Group 38

Online Shopping Management System - MSIKI
Software Requirements Specification
For Subsystem or Feature

Version 1.0

Revision History

Date	Version	Description	Author
28/11/2024	1.0	final version	Dang Thanh Trung Vu Dinh Quyet Vu Minh Duy Do Duc Truong

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Software Requirements Specification

1. Introduction

1.1 Purpose

To provide a comprehensive description of the external behavior of the MSIKI Online Shopping System, detailing its functional and non-functional requirements, design constraints, and other necessary factors for development and maintenance. This document is intended for developers, project managers, stakeholders, testers, and the maintenance team, ensuring that all parties have a clear understanding of the system's requirements and expectations to facilitate successful development, deployment, and ongoing support.

1.2 Scope

The MSIKI system will enable users (buyers and sellers) to browse products, place orders, make secure payments, and track their orders. It will also allow sellers to list products, manage inventory, and view orders, while administrators will manage user accounts and resolve system issues. The system will not handle physical inventory storage or shipping logistics directly but will integrate with external shipping services for order fulfillment. The application of the MSIKI system aims to provide a seamless and efficient online shopping experience, enhancing customer satisfaction and operational efficiency. The primary objectives are to offer a user-friendly interface, ensure secure transactions, and support multiple users concurrently. This scope is consistent with higher-level specifications, ensuring alignment with the overall system requirements and business goals.

1.3 Definitions, Acronyms, and Abbreviations

API: Application Programming Interface, a set of functions and protocols for building and interacting with software applications.

HTTPS: Hypertext Transfer Protocol Secure, a protocol for secure communication over a computer network.

1.4 References

N/A.

1.5 Overview

This document is divided into sections that describe each non-functional requirement of the system including performance, usability, reliability, functionality, supportability, help system requirements, etc.

2. Overall Description

2.1 Product Perspective

2.1.1 System interfaces

The MSIKI system interfaces with external payment gateways for processing transactions and with shipping services for managing deliveries. These interfaces are crucial for completing the purchase process and ensuring timely delivery of products.

2.1.2 User Interfaces

The system provides a web-based interface for desktop users and a mobile-friendly interface for smartphone users. These interfaces are designed to be user-friendly and intuitive, allowing users to easily navigate and perform various actions such as browsing products, managing their cart, and placing orders.

Payment Gateway Interface: is responsible for processing payment transactions securely. The MSIKI system integrates with external payment gateways such as PayPal and Stripe to handle financial transactions. This interface ensures that payment details are securely transmitted and processed, handling transaction verification and confirmation through secure API calls and encrypted data exchange over

HTTPS.

Shipping Service Interface: manages order deliveries by interfacing with external shipping services like FedEx and UPS. This interface ensures that shipping details are transmitted to the shipping service and that tracking information is received and updated. It uses secure API calls and HTTPS for data exchange, including shipping addresses, order details, and tracking numbers.

User Interface (UI): provides a user-friendly interface for customers, sellers, and administrators. The system offers both web-based and mobile-friendly interfaces, allowing users to interact with the system through web browsers such as Chrome, Firefox, and Safari, as well as responsive designs for mobile devices. The UI handles user inputs and system responses, facilitating actions like browsing products, managing carts, and placing orders.

Database Interface: manages data storage and retrieval, interfacing with a MySQL database to store and retrieve data related to users, products, orders, and transactions. This interface ensures efficient data management and secure storage through SQL queries, access controls, and encryption for sensitive data.

Authentication Interface: manages user authentication and authorization, providing secure login and registration functionalities. This interface ensures that only authorized users can access the system and perform actions based on their roles. It uses secure API calls, HTTPS for secure communication, and encryption for passwords and session tokens.

2.1.3 Hardware interfaces

The software will support a Local Area Network (LAN) interface for data collection from users and for updating product information. The LAN will have a logical structure connecting multiple devices within a local network, with physical addresses assigned to each device. The expected behavior includes seamless data transfer between the user devices and the server, ensuring real-time updates of product information.

2.1.4 Software interfaces

The software will include interfaces to firewall and other network security solutions to ensure unauthorized access to the system is prevented. These security components will interact with the network subsystem to monitor and filter incoming and outgoing traffic. The firewall will be configured to protect the system from external threats, while security solutions will work in conjunction with the software to provide real-time protection and maintain data integrity. These components will be integrated into the system to safeguard network communications and protect sensitive user information.

2.1.5 Communications interfaces

The system uses TCP/IP for internal network communication and HTTPS for secure internet communication. It employs RESTful APIs to interact with external services like payment gateways and shipping services, and SMTP for sending email notifications to users. These interfaces ensure secure and efficient data exchange within the system and with external services.

2.1.6 Memory constraints

The system must operate efficiently with a minimum of 4GB RAM on user devices and limit memory usage to 1GB during peak operations. Product entries, including images, should not exceed 5MB each, with a server storage requirement of at least 20GB to handle up to 3000 entries at a time.

2.1.7 Site Adaptation Requirements

The system should be able to adjust to different sites by loading local product catalogs, currency formats. It should also allow changes to features like payment options, language settings, and promotional banners to fit each site’s needs, while following local rules for data protection and transactions.

2.2 Product functions

- **Manage Users**: Allows administrators to manage user accounts, including creating, updating, and deleting

user profiles.

- **Manage Profil**e: Enables users to view and update their personal information and account settings.
- **Authentication**: Provides secure login and registration functionalities for users.
- **Make Payment**: Integrates with payment gateways to process transactions securely.
- **Manage Order**: Facilitates the creation, tracking, and management of customer orders.
- **Manage Cart**: Allows customers to add, remove, and update items in their shopping cart.
- **Manage Coupons**: Enables the creation and management of discount coupons for promotional purposes.
- **Manage Collections**: Allows sellers to organize products into collections for easier browsing.
- **Manage System Category**: Provides functionality for managing product categories within the system.
- **Manage System Ads**: Enables the creation and management of advertisements within the platform.
- **Create New Product**: Allows sellers to list new products on the platform.
- **Search Product**: Provides search functionality for users to find products by name, description, or other attributes.

2.3 User characteristics

Customers: Typically have basic computer and online shopping experience, with varying levels of technical expertise. They should be comfortable using devices like smartphones or computers for browsing and making purchases.
Sellers: Have moderate technical skills, with some experience in managing online stores. They should be able to create and manage product listings and process orders.
Administrators: Possess advanced technical expertise, including knowledge of system management, security, and e-commerce platform administration.

2.4 Constraints

- **Regulatory Policies**: It has to keep up with the data protection laws like GDPR, CCPA as well as the e-commerce law that safeguards the payment process and consumer information.

- **Hardware Limitations**: The load of the system should be balanced with the performance, and it should be operable on devices with not less than 4G RAM while being optimized to load on standard web browsers for maximum user interaction.

- **Interfaces to Other Applications**: The system has to be able to communicate with other services such as payment gateways, shippers, and email clients for the system to run successfully.

- **Parallel Operation**: The system has to accommodate the multiple users who perform the concurrent operation of quantitative features such as product searches and transactions, etc.

- **Audit Functions**: For the purpose of accountability, there will be log files to record users, payments and any other transactions, and an error log file.

- **Control Functions**: There should be account management capabilities for the administrators with privileges to change individual products or general system content, which operates at various permission levels.

- **Higher-Order Language Requirements**: The platform will be coded in present day scripting languages such as JavaScript, PHP or Python so that the scripts can easily grow and be managed.

- **Signal Handshake Protocols**: The system will employ standard forms of communication to achieve reliably encrypted and consistent data transmission between the server and other systems such as payment processors.

- **Reliability Requirements**: It has to be 99,9% available so consumers and sellers are able to access it when there is a huge rush at a particular time.

- **Criticality of the Application**: Organisations that engage in sensitive business transactions and store their users' data must ensure that the system consistently serves them well and is secure in order to retain the organisations' customers' confidence and ensure that its own efficiency does not suffer due to frequent system breakdowns.

- **Safety and Security Considerations**: The system should employ enhanced security to the data by use of a secure entry process for the data and to avoid cases of fraud.

2.5 Assumptions and dependencies

Assuming the target hardware will have common operating systems running, such as Windows, macOS, Linux; and that users use a stable internet for browsing and transaction, the system considers those while providing service. The system depends as well on third party services such as payment gateways and shipping services, and these third parties may change, which may impose a system change. Only if you have the minimum of 4 GB RAM and you understand some computers, the software assumes. It also assumes compliance with local regulations like tax and data protections laws. The system is then designed to grow with users, however, as traffic increases so too may optimization be necessary.

2.6 Apportioning of requirements

Certain features will be postponed to future versions of the MSIKI Online Shopping System, including advanced analytics and reporting, multi-language support, a dedicated mobile app for iOS and Android, and integration with additional payment gateways. These features are not critical for the initial release but will be considered in future updates to enhance functionality and user experience as the platform grows.

3. Specific Requirements

3.1 Functionality

This section presents the functional requirements of the MSIKI Online Shopping System, given the necessary key features and capabilities which the system has to expose. User management, product handling, order processing and payment features and functionalities are these requirements that deal with a smooth experience for customers and sellers. The following are the core functional requirements:

3.1.1 Manage Users

The administrators must be authorized to create, update and delete user profiles and should be able to manage user accounts; that means that the following are required of the system: All user data should be available to administrators and the system should enforce role based access controls preventing non admin users from doing any unrelated actions.

3.1.2 Manage Profile

Its main purpose is for means of viewing and editing personal services such as email, address, and other contact details, as well as viewing and editing personal information for both buyers and sellers. The access to account settings and preference in the profile management interface should be user friendly.

3.1.3 Authentication

They also must offer secure login and registration for users. Those include sign up, login via email and password, and resetting passwords if forgotten. The system needs to properly manage user sessions, and to ensure that access to the system is secure, it has to be equipped with CAPTCHA or any other security measure.

3.1.4 Make Payment

Since the system has to handle secure transactions, many different payment gateways have to be supported, including credit cards, debit cards, e-wallets. Real time payment in and the customer should be sent confirmation of the payment and update the order status.

3.1.5 Manage Order

This means that the system needs to have capabilities to place the orders, track the statuses and see the

history of orders of customers. You need to be able to have your sellers be able to manage the status of our orders, and update status once they ship, say, shipped, processed, delivered. Customers should receive notifications of what the status of their orders is.

3.1.6 Manage Cart

The system has to support customers in adding, removing and updating items in their shopping cart. Customers should be able to finish up the shopping and click through to the checkout if they'd like the quantity and price on the cart to be the right amount.

3.1.7 Manage Coupons

Administrators, sellers, and test users must be able to create and manage discount coupons within the system. These coupons should be for a discount on products or order with expiration date, a usage limitation or a discount amount.

3.1.8 Manage Collections

The system must permit sellers to arrange their products into collections for easier browsing by the customer. The sellers should be able to create, update and remove collections and assign products to specific collections.

3.1.9 Manage System Category

This system must supply the capability to administer product categories. Sellers should be able to add tags to their products which then can be added in a category, this can then be altered by the administrators to make it easier for them to categorise products.

3.1.10 Manage System Ads

Administrators must be able to create, edit and manage the advertisements shown on the platform. Such ads can be connected to certain products or sales, and placed on the appropriate pages to attract customer's attention.

3.1.11 Create New Product

Sellers must be able to enter essential product details like name, desc, price, and stock quantity etc. and add them into the system to list out new products. It must also validate that all required fields are filled out and on occurrence give feedback through user facing error messages if information is missing and if it's missing or in an incorrect form.

3.1.12 Search Product

The system must be able to search for products by name, description or category. Filters like in price range, ratings, availability etc. are supported in the search feature, and its results to be returned in a reasonable period of time i.e. less than 2 second.

3.2 Usability

3.2.1 Training Time

Customers should be able to perform basic tasks, such as searching for products and checking out, within 30 minutes of first use, without requiring formal training.
Sellers and administrators should be able to perform more advanced tasks, such as managing orders and products, within 2 hours of initial training. A brief tutorial should be available to assist in becoming familiar with advanced features.

3.2.2 Interface Standards Compliance

The system's user interface should follow IBM's CUA guidelines for familiarity and ease of use and Microsoft's GUI standards to ensure consistency and a predictable user experience

3.2.3 Task Completion Time

Users should be able to search for a product and complete a purchase within 5 minutes of login. Sellers should be able to update the order status within 1 minute. And can add a new product with all necessary

details within 5 minutes.

3.3 Reliability

3.3.1 Availability

The system must operate continuously 24/7, with downtime not exceeding 5%.

3.3.2 Maintenance Time

Maintenance time should be fast, about 1 hour per maintenance period.

3.3.3 Maintenance

The number of maintenance times should be minimal, no more than 10 times per year.

3.3.4 Accuracy

The system must maintain 100% accuracy.

3.3.5 Security

The system must provide 100% information security.

3.4 Performance

3.4.1 Response Time for Product Search:

The response time for a transaction must be fast which does not exceed 3 seconds.

3.4.2 User Load Capacity:

The system can deal with 3000 users at a time

3.4.3 Transaction Performance:

The system must finish about 80% of transactions in 2 minutes.

3.5 Supportability

3.5.1 Coding Standards

The system must follow coding conventions which are standard such as PSR-12 for PHP code the system is developed in. JavaScript should conform to Airbnb JavaScript Style Guide and CSS to Block Element Modifier.

3.5.2 Naming Conventions

All variables, functions and classes, and database entities should include clearly descriptive names and conventions.

3.5.3 Data Protection and Privacy

The system must protect 100% of users' information, especially personal details such as phone numbers, addresses, and banking accounts.

3.5.4 System Integration with Billing and Payment Platforms

MSIKI must be compatible with a billing system that can be linked with e-wallets and banks affiliated with MSIKI.

3.6 Design Constraints

3.6.1 Design Constraint

The Online Shopping System Tiki must be developed using HTML, CSS, JavaScript, PHP, and MySQL, leveraging IntelliJ IDEA, VS Code, Zend, and jQuery, and adhering to the MVC architecture for reusability and collaboration, while ensuring scalability, high traffic handling, and operation on a dedicated platform with database access.

3.7 On-line User Documentation and Help System Requirements

There will be a customer support system that will answer inquiries and help the user with technical problems.

3.8 Purchased Components

None

3.9 Interfaces

3.9.1 User Interfaces

The software interface will have a main page with a search bar for users to find products or brands. Below the search bar, product categories like Meat, Fruits, Groceries, Home, and Electronics will be displayed. The top right corner will feature an account menu with options for My Order, Product Reviews, Discount Codes, Tiki Coins info, and log-out. A large promotional banner and a "Hot Deals Today" section with discounted products will also be visible. The design will be simple and user-friendly, with a blue, white, and black color scheme.

3.9.2 Hardware Interfaces

The software will support a Local Area Network (LAN) interface for data collection from users and for updating product information. The LAN will have a logical structure connecting multiple devices within a local network, with physical addresses assigned to each device. The expected behavior includes seamless data transfer between the user devices and the server, ensuring real-time updates of product information.

3.9.3 Software Interfaces

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3.9.4 Communications Interfaces

The website and application need to be connected to the Internet

3.10 Licensing Requirements

The copyright belongs to Msiki

3.11 Legal, Copyright, and Other Notices

Msiki. All right reserved.

3.12 Applicable Standards

ISO/IEC 27001 – Information Security Management System.

4. Supporting Information

N/A.