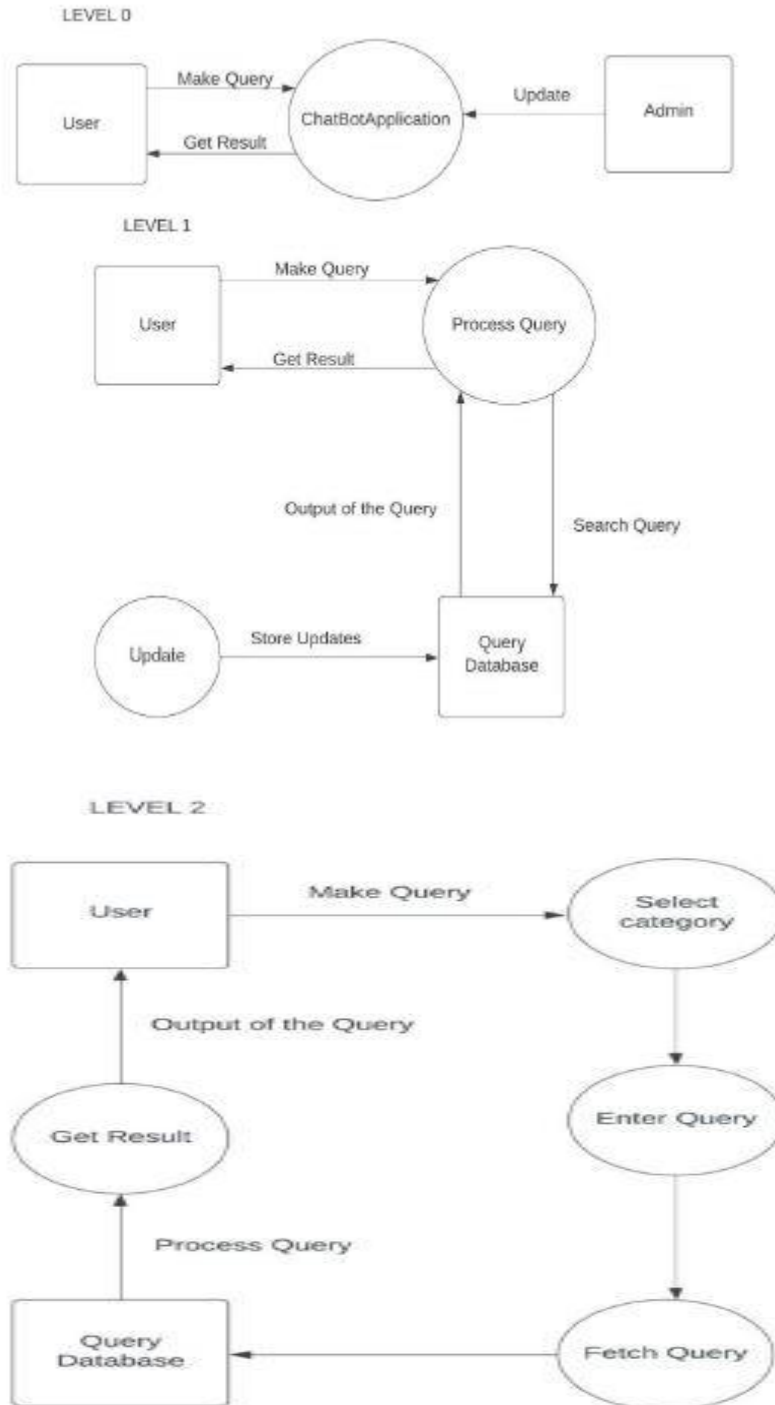
## 4.2 NON - FUNCTIONAL REQUIREMENT

Following are the non-functional requirements of the proposed solution.

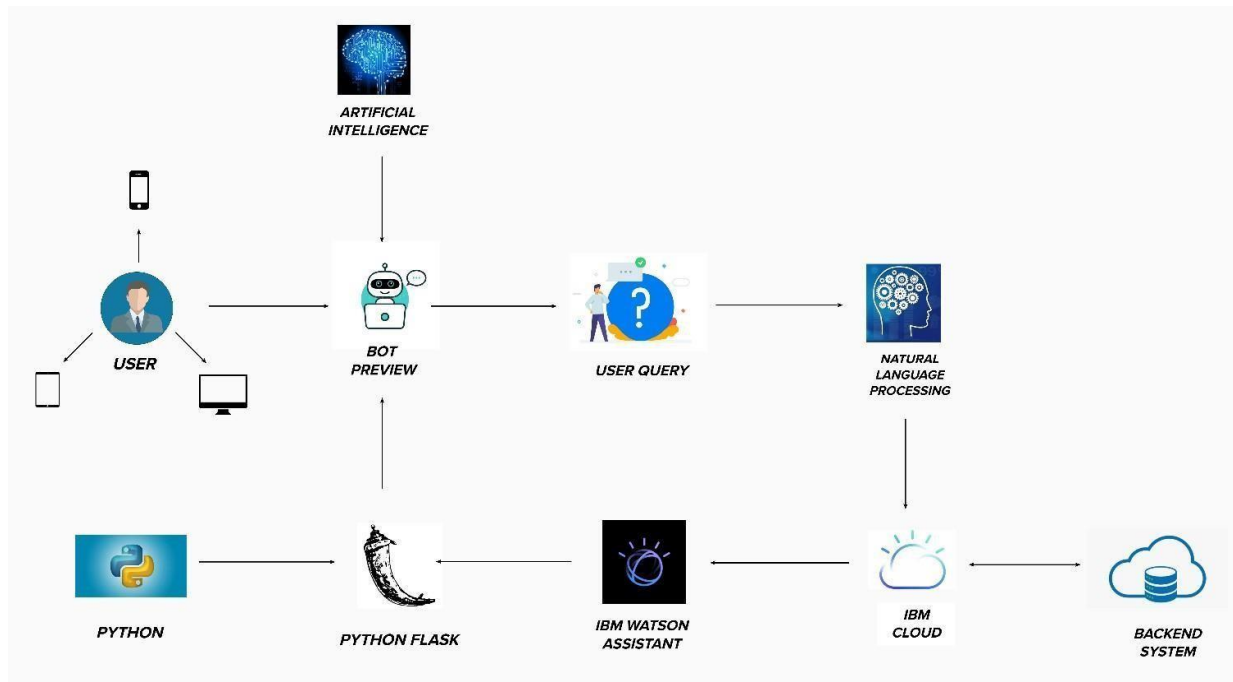
<b>NFR No.</b>	<b>Non-Functional Requirement</b>	<b>Description</b>
NFR-1	<b>Usability</b>	Chatbots developed using AI should be able to answer any general banking queries on account creation, loan, net banking, other services etc. It addresses the queries of customers immediately and effectively in a cost efficient manner.
NFR-2	<b>Security</b>	The AI Chatbot maintains a confidential conversation with customers. Chatbot will provide personal and efficient communication between the user and the bank.
NFR-3	<b>Reliability</b>	Chatbots are trained very well using AI to provide solutions for the popular and frequently asked questions, thereby providing the best suited service quickly. Thus AI Chatbots has a reliable end-user experience.
NFR-4	<b>Performance</b>	AI Chatbots are a great way to overcome the limitation of workload of humans. There can be multiple instances of a single chatbot inquiring different people at the same time. Such chatbots work in real time with no need for the customers to wait. This ensures faster, easier and more efficient face-time with customers.
NFR-5	<b>Availability</b>	AI Chatbots provide 24/7 service to clear all customer queries and guide them through all the banking processes. It is available to anyone with access to the internet with basic hardware.
NFR-6	<b>Scalability</b>	AI Chatbots are helping banking industry to scale their customer service and to improve customer service satisfaction at the same time. It can be scaled as per the requirements of the bank to include answers to queries related to any new feature or service introduced by the bank.

## 5. PROJECT DESIGN

### 5.1 Data Flow Diagrams



## 5.2 SOLUTION & TECHNICAL ARCHITECTURE



## 5.3 USER STORIES

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Mobile or Web user)	Savings Account Related Actions	USN-1	As a user, in the Savings Account option, I can select Types of Savings Account to get details regarding documents required for creating that savings account.	I can clear my queries regarding types of savings account	High	Sprint-1
		USN-2	As a user, I can check the Interest Rates of Savings Account	I can clear my queries regarding interest rates of savings account	High	Sprint-1
		USN-3	As a user, I can check the Minimum Balance of Savings Account	I can clear my queries regarding minimum balance of savings account	Medium	Sprint-2

	Current Account Related Actions	USN-4	As a user, I can choose the Type of Company to know the information on documents to be submitted for creating current account	I can clear my queries regarding types of companies	High	Sprint-1
		USN-5	As a user, I want to get details on procedure to close my Current Account	I can clear my queries regarding current account closure	High	Sprint-2
	Loan Account Related Actions	USN-6	As a user, I can choose the Type of Loans to know the information on choosing an essential loan scheme	I can clear my queries regarding types of loan account	High	Sprint-1
		USN-7	As a user, I can check the Loan Amounts that can be offered for corresponding Loan Accounts chosen	I can clear my queries regarding loan amounts of loan account	High	Sprint-2
		USN-8	As a user, I can check the Status of Loan for my Loan Accounts	I can clear my queries regarding loan status of loan account	Low	Sprint-2
	General Queries Related Actions	USN-9	As a user, I want to get the procedure details for Currency Conversion facility of my bank account	I can clear my queries regarding currency conversion facilities of bank account	Low	Sprint-1
		USN-10	As a user, I want to check my CIBIL score for my loan application and to ensure whether my loan application is approved by the bank.	I can clear my queries regarding CIBIL score of loan application	Medium	Sprint 3
		USN-11	As a user, I want to get the procedure details for maintaining Storage Locker facility of my bank account	I can clear my queries regarding storage locker facilities of bank account	High	Sprint-3

## 6. PROJECT PLANNING & SCHEDULING

### 6.1 SPRINT PLANNING & ESTIMATION

Milestone	Task	Starting Date	Ending Date	Project Completion Status	Team Members
<b>Create IBM Service</b>	Creation of Banking Chatbot or Assistant using IBM Watson Assistant	24 Oct 2022	26 Oct 2022	8%	Gowtham Keerthivasan Umar Farook
	Understanding Customer's Banking Related Queries and skills	26 Oct 2022	30 Oct 2022	18%	Gowtham Umar Farook Vijay
<b>Create Skills and Assistant for Chatbot</b>	Training the Chatbot with Banking related dataset.	31 Oct 2022	02 Nov 2022	25%	Umar Farook Vijay
	Building action and Adding responses to Account Creation	02 Nov 2022	03 Nov 2022	31%	Keerthivasan Vijay
	Building action and Adding responses to Banking related queries	03 Nov 2022	04 Nov 2022	36%	Keerthivasan Umar Farook Vijay
	Building action and Adding responses to Net Banking and Loan Queries	04 Nov 2022	05 Nov 2022	39%	Gowtham Umar Farook
<b>Testing Assistant &amp; Integrate With Flask webpage</b>	Testing the chatbot performance with the trained banking functionalities or conversations	06 Nov 2022	08 Nov 2022	74%	Keerthivasan Umar Farook
	Integration of Flask webpage with the chatbot assistant to provide a framework	09 Nov 2022	12 Nov 2022	81%	Gowtham Keerthivasan Vijay
<b>Deployment Of Chatbot</b>	Banking Industry or Running the Chatbot service in fully efficient and effective condition	14 Nov 2022	19 Nov 2022	100%	Gowtham Keerthivasan Umar Farook Vijay

## 6.2 SPRINT DELIEVERY SCHEDULE

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Creation of banking Chatbot	USN-1	Creation of Banking Chatbot using IBM Watson Assistant/ As a user, I can see a Banking Assistant.	12	High	Gowtham Keerthivasan Umar Farook Vijay
Sprint-1		USN-2	As a user, I will see the Chatbot having banking related options	4	Moderate	Keerthivasan Umar Farook Vijay
Sprint-1	Options creation	USN-3	As a user, I can add new action options to resolve customer queries	4	Moderate	Gowtham Umar Farook Vijay
Sprint-2	Designing of Assistant	USN-4	As a user, I can see a Chatbot which helps to create an account.	10	High	Keerthivasan Umar Farook
Sprint-2		USN-5	As a user, I can discourse with the chatbot regarding saving account-related queries.	5	High	Keerthivasan Vijay

Sprint-2	Loan Account	USN-6	As a user, I can see a Chatbot which helps in Loan related Queries.	5	High	Gowtham Umar Farook
Sprint-3	Queries Action	USN-7	As a user, I can converse with the chatbot about general queries.	10	High	Keerthivasan Umar Farook Vijay
Sprint-3		USN-8	As a user, I can converse with the chatbot about Net banking queries.	5	Moderate	Gowtham Keerthivasan Vijay
Sprint-3	Testing	USN-9	As a user, I can know the chatbots performance level.	5	High	Gowtham Umar Farook Vijay
Sprint-4	Web Application	USN-10	As a user, I want to access the chatbot in a web browser.	10	High	Gowtham Umar Farook
Sprint-4		USN-11	As a user, I want to access chatbot easily in the banking website.	5	Moderate	Gowtham Keerthivasan Vijay
Sprint-4		USN-12	As a user, I can see and use a 24*7 banking chatbot.	5	Moderate	Gowtham Keerthivasan Umar Farook



## PROJECT TRACKER, VELOCITY & BURN DOWN CHART

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as onPlanned End Date)	Sprint Release Date (Actual)
Sprint 1	20	6 Days	24 Oct 2022	29 Oct 2022	20	29 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	20	05 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	20	12 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	20	19 Nov 2022

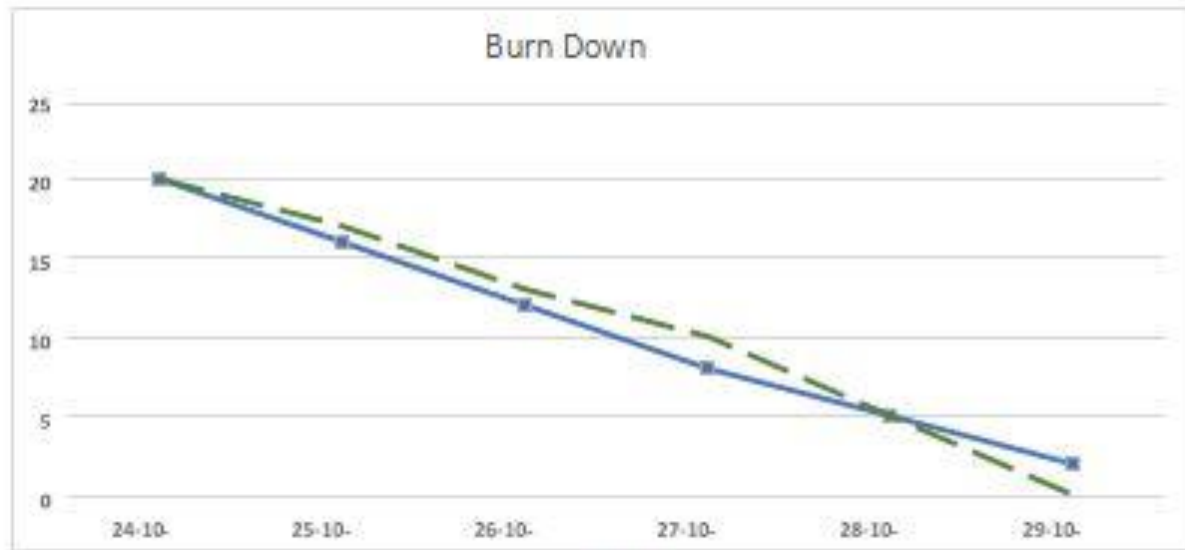
## VELOCITY

The team's average velocity (AV) per iteration unit (story points per day)

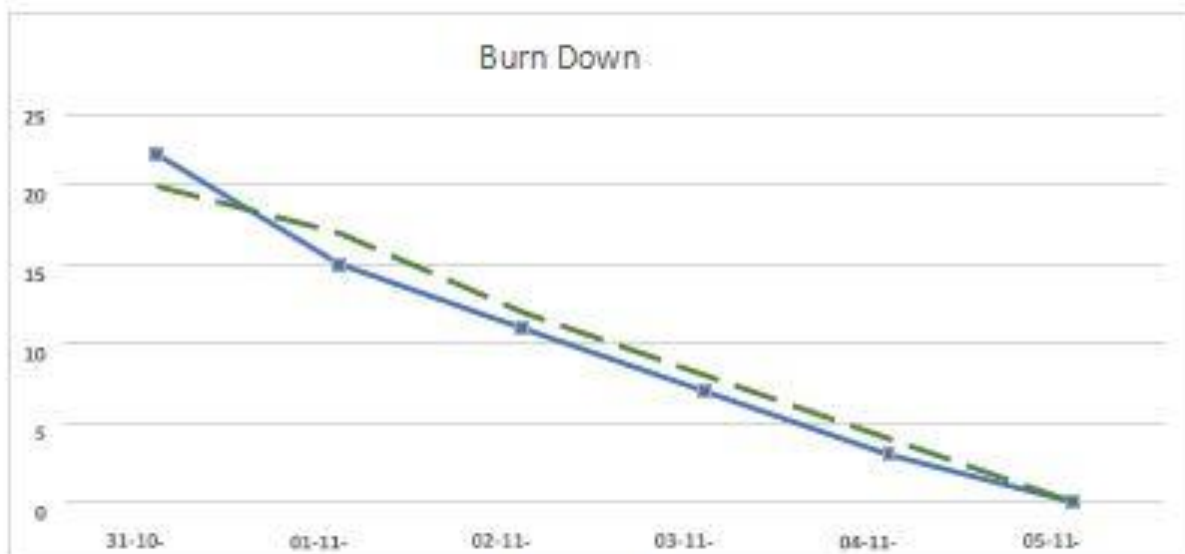
$$AV = 25/6$$

$$= 4.16$$

## BURN DOWN CHART



Sprint-1



Sprint-2



Sprint-3



Sprint-4

# 7. CODING & SOLUTIONING

## 7.1 FEATURE 1

### Queries:

IBM Watson Assistant LiteUpgradeBANK OF KCET

Learning center

Actions

Build

Deploy

Improve

Actions

Created by you

Set by assistant

Variables

Created by you

Set by assistant

Set by integration

Saved responses

Name	Last edited	Examples
Business Loan	7 days ago	1
Banking queries	7 days ago	1
Personal Loan	7 days ago	1
Net Banking	7 days ago	1
loan queries	7 days ago	1
home loan	7 days ago	1
Create an account	7 days ago	1

Items per page: 50 Showing 1-7 of 7 actions

Preview

Greet customer [default]

Welcome, how can I assist you?

queries

Did you mean:

loan queries Banking queries

None of the above

Type something...

### Loan queries:

IBM Watson Assistant LiteUpgradeBANK OF KCET

Learning center

Actions

Build

Deploy

Improve

Actions

Created by you

Set by assistant

Variables

Created by you

Set by assistant

Set by integration

Saved responses

Name	Last edited	Examples
Business Loan	7 days ago	1
Banking queries	7 days ago	1
Personal Loan	7 days ago	1
Net Banking	7 days ago	1
loan queries	7 days ago	1
home loan	7 days ago	1
Create an account	7 days ago	1

Items per page: 50 Showing 1-7 of 7 actions

Preview

Greet customer [default]

Welcome, how can I assist you?

loan queries

loan queries recognized

Select what type of loan queries you have ?

Home Loan Personal Loan

Business Loan

Type something...

## Banking queries:

The screenshot shows the IBM Watson Assistant interface for the 'BANK OF KCET' workspace. The 'Actions' tab is selected, displaying a list of actions created by the user. The 'Banking queries' action is highlighted. A preview window is open, showing the default greeting and the recognized query 'banking queries'.

Name	Last edited	Examples
Business Loan	7 days ago	1
Banking queries	7 days ago	1
Personal Loan	7 days ago	1
Net Banking	7 days ago	1
loan queries	7 days ago	1
home loan	7 days ago	1
Create an account	7 days ago	1

Items per page: 50 Showing 1-7 of 7 actions

Preview window content:

Greet customer [default]  
Welcome, how can I assist you?  
banking queries  
Banking queries recognized  
Select your queries  
Select an option

## Net banking:

The screenshot shows the IBM Watson Assistant interface for the 'BANK OF KCET' workspace. The 'Actions' tab is selected, displaying a list of actions created by the user. The 'Net banking' action is highlighted. A preview window is open, showing the default greeting and the recognized query 'net banking'.

Name	Last edited	Examples
Business Loan	7 days ago	1
Banking queries	7 days ago	1
Personal Loan	7 days ago	1
Net Banking	7 days ago	1
loan queries	7 days ago	1
home loan	7 days ago	1
Create an account	7 days ago	1

Items per page: 50 Showing 1-7 of 7 actions

Preview window content:

Greet customer [default]  
Welcome, how can I assist you?  
net banking  
Net Banking recognized  
Select your queries  
Select an option

## 7.2 Feature 2

### Design of Assistant:

The screenshot shows the IBM Watson Assistant interface for the 'BANK OF KCET' workspace. The 'Actions' tab is selected, displaying a list of actions created by the user. The list includes 'Business Loan', 'Banking queries', 'Personal Loan', 'Net Banking', 'loan queries', 'home loan', and 'Create an account'. A preview window is open on the right, showing a conversation flow for the 'Create an account' action. The preview shows a user greeting the assistant, followed by a prompt to create an account, and then a series of prompts for user information.

Name	Last edited	Examples
Business Loan	7 days ago	1
Banking queries	7 days ago	1
Personal Loan	7 days ago	1
Net Banking	7 days ago	1
loan queries	7 days ago	1
home loan	7 days ago	1
Create an account	7 days ago	1

Items per page: 50 Showing 1-7 of 7 actions

### Loan related queries:

The screenshot shows the IBM Watson Assistant interface for the 'BANK OF KCET' workspace. The 'Actions' tab is selected, displaying a list of actions created by the user. The list includes 'Business Loan', 'Banking queries', 'Personal Loan', 'Net Banking', 'loan queries', 'home loan', and 'Create an account'. A preview window is open on the right, showing a conversation flow for the 'loan queries' action. The preview shows a user asking for loan information, followed by a list of suggested actions: 'loan queries', 'home loan', 'Personal Loan', 'Business Loan', and 'Net Banking'.

Name	Last edited	Examples
Business Loan	7 days ago	1
Banking queries	7 days ago	1
Personal Loan	7 days ago	1
Net Banking	7 days ago	1
loan queries	7 days ago	1
home loan	7 days ago	1
Create an account	7 days ago	1

Items per page: 50 Showing 1-7 of 7 actions

## Home loan:

The screenshot displays the IBM Watson Assistant interface for the 'BANK OF KCET' workspace. The 'Actions' tab is selected, showing a list of actions created by the user. The 'Home loan' action is highlighted, and its configuration is shown in the right-hand pane. The configuration includes a 'Preview' section with a chatbot conversation flow. The chatbot starts with a greeting, followed by a user input 'home loan'. The chatbot recognizes the input and displays a 'Select Your Queries' dropdown menu with the option 'Select an option'.

Name	Last edited	Examples
Business Loan	7 days ago	1
Banking queries	7 days ago	1
Personal Loan	7 days ago	1
Net Banking	7 days ago	1
loan queries	7 days ago	1
home loan	7 days ago	1
Create an account	7 days ago	1

Items per page: 50 Showing 1-7 of 7 actions

## Personal Loan:

The screenshot displays the IBM Watson Assistant interface for the 'BANK OF KCET' workspace. The 'Actions' tab is selected, showing a list of actions created by the user. The 'Personal Loan' action is highlighted, and its configuration is shown in the right-hand pane. The configuration includes a 'Preview' section with a chatbot conversation flow. The chatbot starts with a greeting, followed by a user input 'personal loan'. The chatbot recognizes the input and displays a 'Select Your Queries' dropdown menu with the option 'Select an option'.

Name	Last edited	Examples
Business Loan	7 days ago	1
Banking queries	7 days ago	1
Personal Loan	7 days ago	1
Net Banking	7 days ago	1
loan queries	7 days ago	1
home loan	7 days ago	1
Create an account	7 days ago	1

Items per page: 50 Showing 1-7 of 7 actions

## Business Loan:

IBM Watson Assistant Lite Upgrade BANK OF KCET Learning center

Actions

Actions

- Created by you
- Set by assistant

Variables

- Created by you
- Set by assistant
- Set by integration

Saved responses

Name	Last edited	Example
Business Loan	7 days ago	1
Banking queries	7 days ago	1
Personal Loan	7 days ago	1
Net Banking	7 days ago	1
loan queries	7 days ago	1
home loan	7 days ago	1
Create an account	7 days ago	1

Items per page: 50 Showing 1-7 of 7 actions

Preview

Greet customer [default]

Welcome, how can I assist you?

business loan

Business Loan recognized

Select Your Queries

Select an option

Type something...



## 8. TESTING

### 8.1 TEST CASES

This report shows the number of test cases that have passed, failed, and untested.

Section	Total Cases	Not Tested	Fail	Pass
Print Engine	10	0	0	10
Client Application	35	0	0	35
Security	6	0	0	6
Outsource Shipping	2	0	0	2
Exception Reporting	11	0	0	11
Final Report Output	5	0	0	5
Version Control	4	0	0	4

### 8.2 USER ACCEPTANCE TESTING

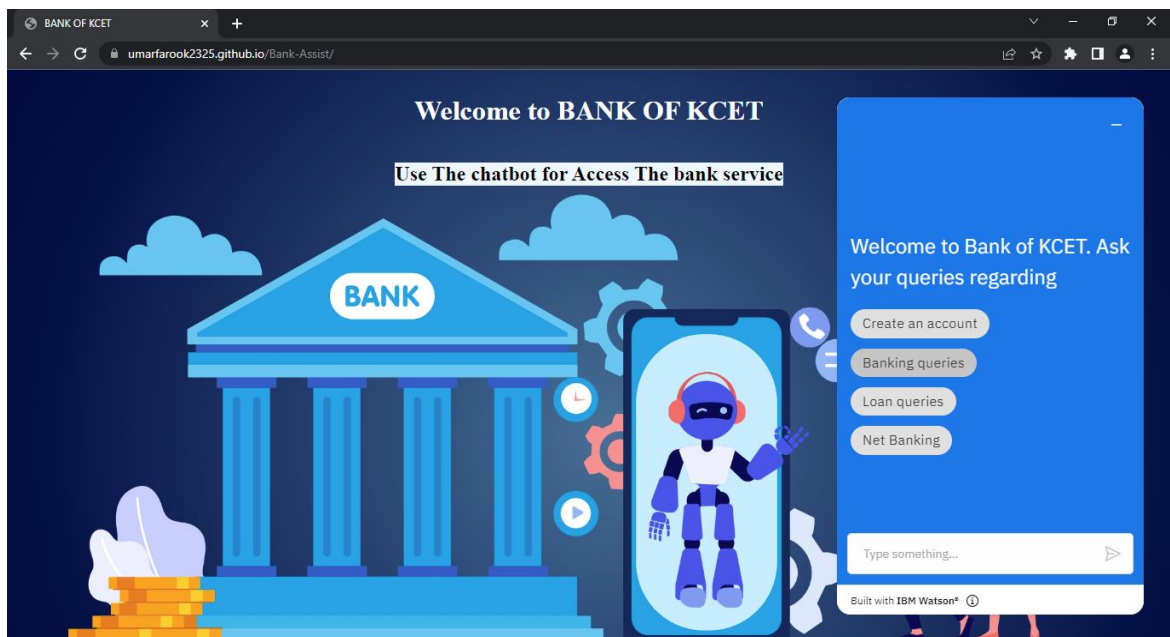
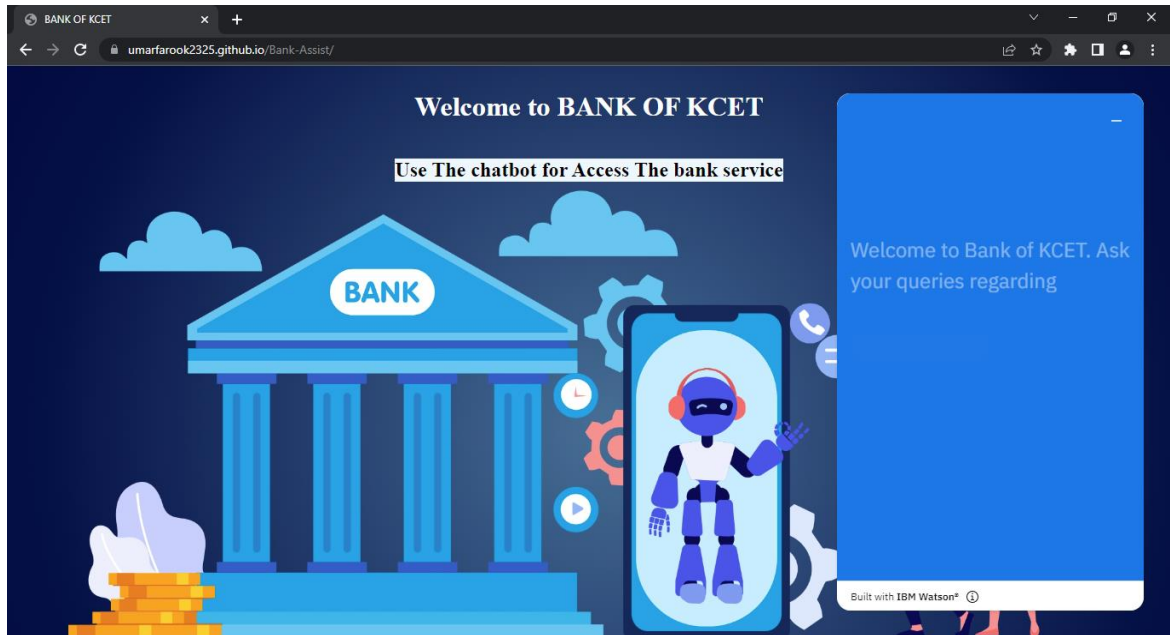
This report shows the number of resolved or closed bugs at each severity level, and how they were resolved.

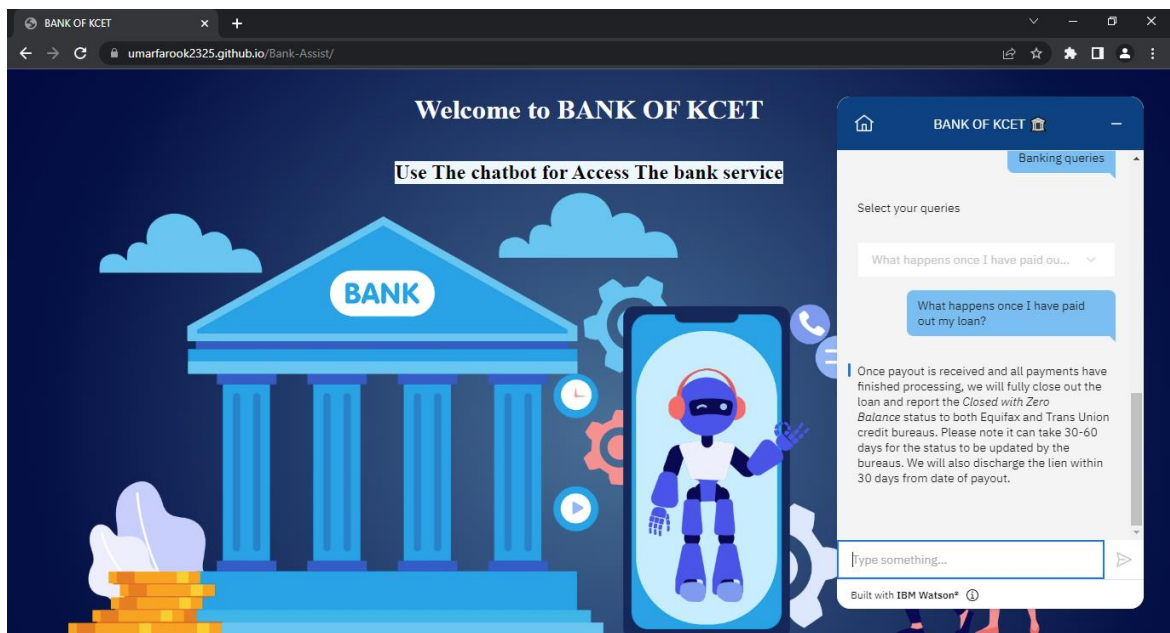
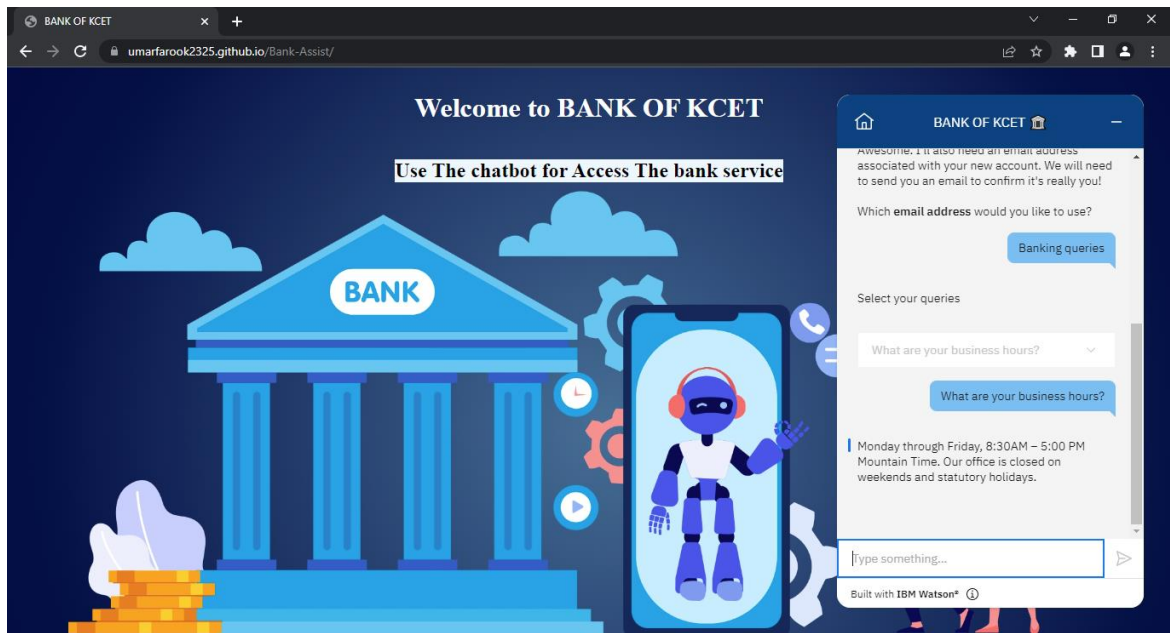
Resolution	Severity1	Severity2	Severity3	Severity4	Subtotal
By Design	7	4	2	3	16
Duplicate	0	0	0	0	0
External	2	2	1	1	6
Fixed	8	1	4	11	24
Not Reproduced	0	1	1	0	2
Skipped	1	0	1	1	3
Won't Fix	0	2	1	3	6
Totals	19	12	10	20	61

## 9. RESULT

### 9.1 PERFORMANCE METRICS

Project team shall fill the following information in model performance testing.





## **10. ADVANTAGES & DISADVANTAGES**

### **ADVANTAGES:**

- Reduced Staffing Needs.
- Helps with fraud prevention.
- AI allows financial institutions to make better investments and accommodate a width customer base.
- Chatbot can help the bank understand the expenditure pattern of the customer.
- AI creates a user-friendly experience with its increased accessibility and flexibility.

### **DISADVANTAGES:**

- Technology issues.
- Chatbots are too impersonal.
- Chatbots require customers to use the internet.
- Chatbots have limited responses.
- They cannot solve complicated queries.

## **11. CONCLUSION**

The usage of artificial intelligence technologies provides an opportunity for banks to stay competitive by differentiating themselves while at the same time save costs. Online channels are increasingly becoming the preferred way for customers to communicate with their banking institutes. The current experience of communicating through a chatbot could be enhanced by the utilisation of advanced robo advisory services. Multiple privacy and security concerns exist among customers. AI system are required to process large amounts of data in order to function properly. With data sets available online the prevent risk for data theft or data exploitation increases.

## **12. FUTURE SCOPE**

It is difficult for the industries to match the unique demands of the customers. The level of expectations of today's customers is exceptionally high. Nowadays, customers are technologically savvy and expect the industries to provide them with pleasant and comfortable customer experience — the same thing customers expect from the banking sector too. To meet the expectations of the customers, the banking sector has spread its wings in retail, IT, and telecom fields to assist with services such as mobile banking, e-banking, and real-time money transfers. No doubt, these advanced features allow the customers to avail the banking at their fingertips, but it also costs the banking sector.

## 13. APPENDIX

### 13.1 SOURCE CODE

#### **build\_python\_code.py**

```
from flask import Flask, render_template
app = Flask(__name__)
@app.route('/')
def index():
    return render_template('index.html')
if __name__ == "__main__":
    app.run()
```

#### **index.html**

```
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="UTF-8">
<meta http-equiv="X-UA-Compatible" content="IE=edge">
<meta name="viewport" content="width=device-width, initial-scale=1.0">
<title>BANK OF KCET</title>
<style>
body {
background-image:url(https://ucppr2k2q2u3lbr9b2ah3a31-wpengine.netdna-
ssl.com/blog/wp-content/uploads/sites/3/2021/04/show-chatbots-for-banking.jpg);
background-size: cover;
}h2 {
background-color: aliceblue;
}
div {
display: flex;
align-items: center;
```

```

justify-content: center;
flex-direction: column;
}h1 {
color: #fff;
}
</style>
</head>
<body>
<div>
<h1>Welcome to BANK OF KCET</h1><div>
<h2>Use The chatbot for Access The bank service </h2>
<!--<imgsrc="https://ucppr2k2q2u3lbr9b2ah3a31-wpengine.netdna-ssl.com/blog/wp-
content/uploads/sites/3/2021/04/show-chatbots-for-banking.jpg"
alt="bank image"> -->
</div>
<script>
window.watsonAssistantChatOptions={ integrationID:"ef26ea7e-a5d8-45f9-b075-
c4a3ef279904", // The ID of this integration.
region: "us-south", // The region your integration is hosted in.
serviceInstanceID: "aa178ac8-b8cd-48e9-a677-a18fd05a9779", // The ID of your service
instance.
onLoad: function (instance) { instance.render(); }
};
setTimeout(function () {const t = document.createElement('script');
t.src = https://web-chat.global.assistant.watson.appdomain.cloud/versions/ + (window.watson
Assistant Chat Options.client Version|| 'latest') + "/WatsonAssistantChatEntry.js";
document.head.appendChild(t);
});
</script>
</body>
</html>

```

## 13.2 GITHUB & PROJECT DEMO LINK

- Our GitHub Repository Direct Link

<https://github.com/IBM-EPBL/IBM-Project-41686-1660644202>

- Webpage to View Chatbot

<https://umarfarook2325.github.io/Bank-Assist/>

- Project Demonstration Video Demo Link

<https://youtu.be/89V6q0OA2oE>