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TECHNOLOGY INNOVATION

Software Requirement Documentation

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1 Purpose of the Software Being Developed

1.1 Problem statement

With the digital presence of Large-Scale Corporate Businesses, the customer outreach for small scale businesses and local markets has become very challenging. This digital divide not only hampers their potential for growth but also puts them at a disadvantage compared to digitally savvy competitors. Hence there is a demand to develop digital solutions for small scale and local businesses which can improve their online visibility, customer outreach and inventory management.

1.2 Objectives

The software application aims to address the digital divide faced by small-scale businesses and local markets. The objectives are:

- To improve their online visibility, enhance customer outreach, and streamline inventory management.
- It enables businesses to establish a strong digital presence, making it easier for potential customers to discover and engage with their products or services.

1.3 Stakeholder Needs

The stakeholders of the software include small scale businesses, local markets, customers and local communities. The business vendors expect a user-friendly software application that is affordable, easy to use and helps in establishing online presence, expanding their customer reach. On the other hand, customers expect a seamless user experience, clear communication channels and accurate information on availability and delivery of the products.

2 Overall Description

2.1 System Architecture

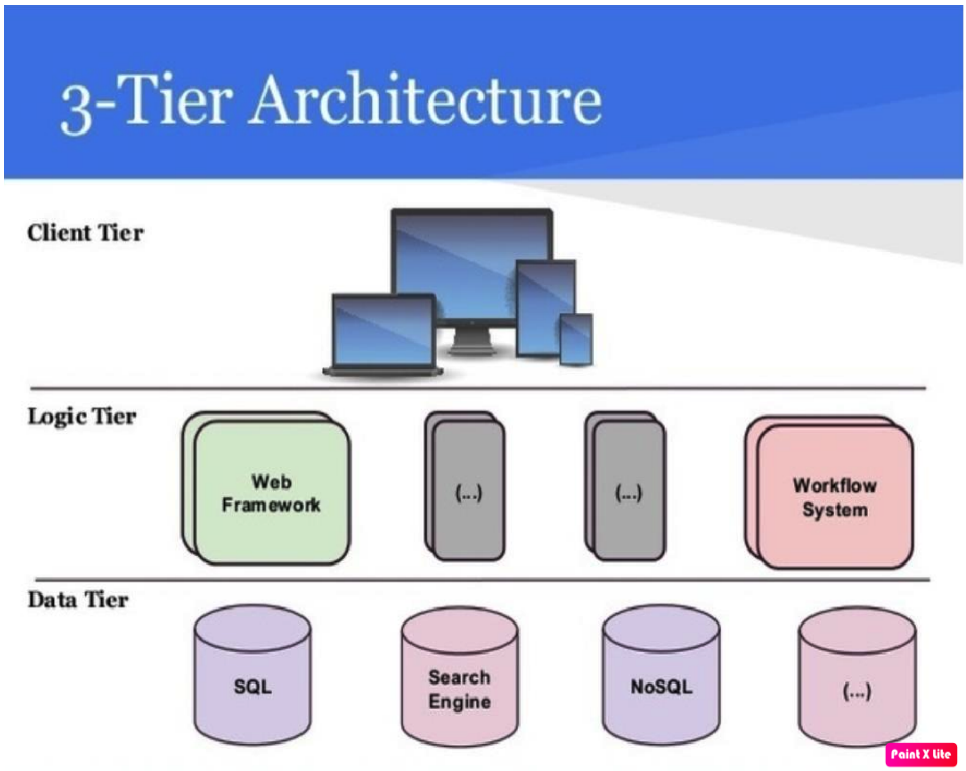

Figure 2.1: System Architecture

2.2 User roles and interactions

The software will define different user roles to ensure appropriate access and functionality for each stakeholder. These roles include small scale business owners/administrators, and customers. Small scale business owners/administrators will have privileges to oversee the

overall operation of the software, and update inventory. Customers will have access to browse products or services, make purchases, communicate with businesses, and provide feedback.

2.3 Data management

The software application uses a database management system to handle data storage, retrieval, and processing. The database will store information such as business profiles, product catalogs, customer details, inventory data, and transaction history. Data will be securely stored and accessed through appropriate authentication and authorization mechanisms. The software will employ data processing techniques to generate insights, reports, and analytics to help businesses make informed decisions.

3 Functional Requirements

3.1 Use Cases

- Business registration: The software should make it simple for small companies to register and construct an online presence, including their contact information, a description of their firm, and information about the goods or services they provide.
- Catalog management: small companies should be able to create, maintain, and manage their online catalogue, including adding images, descriptions, pricing, and availability information for their products and services.
- Managing User: The software should provide features that help small companies easily organize and keep track of client data, such as contact information, purchase history, and loyalty programs.
- Order and Payment: Customers should be able to easily explore and make orders using the software platform, choosing goods, adding them to their shopping carts, and making secure online payments.
- Manage Inventory: Small businesses should be able to quickly monitor their stock levels, get warnings when supplies are running short, make plans for replenishing, and coordinate their online and offline inventories.
- Promote and Market: The software needs to provide small businesses with the tools they need to create and implement marketing strategies, highlight deals or discounts, and interact with clients via tailored email or notification campaigns.
- Report and Analytics: Analytics and reporting capabilities, such as sales figures, customer insights, and website traffic monitoring, should be available to small businesses so they may make well-informed business choices.

3.2 Functional Features

- Authorization and Authentication: To safeguard the privacy and security of consumers and small companies, the software should have secure login capabilities and role-based access control.
- Responsive Interface: The software should have a user-friendly interface that adjusts to various hardware and screen resolutions.
- Search: The ability to search for businesses, products, or services using keywords, categories, or locations.
- Reviews, feedback, and ratings: Customers should be able to write reviews and ratings for businesses, enabling others to make informed decisions.
- Track Order: Customers should be able to get real-time information and monitor the development of their orders.
- Manage social media: The ability to market products and services on online social networks to increase exposure and audience.
- Filtering and browsing: It should be simple for customers to do based on categories, price ranges, ratings, or other pertinent factors. Customers should be able to browse the items and make educated purchases using the software's aesthetically attractive and user-friendly interface.

3.3 System behavior

- User-friendly interface: The software's user interfaces should be intuitive and easy to use for both consumers and small businesses.
- Real-time data synchronization: Any changes or adjustments made by businesses or customers should be immediately reflected across the system.
- Error handling: The program should gracefully manage any issues and provide users with concise error messages.
- Data validation: Input data must be examined for accuracy and integrity, and any errors must be communicated with the appropriate error signals.
- Scalability: The system must be able to manage several concurrent users and increase data quantities without performance being significantly affected.

4 Performance Requirements

4.1 Response Time

Considering average query complexity, the program should provide search results in a maximum of 1-2 seconds [2].

4.2 Scalability

- User scalability: The program must be able to handle an increasing number of concurrent users without substantially deteriorating performance.
- Data volume scalability: The software must be able to handle expanding data quantities, such as those from larger customer and product databases, without compromising performance [2].

4.3 Reliability

- High availability: The software system should strive for at least 99 percent uptime to minimize planned maintenance and unexpected downtime.
- Data backup and recovery: The software must regularly back up data and have plans in place for restoring lost data in the case of crises or failures [2].
- Error handling and logging: The program must keep track of errors and exceptions so that issues may be resolved quickly.

5 Design Constraints

5.1 Limited Technology Knowledge

Users may not be familiar with using digital technology. So, the web application should be user-friendly and intuitive, catering to users with limited technology knowledge.To help users through the application, give plain instructions or tooltips by avoiding technical jargons. Consider providing comprehensive documentation or help resources to assist users in navigating the application effectively.

5.2 Security

As users may have concerns regarding their personal information, web applications should implement robust security measures to protect user data and prevent unauthorized access. Use encryption protocols *(e.g HTTPS)* to ensure secure data transmission. To restrict access to sensitive information, implement user authentication and authorization processes. Regularly update the system to address any security vulnerabilities.

5.3 Limited Internet Connectivity

Users from rural areas have most connectivity issues, so design the web application to be lightweight and optimized for performance, especially for users with limited internet connectivity. Minimize the use of large media files, such as images or videos, that could significantly impact responsiveness of the application . Provide offline capabilities where possible, letting users to access and engage with particular elements even when they are not connected to the internet.

5.4 Mobile Accessibility

Many users need to access the application from mobile devices. So, optimize the web application's design and functionality for mobile devices, considering varying screen sizes

and touch-based interactions. Implement responsive design techniques to ensure the application adapts well to different mobile devices and orientations. Conduct thorough testing on various mobile platforms and browsers to ensure a consistent and smooth user experience.

5.5 Time Constraints

Some users might have limited time to use the application. So, define and prioritize the key features of the web application to meet the specified time constraints. Break down the development process into manageable milestones or sprints to ensure progress within the given time frame. To speed up development and iterations, consider employing fast prototyping approaches.

5.6 Accessibility

Inclusivity is vital when designing the web application, and it should be accessible to users with disabilities, including those with visual or motor impairments. It should follow web accessibility guidelines *(such as WCAG 2.1)* to ensure the application is usable by people with disabilities. Provide alternative text for images, proper semantic markup, and keyboard navigation support. Test the application with assistive technologies, such as screen readers, to verify its accessibility.

5.7 Scalability

Design the web application with scalability in mind, allowing it to handle increasing user traffic and growing data volumes. Implement a robust architecture that can easily accommodate future enhancements and changes without major disruptions.

5.8 Language and Localization

Consider the need for localization of the web application, allowing for seamless adaptation to different languages, cultures, and regions. Design the application with proper support for multilingual content, date/time formats, and localized user interfaces.

6 External Interface Requirements

6.1 User Interface

The user interface of the software will reflect the branding and visual identity of small-scale businesses using the system. This ensures a consistent and recognizable brand presence across the digital platform. By aligning the user interface with their brand, small-scale businesses can strengthen their online presence and establish a sense of trust and familiarity among their target audience.

The user interface will provide simple access to improve the user experience. A simple and logical navigation structure will be built, allowing users to effortlessly explore the software's many areas and functions. The aim is to minimize user confusion and frustration, enabling a smooth and seamless browsing experience. By providing straightforward and user-friendly navigation, small-scale businesses can improve customer outreach and engagement.

6.2 Integration with external systems

The software will offer seamless integration with external systems to address the challenges faced by small-scale businesses and local markets in improving their online visibility, customer outreach, and inventory management. It will integrate with popular payment gateways to enable secure online transactions and support various payment methods, empowering businesses to offer a trusted and convenient payment experience.

Additionally, integration with social media platforms will allow businesses to leverage the power of social media for customer engagement, enabling them to share updates, run promotional campaigns, and interact directly with customers. Furthermore, integration with inventory management systems will also ease stock control by assuring precise inventory tracking, efficient order fulfillment, and reducing stock outs or overselling. These integrations will help small-scale businesses bridge the digital divide, enhance

their online presence, and compete effectively in the digital landscape.

6.3 Security interfaces

The software will prioritize robust security measures and protocols for its external interfaces to safeguard the sensitive data and protect the interests of small-scale businesses and local markets. User authentication and authorization mechanisms, such as username/password combinations or multi-factor authentication, will be implemented to ensure that only authorized individuals can access and utilize the system.

All sensitive data, including customer information and transaction details, will be encrypted both during transit and at rest to prevent unauthorized access. Secure communication protocols, such as HTTPS, will be employed to ensure the confidentiality and integrity of data exchanged between the software and external systems or APIs. Security updates will be released on a regular basis to fix any known vulnerabilities and protect the system from emerging threats. By adhering to these stringent security measures, the software will provide a secure environment for small-scale businesses, instilling confidence in their online operations and safeguarding their customer's data.

7 Non-functional Requirements

7.1 Usability

Usability and user experience will be given top priority in the software, with the goal of offering local marketplaces and small-scale businesses an intuitive and user-friendly platform. The user-friendliness of the programme will be a significant consideration, ensuring that users can easily traverse the system and carry out tasks without difficulty or annoyance.

The layout of the user interface shall be clear and orderly, minimizing clutter and giving priority to crucial functions to improve usability. Users will be able to find required information and access pertinent functions with ease if the navigation menus are clear and intuitive, have search capabilities, and include breadcrumbs. The programme will also leverage responsive design concepts to adjust to various hardware and screen sizes, enhancing user experience on desktops, laptops, tablets, and mobile phones.

The programme will enable small businesses to bridge the digital divide, efficiently manage their online visibility, increase consumer engagement, and streamline inventory management procedures by placing a priority on usability and user experience.

7.2 Performance

For the benefit of small enterprises and regional markets, the software will make an effort to fulfill high performance criteria. To meet the expectations of a rising user base, key performance indicators including throughput and concurrent user support will be addressed. The system will be built to manage a sizable number of transactions, making it possible to execute customer orders, payments, and inventory adjustments quickly and efficiently.

In order to ensure that several users can access and use the software concurrently with-

out suffering performance degradation or delays, it will be optimized to accommodate a large number of concurrent users. The software's efficiency will be continuously assessed and improved in order to preserve responsiveness and reduce any potential bottlenecks.

Small firms will be able to manage their online presence, improve client outreach, and handle inventory management effectively thanks to the software's exceptional performance, giving them a competitive edge in the digital marketplace.

7.3 Security

To ensure the protection of sensitive data and reduce potential security threats, the software will employ thorough security procedures and controls. To make sure that only people with permission may access the software and its data, access restrictions will be put in place.

To confirm user identities and stop unauthorized access, user authentication measures such strong passwords or multi-factor authentication will be used. Techniques for data encryption will be employed to safeguard data while it is in use and at rest, guarding against unauthorized disclosure or interception. In order to find and fix any potential holes in the security posture of the programme, routine security audits and vulnerability assessments will be carried out.

Strong disaster recovery and backup systems will also be in place to guarantee data availability and integrity in the event of any unanticipated incidents. By placing a high priority on security, the software will inspire trust in local markets and small-scale organizations by assuring them that their data is secure and that their online activities are safe from threats and vulnerabilities.

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