

UNIVERSIDAD NACIONAL DEL ALTIPLANO
"FACULTAD DE INGENIERÍA ESTADÍSTICA
E INFORMÁTICA"



REQUIREMENTS ENGINEERING

Empowering Alpaca Farming Families through a Digital Platform
for breeding, production, and sale of Alpaca Fiber

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Empowering Alpaca Farming Families through a Digital Platform for breeding, production, and sale of Alpaca Fiber

Problem Statement

Alpaca farming is the main economic activity for over 90,000 families worldwide, providing vital income for these communities. However, these families face a series of challenges that limit their ability to thrive in this industry. Lack of access to specialized veterinary services and adequate care resources leads to health issues in the herds, affecting the quality and quantity of wool produced. Additionally, marketing alpaca wool is often complicated due to the lack of direct sales channels, leaving breeding families dependent on intermediaries who reduce their profits. Finally, the lack of business training and access to financing limits their ability to develop their businesses sustainably.

In this context, there is a need for a comprehensive virtual platform that provides access to specialized veterinary services and care resources, facilitates direct marketing of alpaca wool and related products, and offers business training for breeding families.

Justification

Camelid farming in Peru, especially of alpacas and vicuñas, is a vital activity for the country's economy. Peru is a world leader in the production of alpaca and vicuña fiber, demonstrating the relevance of this industry at both national and international levels. However, despite this leadership in fiber production, alpaca breeding families face a series of challenges that limit their ability to maximize the benefits of this activity.

Peru holds a prominent position in alpaca fiber production, many breeding communities are located in rural and remote areas where access to specialized veterinarians is limited. This results in untreated health problems in alpaca herds, negatively impacting the quality and quantity of fiber produced.

Additionally, marketing alpaca fiber also poses a significant challenge. Often, breeding families rely on intermediaries to sell their fiber, reducing prices and profits for the producers. The lack of direct marketing channels makes alpaca breeders subject to unfair trade practices and makes it difficult for them to obtain fair value for their production.

Another significant challenge is the need for business training. Despite being leaders in alpaca fiber production, many breeders lack basic business skills and

struggle to access loans or financing to improve their operations. This limits their ability to develop sustainable businesses and diversify their sources of income.

Therefore, the need arises for a digital platform that addresses these challenges and provides effective solutions for alpaca-raising families in Peru. By providing access to veterinary services and care resources, it will facilitate direct marketing channels for alpaca fiber, and offer business training to empower breeders and promote more sustainable development of the industry.

General objective:

To develop and launch a comprehensive digital platform that provides effective solutions to strengthen alpaca farming and improve the quality of life of breeding families.

Specific objectives:

- Integrate an expert system that can provide accurate answers to frequently asked questions about the health and care of camelids.
- Integrate artificial intelligence for user frequently asked questions in the platform's search engine.
- Implement data security and privacy measures to protect user information.
- Integrate the inference engine (possible diseases and/or treatments) for the expert system.
- Provide a centralized and user-friendly digital interface.
- Establish direct online marketing channels for alpaca wool and related products, eliminating intermediaries.
- Create a virtual community where breeding families can share experiences, knowledge, and resources, promoting collaboration and mutual support through the platform.

Benefits of the digital platform

- Access to veterinary services through an artificial intelligence-driven expert system, which will alleviate the burden on support staff and provide quick and accurate responses to users.

- Direct marketing of alpaca wool and related products, allowing breeding families to obtain better prices by eliminating intermediaries and connecting directly with consumers.
- Business training to empower breeding families and help them develop their businesses sustainably. This will be achieved through the platform via interactive modules covering management, marketing, and financing skills, essential for long-term success in the industry.
- The platform offers resource centralization by providing useful information, guides, and practical tools to improve breeding practices and business management.
- The platform fosters the creation of an online community where breeders can exchange experiences, share knowledge, and establish business relationships, creating an environment of collaboration and mutual support.

Differentiation of the platform

1. Comprehensive approach

- Unlike other platforms that may offer limited services, our platform encompasses all necessary aspects for the success of alpaca breeding families. From veterinary services to business training, we provide a comprehensive solution.

2. Customization and adaptability

- The platform is designed to adapt to the specific needs of alpaca breeders. We offer personalized tools and resources that fit each stage of the alpaca lifecycle and the individual circumstances of each breeder.

3. Direct interaction

- By facilitating direct marketing channels, our platform allows for closer interaction between breeders and consumers. This creates a more authentic and transparent connection, resulting in increased customer trust and loyalty.

4. Continuous updates

- The platform will always be updated with the latest trends, technologies, and best practices in the industry. This ensures that our users always have access to the most relevant and useful information.

5. Support and assistance

- Exceptional customer service and continuous support will be provided to users. This platform is here to assist every step of the way, from resolving technical issues to providing personalized business advice.

Functional requirements

1. Access to veterinary services

- Implement an expert system with artificial intelligence to provide answers to frequently asked questions related to the health and care of alpacas, offering advice and guidance on various medical and management situations.
- Develop an artificial intelligence-based virtual assistance system that allows users to interact and obtain quick and accurate answers on specific veterinary topics.

2. Direct marketing

- Create a virtual space for breeders to list their products.
- Integrate an online order and payment management system.
- Provide shipping options and order tracking.

3. Business training:

- Develop interactive modules for business management training.
- Offer online courses on marketing, financing, and business development.
- Provide downloadable educational materials and access to live webinars.

4. Resource centralization

- Establish a database of information on alpaca care, health, and business management.
- Create step-by-step guides for specific tasks, such as shearing and feeding.
- Integrate practical tools, such as cost calculators and production planners.

5. Community and Networking

- Implement a forum or discussion platform where users can interact.
- Facilitate the creation of user profiles with information about breeding activity.
- Allow the posting of events and meetings related to alpaca breeding.

Non-functional requirements

1. Performance

- The platform must be able to handle a high volume of simultaneous users without experiencing excessive loading times.
- The platform's response time to user requests should not exceed 2 seconds.

2. Security

- The platform must comply with industry security standards to protect user data.
- A secure authentication system must be implemented for user access.
- User-sensitive data must be encrypted both in transit and at rest.

3. Compatibility

- The platform must be compatible with a wide range of devices and modern web browsers.
- It should be compatible with different operating systems, including Windows, macOS, iOS, and Android.

4. Usability

- The user interface must be intuitive and easy to use, even for users with no technical experience.
- The platform must be accessible to people with disabilities, complying with web accessibility standards.

5. Scalability

- The platform architecture must be scalable to allow for future growth without compromising performance.
- It should be able to adapt to a significant increase in the number of users and the amount of data.

6. Availability

- The platform must be available 24/7, with minimal downtime for scheduled maintenance.
- A regular backup system must be implemented to ensure continuous data availability.

7. Maintainability

- The platform's source code and infrastructure must be easily maintainable and modifiable.
- Detailed documentation must be provided for developers and administrators regarding the platform's structure and operation.

Must-have Requirements	Should-have Requirements
The system must allow users to log in with two-factor authentication.	Integrate the application with third-party APIs.
The application must load in less than two seconds.	The homepage should include an explanatory video of the platform.
Reports must be able to be exported to PDF format.	Develop a predictive analytics module.
The mobile application must work on both iOS and Android.	Add interactive visual effects for statistics.
The database must be able to handle simultaneous transactions from up to 1000 users.	Add advanced filters for data search.
Implement a daily backup system.	Add the ability to customize the interface with custom themes.
Users must receive personalized push notifications.	Implement a dark mode for the user interface.
The application must comply with GDPR.	Add video conferencing functionality.
Allow purchases and sales.	Create a feedback tool that allows users to submit suggestions.
The application must be compatible with low-power devices.	Integrate an inventory management system.
Critical data must be encrypted.	Develop a task management module.
The database must be replicated in multiple geographic zones for high availability.	Add multilanguage support for the chatbot.
Implement a real-time error tracking system.	Create an interactive frequently asked questions section.
Implement enhanced security measures for online purchasing and selling.	Add a dynamic zoom feature for images and documents.
Implement security filters to prevent inappropriate content.	Develop a sales management module.
Allow users to make sales through the application.	Add customization options for notifications.
Integrate a buying and selling system.	Implement a comments and ratings system for products or services.
Develop an e-learning platform associated with the application.	Add a feature for creating and broadcasting events to users.
Implement a ticketing system for technical support.	Implement a secure data erasure function for personal data.
Add a section for guides and video tutorials.	Add augmented reality features for product visualization.
Develop integrations with ERP or CRM systems.	Develop a tool for comparing statistics or historical data.
Implement an online store to purchase related products.	Offer detailed privacy settings for users.

Must-have Requirements	Should-have Requirements
	Implement a notification system for important events.
	Add support for multiple currencies in financial transactions.
	Develop a feature for reporting technical issues within the application.
	Implement a friend recommendation or professional connections system.

Cloud have Requirements	Want have Requirements
The interface must be available in English and Spanish.	There must be a voice search function.
Implement a chatbot for customer assistance.	Incorporate a scoring and rewards system for frequent users.
Implement drag-and-drop functionality for file uploads.	Create a customizable dashboard for each user.
The platform must be accessible according to WCAG 2.1 standards.	Develop an integration with social media platforms.
Create an interactive tutorial for new users.	Implement facial recognition to enhance security.
Allow users to customize notification alerts.	Add an interactive map for location services.
Allow users to specifically disable personalized ads.	Implement functionality to schedule social media posts.
Add a calendar to manage events within the application.	Implement A/B testing for the user interface.
Add the ability to conduct surveys within the application.	Develop functionality for sharing documents in the cloud.
Offer online training for advanced system usage.	Allow users to set up automatic reminders.
Implement a news section related to users' sector.	Add integration with smart assistants like Alexa or Google Home.
Develop an expense tracking module.	Allow users to archive conversations and data.
Add a personalized recommendations system.	Implement gesture controls for navigation.
Allow users to set goals and objectives within the application.	Add an advanced search filter by date, content type, etc.
Add customization options for notifications.	Develop a location-based alert system.
Add an activity history that users can review.	Offer integration with wearable devices.
Offer a gallery of customizable templates.	Implement a power-saving mode for mobile devices.
	Offer a desktop widget for quick access.
	Develop a feature for automatic audio to text transcriptions.

EN ESPAÑOL:	
Debe Tener:	Debería Tener
El sistema debe permitir a los usuarios iniciar sesión con autenticación de dos factores	Integrar la aplicación con APIs de terceros.
La aplicación debe cargar en menos de dos segundos.	La página de inicio debe incluir un vídeo explicativo de la plataforma.
Los informes deben poder exportarse a formato PDF.	Desarrollar un módulo de análisis predictivo.
La aplicación móvil debe funcionar tanto en iOS como en Android.	Añadir efectos visuales interactivos para estadísticas.
La base de datos debe ser capaz de manejar transacciones simultaneas de hasta 1000 usuarios	Añadir filtros avanzados para la búsqueda de datos.
Implementar un sistema de backup diario.	Añadir la capacidad de modificar la interfaz con temas personalizados
Los usuarios deben recibir notificaciones push personalizadas.	Implementar un modo oscuro para la interfaz de usuario.
La aplicación debe cumplir con GDPR.	Añadir la función de videoconferencia.
Permitir compras y ventas.	Crear una herramienta de feedback que permita a los usuarios enviar sugerencias.
La aplicación debe ser compatible con dispositivos de baja potencia	Integrar un sistema de gestión de inventarios.
Los datos críticos deben estar encriptados.	Desarrollar un módulo de gestión de tareas.
La base de datos debe replicarse en múltiples zonas geográficas para alta disponibilidad.	Añadir soporte multilenguaje para el chatbot.
Implementar un sistema de seguimiento de errores en tiempo real.	Crear una sección de preguntas frecuentes interactiva.
Implementar medidas de seguridad reforzadas para compra y venta online.	Añadir una función de zoom dinámico para imágenes y documentos.
Implementar filtros de seguridad para evitar contenido inapropiado.	Desarrollar un módulo para gestión de ventas
Permitir que los usuarios realicen ventas a través de la aplicación.	Añadir opciones de personalización para notificaciones.
Integrar un sistema de compra y venta.	Implementar un sistema de comentarios y valoraciones para productos o servicios
Desarrollar una plataforma de e-learning asociada con la aplicación.	Añadir una función para la creación de eventos y su difusión entre los usuarios
Implementar un sistema de tickets para soporte técnico.	Implementar una función de borrado seguro de datos personales.
Añadir una sección para guías y tutoriales en video.	Añadir funciones de realidad aumentada para visualización de productos.
Desarrollar integraciones con sistemas de ERP o CRM.	Desarrollar una herramienta para comparar estadísticas o datos históricos.
Implementar una tienda en línea para comprar productos relacionados.	Ofrecer configuraciones de privacidad detalladas para los usuarios

Debe Tener:	Debería Tener
	Implementar un sistema de notificaciones para eventos importantes.
	Añadir soporte para múltiples divisas en transacciones financieras.
	Desarrollar una función de reporte de problemas técnicos dentro de la aplicación.
	Implementar un sistema de recomendación de amigos o conexiones profesionales.

Podría Tener	No Tendrá:
La interfaz debe estar disponible en inglés y español	Debe existir una función de búsqueda por voz
Implementar un chatbot para asistencia al cliente.	Incorporar un sistema de puntuación y recompensas para usuarios frecuentes.
Implementar una funcionalidad de arrastrar y soltar para cargar archivos.	Crear un dashboard personalizable para cada usuario.
La plataforma debe ser accesible según los estándares WCAG 2.1.	Desarrollar una integración con plataformas de redes sociales.
Crear un tutorial interactivo para nuevos usuarios.	Implementar reconocimiento facial para mejorar la seguridad.
Permitir a los usuarios personalizar las alertas de notificación.	Añadir un mapa interactivo para servicios de localización.
Permitir a los usuarios desactivar específicamente anuncios personalizados.	Implementar una funcionalidad para programar publicaciones en redes sociales.
Añadir un calendario para gestionar eventos dentro de la aplicación.	Implementar pruebas A/B para la interfaz de usuario.
Añadir capacidad para realizar encuestas dentro de la aplicación.	Desarrollar una funcionalidad para compartir documentos en la nube.
Ofrecer capacitación en línea para el uso avanzado del sistema.	Permitir a los usuarios configurar recordatorios automáticos.
Implementar una sección de noticias relacionadas con el sector de los usuarios.	Añadir integración con asistentes inteligentes como Alexa o Google Home.
Desarrollar un módulo de seguimiento de gastos.	Permitir a los usuarios archivar conversaciones y datos.
Añadir un sistema de recomendaciones personalizadas.	Implementar controles gestuales para la navegación.
Permitir a los usuarios establecer metas y objetivos dentro de la aplicación.	Añadir un filtro de búsqueda avanzada por fecha, tipo de contenido, etc.
Añadir opciones de personalización para notificaciones.	Desarrollar un sistema de alertas basado en la ubicación del usuario.
Añadir un historial de actividad que los usuarios puedan consultar.	Ofrecer integración con dispositivos wearables.
Ofrecer una galería de plantillas personalizables.	Implementar un modo de ahorro de energía para dispositivos móviles.
	Ofrecer un widget de escritorio para acceso rápido.
	Desarrollar una función para transcripciones automáticas de audio a texto.