INSTITUTE OF ENGINEERING
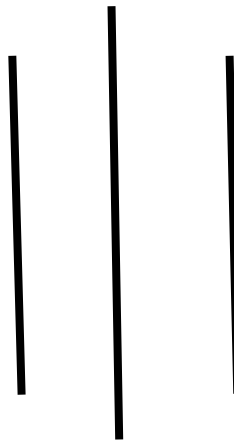## ADVANCED COLLEGE OF ENGINEERING AND MANAGEMENT
Kupondole, Lalitpur
(AFFILIATED TO TRIBHUVAN UNIVERSITY)

Subject: PROJECT MANAGEMENT

Submitted By: **Submitted To:**

Name: Sameep Dhakal   Dr. Pranita Upadhyaya

      Rabin Timalsina

      Rajiv Dahal

      Samrat Neupane

PROJECT MANAGEMENT PLAN

PROJECT INTEGRATION MANAGEMENT

Project Charter

Project Name	Intelligent Re-commerce site with image and voice processing
Focus Area	Apply artificial intelligence in e-commerce website for better automation and customer satisfaction.

Prepared By:

Document Owners	Project Role	Work Division	Contact info
Dr. Pranita Upadhyaya	Project Supervisor	Supervise the overall working of the project	pranitaupadhyaya@gmil.com
Rajeev Dahal	Project Manager	Consulting with CEO, stakeholders. manager,	Rajeev.074bct063@acem.edu.np
Rabin Timalsina	Project Team Member	Handle the voice processing department and recommendation	Rabin.074bct049@acem.edu.np
Sameep Dhakal	Project Team Member	Handle the web development department	Sameep.074bct063@acem.edu.np
Samrat Neupane	Project Team Member	Handles the image processing part.	Samrat.074bct064@acem.edu.np

Project purpose:

The team will identify and carry out necessary steps for developing e-commerce website that encompasses different fields of artificial intelligence. Our website will include theses fields:

- Image Procecssing
- Voice processing
- Product recommendation

Each team member will do appropriate e-commerce research to discover possible solutions for our new business. Team members will focus on building best e-commerce website using best tools of artificial intelligence available. Moreover, our intention is to replace the old fashioned e-commerce websites available in market.

Project overview:

Our project's mission is to develop new and successful AI based e-commerce website using various tools of Artificial intelligence such as CNN, Collaborative filtering. The site will use different models as Business to customer and Customer to customer models. We will use various available tools to make transactions and recommendations easier and fruitful.

Project Objectives:

- To automatically crop and remove background of images inserted in website.

- To automatically analyze database for product recommendation and admin notification.

- To enable voice search using speech recognition

Project Scope	- Website Development - Build AI models - Create business models

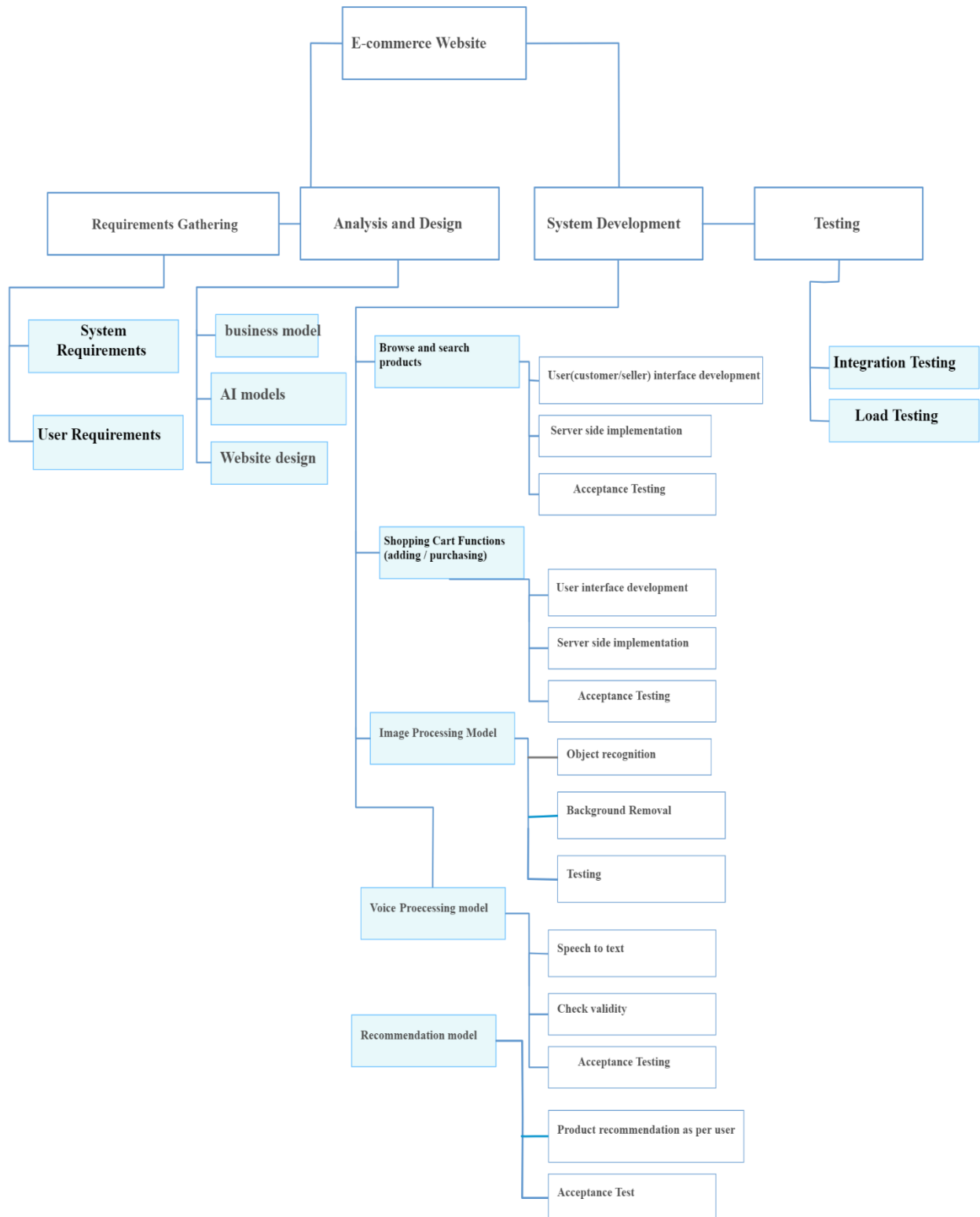|	
Milestones	• Project Planning • Project execution • Project closing
Time management	• Develop Gantt Chart • Develop Critical path Diagram
Cost Management	• Define cost of project
Potential Risks	• Unable to launch product in market • Server failure • Unable to reach more people • Unable to competein marler
Resource Management	• Hire Database manager • Hire Server Manager • Hire Market Expert
Procurement Management	• Data training server • Hosting Domain
Quality management	• Develop Benchmark • Fishbone Diagrams • Quality control- pareto analysis

PROJECT SCOPE MANAGEMENT

Project scope:

This field defines overall scope of our project:

Goals	
Design Goals:	**Visitor features:** View home page View most selling products Search: voice and text Browse products View product details View FAQ's Proceed to registration **Registered customer Panel:** Login Search: voice and text View recommended products Manage account my profile my orders Buy product Logout **Registered seller panel:** Login View his/her most bought products Manage account My profile Search: voice and text Add items Buy product Logout **Admin Panel** Login User Management Product management Price chart management Order manager Shipping management
Service goals:What will our website offer as product and services.	Product research by the project team, ie what are the most item being sold in various e commerce website, what are customers demanding and time based product sales(according to different festivals celebrated)
Design of Different models: B2C and C2C	Define estimated specifications , time , cost, schedule and personnel to integrate model into our website
Use of best available AI models	Project team will need to preform research on various tools that can automate our E-commerce website. Best tools for voice processing, image processing, and product recommendation are to be implemented

Work Breakdown Structure:

E-commerce Website

- **Requirements Gathering**
  - System Requirements
  - User Requirements
- **Analysis and Design**
  - business model
  - AI models
  - Website design
- **System Development**
  - Browse and search products
    - User(customer/seller) interface development
    - Server side implementation
    - Acceptance Testing
  - Shopping Cart Functions (adding / purchasing)
    - User interface development
    - Server side implementation
    - Acceptance Testing
  - Image Processing Model
    - Object recognition
    - Background Removal
    - Testing
  - Voice Proecessing model
    - Speech to text
    - Check validity
    - Acceptance Testing
  - Recommendation model
    - Product recommendation as per user
    - Acceptance Test
- **Testing**
  - Integration Testing
  - Load Testing

PROJECT TIME MANAGEMENT

Project deliverables:

| Milestone	Date Estimate	Deliverables
1. Initiation_project Definition	May 15-july 10	• define overall specs of website(image,voice processing, recommendation0 • Research Of business Models • Estimate the cost for making website • Estimate time and resources
2. Execution-utilize ideas to create e-commerce business model	June 20-feb 10	• Applying of business models (B2C and C2C) • Creating site based on research of AI tools • Testing our site
3. Closing	Feb 10-March 30	• Meet the needs of stakeholders • Make better website than available ones

Gantt chart:

		Q3 2021			Q4 2021			Q1 2022		
	July	August	September	October	November	December	January	February	March

week 1-starting of project

week 1-starting of project • Jun 17 - Jul 10 • 24 days

proposal defence and report submission	Jun 17 - 24	proposal defence and report submission
discussion with supervisor and team ...	Jun 17 - 24	discussion with supervisor and team member
research report study and review matri...	Jun 17 - 24	research report study and review matrix preparation
discussion with supervisor	Jun 24 - Jul 3	discussion with supervisor
progress report of week 1	Jul 3 - 10	progress report of week 1

Building AI models

Building AI models • Jul 24 - Oct 24 • 93 days

backround subtraction using CNN	Jul 24 - Aug 24	backround subtraction using CNN
voice to text conversion	Aug 24 - Sep 24	voice to text conversion
Product recommendation	Sep 24 - Oct 24	Product recommendation

Website Development

Website Development • Jul 30 - Jan 14 • 169 days

login Page	Jul 30 - Aug 6	login Page
User Portal	Aug 20 - Sep 15	User Portal
product showcase development	Sep 24 - Oct 24	product showcase development
Backend development	Oct 31 - Jan 14	Backend development

Finalize

Finalize • Jan 14 - Mar 4 • 50 days

Testing	Jan 14 - 28	Testing
Presentation to stakeholders	Jan 28 - Feb 4	Presentation to stakeholders
Launch	Feb 4 - Mar 4	Launch

Critical path method:

o	Description	precedents	Time
A	Research and consultation	-	3 weeks
B	Image processing	A	4 weeks
C	Login Page	A	1 week
D	Voice Processing	B	4 weeks
E	Product Recommendation	D	4 weeks
F	User portal Design(admin/seller/customer)	C	3 weeks
G	Product showcase design	F	4 weeks
H	Backend Development	E,G	10 weeks
I	Testing	H	2 weeks
J	Presentation to stakeholders	I	1 week
K	Launch	J	4 weeks
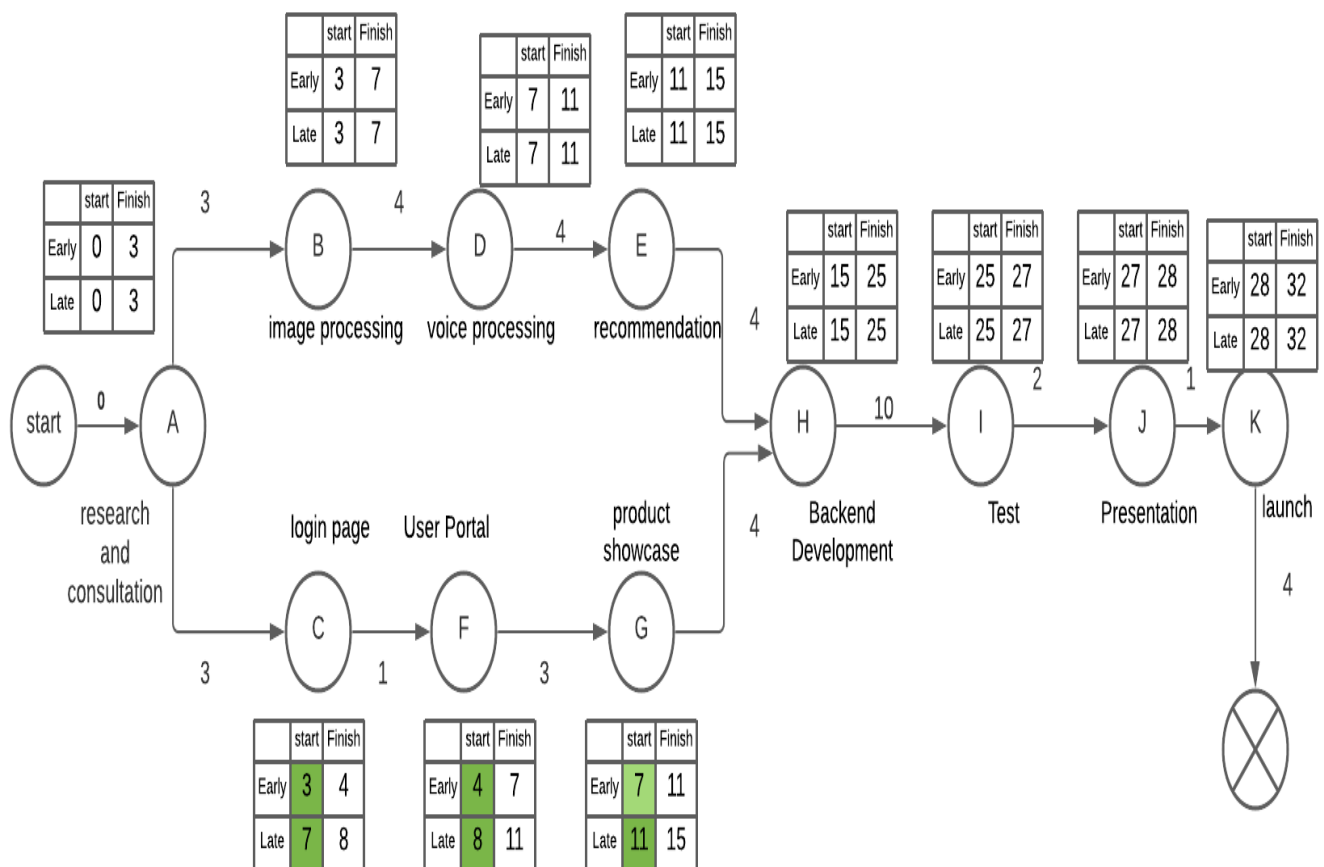
Here A,B,C,D,E,H,I,J,K are the critical events and non critical events have slack time 4 weeks.

PROJECT COST MANAGEMENT:

We first identified variable and fixed cost

Fixed costs:

- Internal server
- Developers computer
- Inter connections hardwares

Variable cost:

- Internal implementation labour
- Maintainence Contract
- Operational Contract
- Developers cost

Hardware requirements:

Particulars	Details	Amount
Server	Server to host our website, database server	50000
Pc for developments	5 laptops	400000
Internet connection	Cables, terminals, hubs	5000

Software requirements

Particulars	Details	Amount
Website design	A better ide forfrontend and backend	50000
Model training	Web based model training server Ie google colab, AWS	20000
Internet connectivity	Internet service with sufficient speed	30000

Other requirements:

Particulars	Amount
WWW server system	20000
Business registeration	5000
Annual Tax for Nepal Government	5000

Cost Analysis:

year	cash outflow	cash inflow	cash flows	commutative cash flow	present value	intrest
0	1435000	0	-1435000		-1435000	10%
1	55000	100000	45000	-1390000	40909.09091	
2	55000	200000	145000	-1245000	119834.7107	
3	55000	400000	345000	-900000	259203.6063	
4	55000	400000	345000	-555000	235639.6421	
5	55000	400000	345000	-210000	214217.8565	
6	55000	400000	345000	135000	194743.5059	
7	55000	400000	345000	480000	177039.5508	
8	55000	400000	345000	825000	160945.0462	
9	55000	400000	345000	1170000	146313.6783	
10	55000	400000	345000	1515000	133012.4349	
		Payback Period		5.608695652	246859.1225	
		NPV			$246,859.12	
		IRR			13%	

cash Inflow and outflow per year

■ cash outflow ■ cash inflow
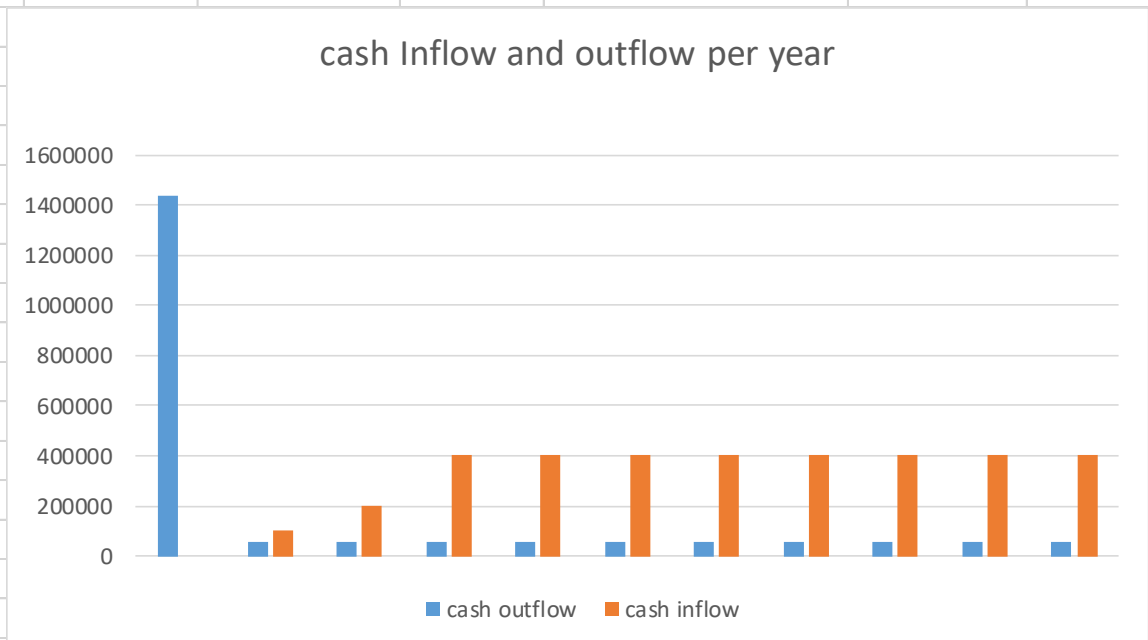
PROJECT COMMUNICATION MANAGEMENT

Communication Planning:

Our team is consist of 4 members ,total communication channel will be 6 : (n(n-1)/2)

Sample Stakeholders Communication analysis:

Communication will be in accordance of stakeholders tasks and concerns , flow of communication will be according to respective document presented

Stakeholders	Role/Intrest field	Document Name	impact	intrest	Document Format	Contact Person	Due
Pranita Upadhyaya	Customer Management ,communication Supervisor	Weekly Status Report	High	High	Hard Copy	Rajiv Dahal	First of week
Sailesh Kafle	Voice to text and Its data collection	Weekly Status Report	Medium	High	Hard Copy	Rabin Timalsina	First of week
Sagar Timalsina	Image processing and and data collection	Weekly Status Report	High	Low	Hard Copy	Samrat Neupane	First of week
Sachin Thapa Magar	Web site creation and deployment	Weekly Status Report	Medium	Low	Hard Copy	Sameep Dhakal	First of week
Rupesh Lekhak	Customer management	Daily status report	medium	Low	Hard Copy	Sameep Dhakal	First of week

Raj Upreti	marketting	Weekly status report	medium	Low	Hard Copy	Sameep Dhakal	First of week

Media Choice Table

Way of communication is verified and chosen according to following table

key:1 =Excellent   2=Adequate   3=Inappropriate

How well medium is suited to:	Hard Copy	Messenger	Voice Mail	E-mail	Zoom meeting	github
Assessing Commitment	3	3	3	3	1	3
Programming Help	3	1	3	2	2	3
Resolving Misunderstanding	3	2	1	3	3	3
Maintaining Confidentiality	2	2	1	2	3	3
Sharing code	3	2	3	2	3	1
Building logics and modifying plans	3	2	1	2	1	3

Conclusion:

Assessing Commitment via Zoom meeting,Programming Help via Messenger,Resolving Misunderstanding via voicemail,Maintaining Confidentiality via voice mail,v via github,Building logics and modifying plans via Zoom meeting

Traceability Matrix:

Requirements traceability is the ability to connect requirements to other artifacts — such as different types of software tests or bugs. It's used to track requirements — and prove that requirements have been fulfilled.

Ref. id	Main Requirement	Sub Requirement	Category	Description	Team	Status	Non functional requirement
1	Voice to text and Image subtraction datasets preparation	Data cleaning and documentation	required	Through kaggle or manual preparation	Rabin, Rajiv-Sameep Samrat	Started (work in progress)	Usability, reusability,stability,availability
2	Data training and model preparation	Make exportable and reusable model	required	Using Sklearn libraries and tensor flow	Rabin,Rajiv-Sameep Samrat	to-do	Performance,Security,Usability,Portability,Availability
3	UI/UX design and front end development	Component based development	required	Use Reactjs and photoshop	Rabin,Rajiv-Sameep Samrat	Started (work in progress)	Usability, reusability,stability,availability
4	API creation and data modeling	Should be based on Rest API	required	Use Nodejs and mongoDB	Rabin,Rajiv,Sameep Samrat	to-do	Performance,Security,Usability,Portability,Availability
5	Deployment	Use Heroku	optional	Use git and its tool	procurement	to-do	Performance,Security,Usability,Portability,Availability
6	SEO optimization	Use MOz-pro	optional	Optional can be done in spare time	procurement	to-do	performance,Availability,Usability

RISK MANAGEMENT

The possible risk of our project are given below:

Rank	Risk	Description	Category	Cause	Triggers	Potential response	Risk owner	probability	impact
1	Market risk	Many online e-commerce sites are already available.	commercial	Market competitiveness	Whenever we try to take a product to market.	1.Use better technologies and interfaces. 2.Use of attractive UI	All	high	high
2	User interface	User may find our site hard to use	technical	Use of unfamiliar technologies	Searching and buying product from website	1.Send a sample interface with a video to operate	Rajiv Dahal	medium	high
3	Change of technology	Maintenance could be tough due to change in technology	technical	Change in technology	When we need to update our system.	Update the version of programming language and don't ignore warnings	Sameep dhakal	medium	medium
4	Model working phenomenon	Functionality of model over certain products could be not accurate	technical	Less no. of datasets during training	On recommendation, bg removing and voice searching	Re-training the model	Sameep Dhakal	medium	high
5	marketing	We may not convince people	social	We may not reach many people to make them understand about our project	When trying to reach multiple users	Use cognitive bias for marketing and better research of market fields.	Marketing executive.	high	high
6.	Real time working of model	Dynamic changing of products can cause insensitive recommendation	technical	Real time data variation	Over recommendation part	Online and Batch training the model	Samrat Neupane	high	high

15

7	Server down due to more traffic	Server might not respond over heavy traffic	technical	Weak hosting platform	Entire site	Purchase the powerful hosting platform. Improve security measures.	Rabin Timal sina	high	high

PROCUREMENT MANAGEMENT PLAN

Procurement itself defines the materials or resources to purchase and acquire from outside the project team. Our team has concluded different resources to procure which are briefly listed and explained in the document below.

Process flow

Procurements

Date: 24th July 2021

Item	Description	Date
Data Training server	Used to train our different AI modes	July 2021 – February 2022
Domain Hosting server	For hosting our website	March 2022
Execution room	For future execution	April 2022

RESOURCE MANAGEMENT PLAN

Responsibility Assignment Matrix

person \ task	razeev	samrat	sameep	rabin
Background removal	A	R	R	A
Text to speech conversion	I	R	A	I
chatbot	R	C	R	A
Image recognition	R	A	C	R
Recommendation system	C	I	I	R

Here,

Responsible= R

Accountable= A

Consulted= C

Informed= I

Equipment Management:

Description	Spec.	Quantity	Proposed supplier
Dell laptop	8 gb RAM	4	personal
Cloud Training server	Unlimited	4	College management
Data resources	xx	xx	kaggle

Human Resource Management

Internal Resources

Name	Role	Assigned Work
Dr. Pranita Upadhyaya	Project Supervisor	Supervise the overall working of the project
Rajeev Dahal	Project Manager	Consulting with CEO, stakeholders. manager,
Rabin Timalsina	Project Team Member	Handle the voice processing department and recommendation
Sameep Dhakal	Project Team Member	Handle the web development department
Samrat Neupane	Project Team Member	Handles the image processing part.

External Resources

Description	Type	Reason	Timing to start	Bidder	Status	Comments
SEO specialist	technical	To perform SEO after deployment	March 2022	Rajiv Ranjan Sah	informed	Project will be given to SEO specialist on march 2021
Data training Server	Resource	To train AI model	15 Aug 2021	Team members, AWS server	informed	Datasets will be ready and one time agreement
Domain and Hosting	Resource	To deploy and launch software	march 2022	Er. Rupesh Lekhak	to-do	Software will be ready and must have fulfilled functional requirements

Testing and QA team	Technical	To test software and analyze its quality	15 Nov 2021	Er. UkeshThapa and team	informed	Software will be ready and should be in final stage to launch
Database Administrator	Technical	To extract necessary Info. and maintain database	1st Jan 2022	Raj Upreti and team	informed	Must login user info and traffic data & should submit analytical report to CEO

QUALITY MANAGEMENT:

Quality Planning:

Benchmarking:

Here as a benchmarking example we have taken the famous e-commerce website Amazon.

AMAZON:

Amazon offers a number of e-mail addresses to ensure customers can request for information that bothers them, and also to encourage suggestions and feedbacks. In addition to this, Amazon provides customers with telephone services, therefore, users or customers can access the customer service representatives through the telephone 24 hours a day, and 7 days a week. Moreover, to ensure the quality of services provided by the customer service is prompt and professional enough to meet customer demands, Amazon has automated some specific tools utilized by its customer support staff and also constantly planning for future enhancements. ("Amazon Reports")
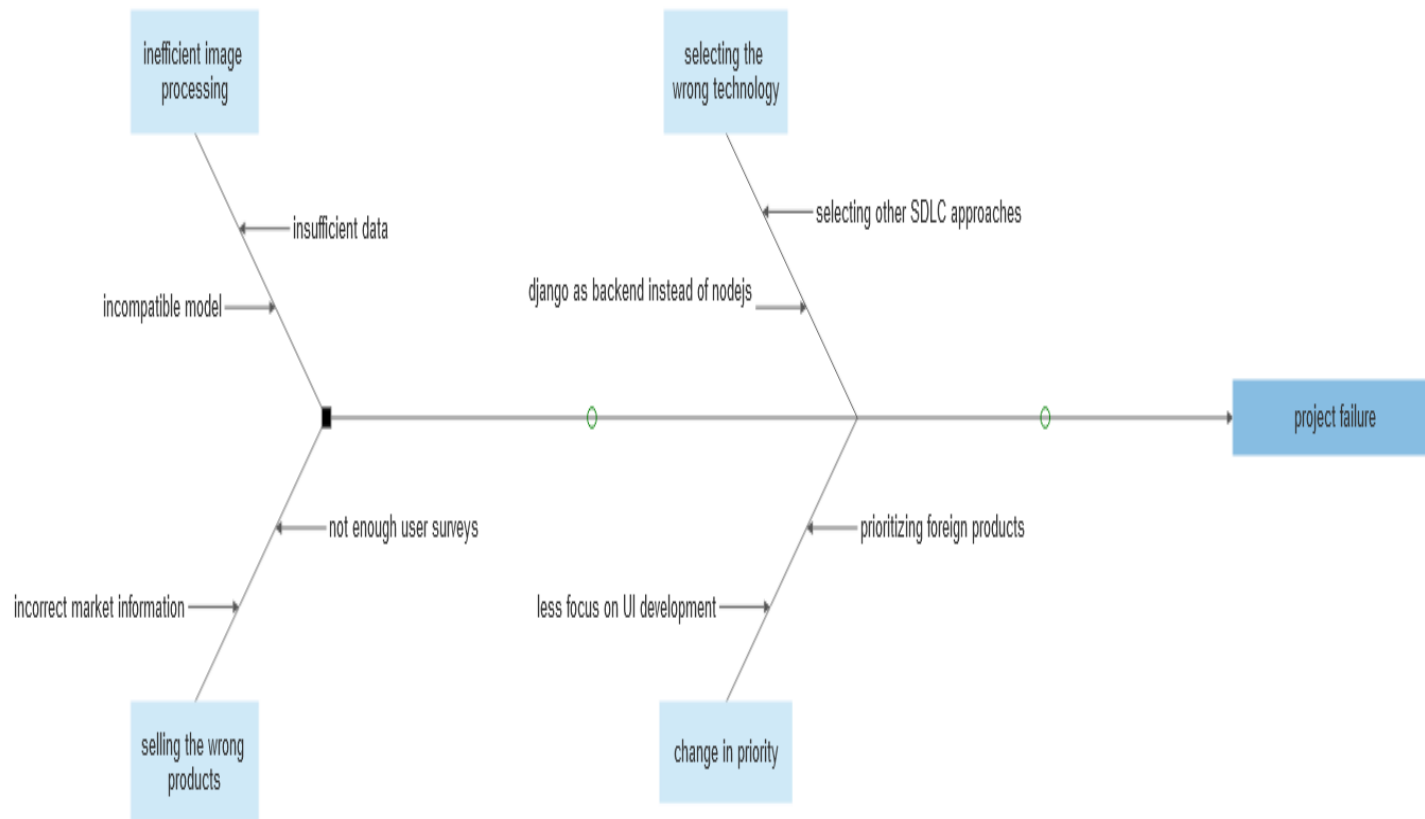
Cause and effect diagram:

Fig:cause and effect(fishbone) diagram for e-commerce

Quality Assurance

Project Process	Process Quality Standards/ Stakeholder Expectations	Quality Assurance Activity	Frequency/Interval	Who is Responsible
Requirement analysis	Developers have completely understood project requirements.	Peer review of software requirements specification.	weekly	All members.
Set realistic time and budget estimates	Minimum budget and time requirements	Inspect project features	weekly	All members
Programming the functionalities	Project functionalities satisfies project requirements	Verification and testing	weekly	All members
Security features	Project is secure and negates external attacks	Proper security measures implementation	weekly	All members

Quality Control

Pareto analysis:

It is the analysis based on the principle that "80% of our sales come from 20% of our clients" or "80% of complaints are from 20% of clients" also known as "80/20" rule.

The diagrammatical representation of pareto analysis is done through pareto diagrams. For our project we have analysed the error count to problem specifications:
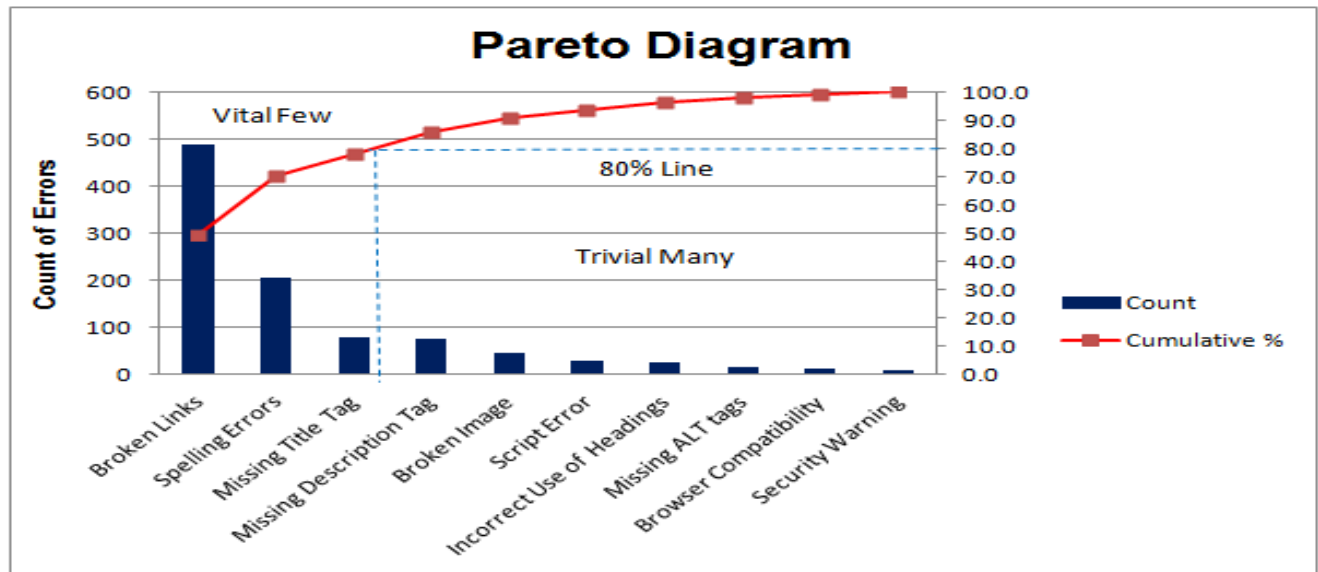
This concludes the project management plan of Intelligent recommerce website.