3. SOFTWARE REQUIREMENT ANALYSIS

3.1 INTRODUCTION

3.1.1 PROJECT SCOPE

This research paper presents a comprehensive examination of an innovative web platform that connects farmers, consumers, and sellers in the agricultural sector. It covers technical aspects, focusing on the MERN stack's role in platform development and the intricate technical architecture and user interface. The paper also explores stakeholder dynamics and the platform's contribution to supply chain optimization, emphasizing economic empowerment for farmers and benefits for consumers, including sustainable farming practices. Additionally, it highlights the platform's role in promoting sustainability and transparency in the agricultural sector and supporting agricultural suppliers. The paper concludes by considering the platform's future implications and potential limitations, including scalability and its broader impact on the agricultural industry.

3.1.2 ASSUMPTIONS AND DEPENDENCIES

ASSUMPTIONS:

1. Assumption of Technological Readiness: The project assumes that the technological infrastructure and resources required for implementing the web platform, including the availability and proficiency of the MERN stack, are readily accessible and viable for deployment.
2. Assumption of Stakeholder Willingness: It assumes that farmers, consumers, and sellers are willing to adopt and engage with the platform, recognizing the benefits it offers in terms of direct interactions and transactions.
3. Assumption of Data Accuracy: The project assumes that the data related to agricultural products, transactions, and stakeholder interactions are accurate and reliable, as this data forms the foundation for the platform's functionality.
4. Assumption of Economic Impact: There is an assumption that the platform will indeed lead to economic empowerment for farmers, increased consumer access to local products, and a shift towards more sustainable farming practices, even though these outcomes might depend on various factors beyond the platform itself.
5. Assumption of Environmental Impact: The project assumes that the adoption of the platform will lead to improved environmental sustainability in agriculture, although this is contingent on the actual practices and choices of farmers and consumers.
6. Assumption of Supplier Engagement: It assumes that agricultural suppliers will actively engage with the platform to support farmers and provide essential resources, as their involvement is crucial for the platform's success.
7. Assumption of Scalability: The project assumes that the platform can be scaled up effectively to accommodate a larger user base and have a significant impact on the broader agricultural industry.
8. Assumption of User Interface Suitability: It assumes that the user interface provided by the platform, built with React, is user-friendly and capable of meeting the diverse needs of farmers, consumers, and sellers.

DEPENDENCIES

1. Technical Infrastructure: The availability and reliability of the technical infrastructure required for the platform, including server hosting, internet connectivity, and hardware, are critical dependencies.
2. MERN Stack: The project relies on the MERN stack, which includes MongoDB, Express, React, and Node.js. Dependencies on the stability and compatibility of these technologies are essential.
3. Data Sources: The accuracy and availability of data related to agricultural products, transactions, and stakeholder information are crucial. This data can come from various sources and should be dependable.
4. User Adoption: The success of the platform depends on the willingness of farmers, consumers, and sellers to adopt and actively engage with it. User buy-in is a significant dependency.
5. Supplier Engagement: The involvement of agricultural suppliers in providing resources and support to farmers is necessary for the platform's functionality and success.
6. Regulatory Compliance: The project may be subject to regulatory and legal requirements related to data privacy, e-commerce, and agricultural practices. Compliance with these regulations is a critical dependency.
7. Funding and Resources: The availability of funding and resources for platform development, maintenance, and scaling is a significant dependency. Financial and human resources are essential for project success.
8. Scalability: The platform's ability to scale and accommodate a growing user base is a dependency, as it needs to handle increased traffic and data.
9. Environmental Factors: The success of sustainability and environmentally conscious practices may depend on factors such as weather conditions, local ecosystems, and the willingness of farmers to adopt sustainable practices.
10. Consumer Behavior: The impact of the platform on consumer behavior and choices is a dependency. It relies on consumers opting for locally-sourced and sustainable agricultural products.
11. Competitive Landscape: The project's success could be influenced by the presence of competing platforms or initiatives in the same agricultural market.
12. Technological Updates: The MERN stack and other technologies used in the platform may undergo updates and changes, which could impact the platform's functionality and compatibility.
13. Market Trends: The project depends on an understanding of evolving consumer preferences and market trends in the agricultural sector, as these factors may influence the platform's design and features.

3.2 FUNCTIONAL REQUIREMENTS

1) User Registration and Profiles:
- Users can register accounts with basic profile information, including user type (farmer, consumer, or seller).

2) Product Listings:
- Farmers can create, update, and delete listings for their agricultural products, including product name, description, quantity, and price.
- Consumers and sellers can browse and search for products.

3) Transaction Management:
- Users can initiate and manage transactions for agricultural products.
- The platform supports secure payment processing.

4) User Messaging:
- Users can send and receive messages related to product inquiries and transactions.

5) Reviews and Ratings:
- Users can provide reviews and ratings for products and other users.
- Aggregated ratings and reviews are displayed.

6) User Management and Security:
- User accounts and data are securely managed.
- User authentication, including password reset and account recovery, is available.

3.3.1 PERFORMANCE REQUIREMENT

- Better User Experience: The MERN stack, with React, makes websites more enjoyable to use.
- Faster Data Transfer: The MERN stack can send and receive data quickly, so web pages load fast.
- Quick Server Responses: The MERN stack's server part, Node.js, responds to requests without making users wait.
- Saved Web Pages: MERN can save web pages on your computer so they load faster the next time you visit.
- Smart Memory Usage: MERN manages memory well, making sure it doesn't keep old stuff, so it works efficiently.

3.3.2 SAFETY REQUIREMENT

- User Safety: Using the system should not harm people in any way.
- Protection from the Internet: The system should be able to defend itself against threats from the outside internet.

3.3.3 SECURITY REQUIREMENTS

- Data Security: The system must ensure that data is kept secure. Regular users will have read-only access and won't be able to edit or modify their personal and specific information.
- User Access Control: The system will support various types of users, each with specific access constraints and permissions.

3.3.4 SOFTWARE QUALITY ATTRIBUTES

• Availability:
It is available 24 Hours worldwide across the globe on any web enabled device
that has internet connection.
•Portability:
It is portable since it is a web application and can be accessed from any browser.

3.4 SYSTEM REQUIREMENT

3.4.1 SOFTWARE REQUIREMENTS

- Web browser
- Camera

3.4.2 HARDWARE SPECIFICATION

Hardware required: any web browser supported device