**@doorz – A Multi-Vendor Website**

By

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| MUHAMMAD ABUBAKAR SIDDIQUE | | 2022-GCUF-05733 |
| NAILA SHAFIQUE | 2022-GCUF-05736 | |
| SAUD AHMAD | 2022-GCUF-05737 | |

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# **Chapter No 1: Introduction to the Problem**

**1.1 **Introduction****

Due to the rapid growth of the online industry, e-commerce platforms are now essential for both customer delight and business expansion. The need for a stable and dynamic multi-vendor e-commerce platform has never been greater. This need is met by the @doorz initiative, which creates a vast online marketplace aimed at promoting seamless communication between buyers and sellers. The project uses Redux for state management in conjunction with the MERN stack, which consists of MongoDB, Express.js, React, and Node.js. These technological advances guarantee that the platform is user-friendly, scalable, and efficient, meeting the demands of both modern suppliers and consumers.

@doorz aims to revolutionize the online shopping experience by providing a flexible and welcoming environment that fosters the growth of small and medium-sized enterprises (SMEs). It is not just another e-commerce platform. @doorz will bridge the gap between suppliers and buyers using innovative technology solutions and a simple and efficient marketplace that promotes company expansion and enhances customer happiness.

1.2 Background

E-commerce has emerged as a major sales channel as a result of the fundamental transformation of the retail industry as a result of the rapid spread of mobile and Internet technologies. Online marketplaces are gradually replacing or complementing traditional brick-and-mortar retailers as they provide unparalleled accessibility and convenience. As they can bring together a wide range of sellers and products, multi-vendor e-commerce platforms have become increasingly popular in this context, providing consumers with a one-stop shop for all their shopping needs.

However, there are often issues with scalability, security, and user experience with the multivendor platforms that now exist. Many small and medium-sized businesses (SMEs) find it difficult to build a solid online presence due to their expensive operating costs and lack of technical know-how. By offering SMEs an easy-to-use, scalable, and secure platform, @doorz aims to solve these problems while also improving the overall shopping experience for customers.

1.3 Purpose

The primary goal of the @doorz project is to use the MERN stack (MongoDB, Express, React, and Node.js) as well as Redux for state management to design and build a robust multi-vendor e-commerce platform. The platform strives to:

* **Empower Vendors:** Give SMEs the tools and assets they need to monitor their stores, monitor revenue, and grow their customer base with minimal overhead.
* **Improve the** **Customer experience:** Provide a secure checkout procedure, an intuitive user interface, and advanced search features to guarantee client happiness.
* **Leverage** **Advanced technologies:** Build a scalable, responsive application with real-time updates and the ability to handle large levels of traffic using the MERN stack.

1.4 Scope

The scope of the @doorz project includes building an e-commerce platform with multiple vendors that has the following features:

* **Vendor Dashboard:** Vendor dashboards are comprehensive control panels that allow vendors to monitor orders, inventory, and sales data.
* **Customer Accounts:** Personalized shopping experiences with wish lists, transaction histories, and order monitoring are available through customer accounts.
* **Product Listings:** Comprehensive product pages that include dynamic pricing options and multimedia support.
* **Search and Filters:** Advanced search features and filters are provided to help users find products quickly and efficiently.
* **Checkout and Shopping Cart:** Simple, secure procedures that help customers complete their transactions.
* **Payment Gateway Integration:** To enable smooth transactions, several secure payment methods are provided.
* **Order Management:** Reliable back-end systems that allow suppliers to handle orders, track status updates, and monitor shipping.
* **Review and Rating System:** Mechanisms for users to rate and review products and vendors, fostering community trust and engagement.
* **Responsive Design:** Ensuring compatibility with various devices, including desktops, laptops, tablets, and smartphones.

1.5 Objective

The objectives of the @doorz project are as follows:

* **To create an efficient, scalable, multi-vendor e-commerce platform** that facilitates the expansion of small and medium enterprises (SMEs) by offering a comprehensive, user-friendly environment for managing their online presence. does.
* **To improve the online shopping experience for consumers** by providing a secure transaction processing system, advanced search features, and an easy-to-use interface.
* **Strong security mechanisms** should be in place to protect user information and guarantee the integrity of transactions, instilling trust and reliability in the process.
* **To give suppliers access to comprehensive analytics tools** that will help them understand market trends, consumer behavior, and sales success. This will allow them to make data-driven decisions and improve their business.
* **Offering a long-term and innovative solution** for online sales to guarantee that the platform is flexible enough for future expansion as well as advancements in technology.

1.6 Intended Audience and Reading Suggestions

The target audience for this paper is broad and includes:

* **Project Supervisor**: Charged with monitoring and ensuring that the project meets technical and academic requirements.
* **Developers**: Developers are charged with implementing the platform's technical framework. They will discover the comprehensive technical specifications, schematics, and installation instructions necessary to build the platform.
* **Graphic Designers**: Graphic designers are tasked with creating user interfaces and user experiences. The document will be used by designers to understand the functional specifications and design principles that guide the creation of the platform's interactions and visual components.
* **Project Manager:** responsible for overall project coordination, resource allocation, risk management, and planning. The document will serve as the project manager's reference for comprehensive project schedules, resource requirements, and risk mitigation strategies.

**Reading Suggestions:**

* Overview: Provides all readers with a basic understanding of the project's purpose by providing a quick explanation of the project's vision, objectives, and impact
* Project Description: For most project managers and developers, this outlines goals, expected results, and techniques.
* Design and Development: Describes specific processes, tools, and design philosophies that developers and designers use.
* Project Management: For most project managers, this focuses on resource allocation, risk management, and project timeframes.
* Testing and Quality Assurance: For most developers and project managers, this section covers specific techniques for assuring software quality and reliability.

1.7 Documentation Conventions

This document follows specific conventions to ensure clarity, consistency, and professionalism. The conventions used throughout the document are as follows:

* **Font and formatting:** Times New Roman is used throughout the work, with body text set at 12 points, main headings set at 16 points, and subheadings set at 14 points. Section and subsection headings are distinguished by bolding and capitalization.
* **Lists:** Products, features, and benefits are presented using bulleted lists. Sequences of actions or systematic steps are represented using numbered lists.
* **Emphasis:** Key words and phrases are underlined in the text to draw attention to them. Instructions and important parts can also be underlined for emphasis.
* **Tables and Figures:** All tables and figures in the paper have a sequential numbering system and are properly referenced in the text. This guarantees that every visual aid can be referenced and easily identified.

# **Chapter 2: Software Requirements Specification**

## **2.1 Overall Description**

The basic components and background of the software development process are described in the general overview of the @doorz project. This section thoroughly covers the project objective, scope, and technology framework. @doorz aims to be a multi-vendor e-commerce platform that uses the MERN stack (MongoDB, Express.js, React, and Node.js) to build a user-friendly, scalable, and efficient marketplace. The platform seeks to enable small and medium-sized businesses (SMEs) by giving them access to the resources and tools they need to run their online stores, monitor sales, and interact with clients. Additionally, it strives to improve the shopping experience for customers by providing sophisticated search features, secure transactions, and customized shopping options. A number of constraints, such as technical limitations, performance requirements, and legal compliance, influence the design and implementation of the platform. Other important considerations that guide the development process are dependencies and assumptions about user expertise, Internet access, and third-party service reliability.

2.1.1 Product Perspective

The @doorz project seeks to provide an innovative, multi-vendor e-commerce platform that improves the user experience by leveraging contemporary web technologies and addressing the shortcomings of existing solutions. The platform will act as a dynamic marketplace where customers can have a seamless and secure shopping experience and vendors can manage their products, track sales, and interact with customers.

* **Market Positioning:** With an emphasis on scalability, security, and user-friendliness, @doorz aims to be a preeminent multi-vendor platform. Its target market includes small and medium-sized businesses (SMEs) as well as a wide range of consumers looking for a variety of products.
* **Stakeholder Participation:** Key stakeholders involved are:
  + **Vendors:** business owners who need a stable platform to manage and list their goods.
  + **Consumers:** end users looking for a safe and convenient way to shop online.
  + **Administrators:** platform managers in charge of managing user complaints, ensuring compliance, and monitoring operations.
  + **Developers:** The technical group in charge of building and managing the platform.
* **Technical integration:** The platform guarantees a unified development process by leveraging the MERN stack. React provides a dynamic user interface, Express.js is a robust server framework, MongoDB provides a configurable database solution, and Node.js facilitates efficient server-side operations. Redux optimizes state management to guarantee a reliable and consistent user experience.
* **Scalability and adaptability:** The platform architecture is designed to withstand increasing traffic and data volumes. Its modular design allows for future improvements and the easy inclusion of new features.

2.1.2 Product Features

A number of features will be added to the @doorz platform to improve the user experience for merchants and consumers. Among these features are:

* **Vendor Dashboard**: An all-in-one control panel that allows vendors to monitor their orders, merchandise, sales data, and correspondence with clients.
* **Customer Accounts:** Individual accounts that allow customers to monitor past purchases, maintain wish lists, and track orders.
* **Product Listings:** Comprehensive product pages include dynamic pricing options, user reviews, and multimedia support.
* **Advanced Search and Filters:** Enhanced search features are provided with filters based on categories, prices, ratings, and other criteria to help users find products quickly and efficiently.
* **Shopping Cart and Checkout:** Provides a secure, efficient checkout procedure with an easy-to-use shopping cart and multiple payment options.
* **Order Management System:** A back-end system for vendors managing order processing, status updating, and logistics.
* **Review and Rating System:** Encourage trust and engagement by providing customers with a way to rate and review vendors and items. A design that guarantees cross-platform compatibility and offers a seamless experience across PCs, tablets, and smartphones is called responsive design.
* **Analytics and Reporting:** Tools that suppliers can use to learn about market trends, customer behavior, and sales performance.
* **Customer Communication:** An instant messaging platform that facilitates direct communication between suppliers and clients. Vendors are able to answer clients' questions, provide updates on orders, and resolve any issues.

2.1.3 Design and Implementation Constraints

Several limitations affect the design and implementation of the @doorz platform:

* **Technology Stack:** Since this platform is built on the MERN stack, some third-party tools and libraries that are incompatible with this technology cannot be used.
* **Performance Requirements:** The system must be able to handle significant traffic volumes and a large number of concurrent users without experiencing any performance degradation. This requires strong server infrastructure, effective coding techniques, and well-crafted database queries.
* **Security Requirements:** To protect user data and guarantee secure transactions, the platform must adhere to strict security measures. This includes secure authentication mechanisms, encryption, and frequent security reviews.
* **Compliance:** The platform must adhere to all applicable laws and regulations, especially those related to e-commerce and data protection, such as GDPR. Regular reviews and changes are necessary to guarantee continued compliance with this.
* **Resource Constraints:** Project resources, including money, time, and staff, are limited. Careful planning and prioritization of work are required to move the project forward.

2.1.4 Assumptions and Dependencies

**Assumptions:**

1. **User Proficiency:**

* Assumes that both vendors and customers possess a basic level of digital literacy, enabling them to navigate the platform without extensive training or support. This includes understanding standard e-commerce practices, such as creating accounts, adding products to the cart, and completing transactions.
* Assumes that administrators have a moderate to advanced level of technical proficiency to manage the backend functionalities effectively.

1. **Internet Accessibility:**

* Assumes that users have consistent and reliable internet access to interact with the platform. This is critical for real-time interactions, such as browsing products, managing vendor dashboards, and processing transactions.
* Assumes that vendors can regularly access the internet to update their product listings, manage orders, and respond to customer inquiries.

1. **Third-Party Service Reliability:**

* Assumes that third-party services integrated into the platform, such as payment gateways (e.g., PayPal, Stripe) and shipping carriers, will maintain high availability and performance standards. These services are essential for processing payments and managing logistics effectively.
* Assumes that any APIs used for external services will remain stable and supported by their providers throughout the project lifecycle.

1. **Hosting and Scalability:**

* Assumes that the chosen cloud hosting provider (e.g., AWS, Azure) will offer the necessary scalability and reliability to support the platform as user demand grows. This includes handling peak loads during high-traffic periods without significant performance degradation.
* Assumes that the hosting provider will offer robust security measures to protect user data and ensure compliance with data protection regulations.

1. **Continuous Support and Maintenance:**

* Assumes that the development team will provide ongoing support and maintenance for the platform post-deployment. This includes regular updates, bug fixes, and enhancements to keep the platform running smoothly.
* Assumes that the platform will undergo periodic performance evaluations to identify and address potential bottlenecks or areas for improvement.

1. **Regulatory Compliance**:

* The platform assumes that all regulatory compliance requirements for e-commerce, data protection, and online transactions are met by both the platform and third-party services.

1. **User Engagement**:

* It is assumed that vendors will actively manage their storefronts, including inventory updates and order processing, and that customers will provide feedback and ratings for purchased products.

**Dependencies**

1. **Payment Gateways:**

* The platform depends on payment gateways (e.g., PayPal, Stripe) to process transactions securely. Any downtime or issues with these services could directly impact the platform's ability to process payments and complete orders.
* Requires integration with multiple payment options to provide flexibility to users and reduce dependency on a single payment service provider.

1. **Shipping Services:**

* Depends on shipping service APIs for real-time tracking and logistics management. This ensures that users can track their orders from dispatch to delivery, enhancing the overall customer experience.
* Relies on accurate and timely updates from shipping carriers to manage order fulfillment and provide customers with reliable delivery estimates.

1. **Cloud Hosting Providers:**

* The platform's performance and scalability are heavily dependent on the chosen cloud hosting provider (e.g., AWS, Azure). Any disruptions or limitations in the hosting service could affect the platform's availability and user experience.
* Requires robust infrastructure to support database operations, application servers, and content delivery networks (CDNs) to ensure fast and reliable access to the platform.

1. **Development Team:**

* Depends on the development team for continuous support, including addressing technical issues, implementing new features, and maintaining system security. The team's expertise and availability are critical for the platform's long-term success.
* Relies on effective project management practices to ensure timely updates and adherence to the project roadmap.

1. **Regulatory Bodies:**

* Compliance with local and international regulations regarding e-commerce, data protection (e.g., GDPR), and online transactions is essential. Changes in regulatory requirements could impact platform operations.

1. **Regulatory Bodies:**

* The platform’s success depends on continuous user feedback and the ability to adapt to changing user needs. This includes feedback from both customers and vendors regarding the platform’s usability and features.