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| Marwadi University<br>Marwadi Chandarana Group<br>NAAC A+ | **Marwadi University**<br>**Faculty of Engineering and Technology**<br>**Department of Information and Communication Technology** | |
| **Subject: Capstone Project (01CT0715)** | **Project Definition and Scope - Intermediate Review** | |
| **Project Definition** | **Date: 25/09/2025** | **Enrolment No: 92200133013 & 92200133017** |

## Introduction

Import and export companies handle many queries from customers about products, shipping, and regulations. Answering all these questions manually takes time and can delay responses. With Information and Communication Technology (ICT), smarter systems can be built to give fast and accurate answers.

My project, **"Chatbot for Import Export,"** solves this problem by creating two chatbots. One gives general import–export information (rules, documents, procedures) in multiple languages and even by voice. The other gives company-specific details for **Harivarsh Import & Export Pvt. Ltd.** (products, countries served, certificates).

The system is built using **React.js, TypeScript, Node.js, MongoDB Atlas** and Python chatbots, deployed on **Vercel** and **Render**. It shows how ICT can improve communication in the trading field by reducing manual work and improving customer experience.

## Problem Statement

Import and export businesses receive large numbers of customer queries about products, shipping, documentation, and regulations. Most companies still handle these questions manually through email or calls, which is slow, repetitive, and costly. Customers also expect instant, multilingual, and accurate responses that traditional systems cannot easily provide.

This project addresses this gap by designing a dual-chatbot system that can automatically answer both **general import–export questions** and **Harivarsh Import & Export Pvt. Ltd. company-specific queries**. The solution aims to improve response speed, accuracy, and customer experience using modern ICT tools and AI-based communication.

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## Objectives

The main objectives of this project are:

1. **Develop a dual-chatbot system** – one for general import–export information and one for company-specific queries for Harivarsh Import & Export Pvt. Ltd.
2. **Enable multilingual and voice-based interaction** so users can ask questions in different languages or by voice and still get accurate answers.
3. **Integrate modern ICT tools** such as React.js, Node.js, MongoDB Atlas, Python NLP frameworks, and cloud deployment to make the system scalable and reliable.
4. **Reduce manual workload and improve customer experience** by providing instant, accurate, and automated responses to common queries.
5. **Ensure easy deployment and accessibility** through hosting on platforms like Vercel and Render for global availability.

## Relevance to ICT Domain

This project clearly belongs to the **Information and Communication Technology (ICT)** domain because it combines several key ICT areas — **web development, cloud computing, natural language processing (NLP), and artificial intelligence (AI)**. It uses web technologies (React.js, Node.js, MongoDB Atlas) to build a scalable platform and Python-based AI to process user questions and generate instant answers.

By supporting **multilingual and voice-based interaction**, the chatbot also demonstrates how ICT can improve human–computer communication and make services accessible to a wider audience. It shows a practical application of ICT to a real-world business problem — automating customer support in import–export — and reflects current trends in digital transformation, AI-driven services, and cloud deployment.

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## Feasibility Analysis

### Technical Feasibility

The project uses widely adopted technologies such as **React.js, TypeScript, Node.js, MongoDB Atlas, Python NLP frameworks**, and cloud platforms like **Vercel** and **Render**. These tools are open-source or have free tiers, making them easy to set up and integrate. The architecture is scalable, allowing the chatbot to handle more queries as usage grows.

### Economic Feasibility

All the main technologies used in the project are free or offer student-friendly plans. Deployment on Vercel and Render can be done at no cost within their free tiers, and MongoDB Atlas provides a free cluster. This makes the system affordable to develop, host, and maintain without additional hardware expenses.

### Ethical Considerations

The chatbot only provides general and company-related information without collecting sensitive personal data. Basic user consent can be shown for any stored interactions. This ensures data privacy and ethical use of AI. The system also promotes accessibility by supporting multiple languages and voice input, reducing barriers for users from different regions.

## Market / User Needs Analysis

Import–export is a large and growing sector, with businesses dealing with suppliers and buyers across multiple countries. According to reports from **UNCTAD** and the **World Trade Organization**, cross-border trade is becoming more digital and customers expect faster, automated responses to their questions. Many small and medium-sized trading companies still depend on manual communication, which slows down their operations and affects customer satisfaction.

Users such as **export managers, logistics partners, suppliers, and customers** need quick access to information about documents, procedures, shipping status, and company-specific details. A dual-chatbot system can meet this demand by providing instant answers in multiple languages and formats (text or voice).

Existing studies (IEEE and ACM papers on AI chatbots in business) show that AI-based customer support reduces response time and improves engagement compared to traditional methods. This project applies the same trend to the **import–export domain**, filling a gap where very few tailored solutions exist for trading companies.

## Literature Review & Novelty

Several studies show that AI chatbots improve customer support and reduce manual workload in business environments. For example, research in **IEEE and ACM papers** highlights the use of NLP-based chatbots for multilingual customer queries, automated FAQs, and interactive voice support. Most existing solutions are generic and do not focus on the specific needs of import–export companies.

The novelty of this project lies in its **dual-chatbot approach**: one chatbot for general import–export guidance and another specifically for Harivarsh Import & Export Pvt. Ltd. This combination, along with multilingual and voice-enabled support, sets it apart from existing systems. By integrating **AI, cloud deployment, and web technologies**, the project provides a practical, scalable, and company-focused solution that is not widely available in the current market.

## Conclusion

This project proposes the development of an intelligent dual-chatbot system to address the communication challenges faced by import-export companies like Harivarsh Import & Export Pvt. Ltd. By automating responses to both general trade questions and company-specific queries, the system will significantly improve efficiency and customer satisfaction.

The solution is technically feasible using modern, open-source ICT tools like React.js, Node.js, and Python. It is also economically viable due to the use of free-tier cloud services. The project is highly relevant to the ICT domain, demonstrating a practical application of AI, web development, and cloud computing to solve a real-

world business problem. The proposed system is a novel approach that will provide a scalable, accessible, and user-friendly platform for the import-export industry.