بسم الله الرحمن الرحيم

Ministry of Agriculture and Animal Welfare

Male', Republic of Maldives

Ministry of Agriculture and Animal Welfare

Terms of Reference for Consulting Services

for

The Enhancement of Agriculture Information and Communication Technology (AICT) Platform and Development of Mobile Application

Ref No: MAP/CS/2023/11

Submission date: 14th December 2023

Maldives Agribusiness Programme
Consultancy Service for Enhancement of AICT Platform and Development of Mobile Application
(Ref no: MAP/CS/2023/11)

Foreword

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Terms of Reference (TOR)
Consultancy Service for The Enhancement of Agriculture Information and Communication Technology (AICT) Platform and Development of Mobile Application

1. Client

The client for this assignment is Maldives Agribusiness Programme (MAP) under the Ministry of Agriculture and Animal Welfare (MoAAW).

2. Country Background

Maldives being located near the equator is a tropical country with warm and humid tropical monsoon climate with an annual temperature of 28°C. The hottest month of the year is April with an average daily maximum of 32°C and an average low of 29°C. The coolest month of the year is November with an average daily maximum of 30°C and an average low of 27°C. There are two distinct seasons in Maldives. The Southwest monsoon and the Northeast monsoon. From May or April to October or November is the southwest monsoon which brings windy and rainy weather, and the rest of the year is usually dry and sunny days. Between December and April rainfall amounts are at their lowest, accompanied with the longest hours of sunshine.

Agriculture is one of the primary industries involved in domestic production along with Fisheries in Maldives. Its contribution to GDP was at 1.6% in 2020. Production has remained constant throughout the past five years with a slight increase of 1.6% in 2020 compared to 1.1% and 1.2% in 2019 and 2018 respectively.

Due to the geographic nature of the country, visiting farmers regularly to provide technical support is a costly operation. Almost all Maldivian farmers use smart phones and mobile internet service. In order to increase outreach to farmers, it is essential to make the best use of user-friendly smart technologies.

3. Project Background

The Government of Maldives (GoM) through the Ministry of Agriculture and Animal Welfare (MoAAW) is initiating the implementation of the Maldives Agribusiness Programme (MAP) with the support of International Fund for Agriculture Development (IFAD). The Project Implementation Unit (PIU) set up within the MoAAW will manage the Program in accordance with the guidelines provided by the design report, implementation manual and under the guidance of the project steering committee and IFAD supervision missions.

The main aim of MAP is to enable small farmers in the Program area to sustainably enhance their production levels, increase income, secure food and nutrition for their household demands, and deliver produce to connected markets.

The Programme will be of nation-wide scale, covering all regional and sub-regional hubs, clusters and islands where agriculture is undertaken by small farmers. The main

Programme hubs for Programme activities are in region 1-3 are Haa Alif Hoarafushi for region 1. Haa Dhaalu Vaikaradhoo for region 2, and Shaviyani Milandhoo for region 3. Each of these hubs will serve 8, 9 and 9 inhabited agriculture islands respectively. Specifically, under different technical components:

- Component 1 of Enabling policy, institutions, and services will be nationwide in scope covering all 19 atolls, 21 regions covering 188 inhabited islands of these 98 are inhabited where agriculture is practiced on around 800 registered hectares. Also belonging to the Programme area are 50 uninhabited islands leased for commercial agricultural purposes, with a total of 956 hectares of land of which 24 islands are actively doing agriculture on 582 hectares of land.
- Component 2 of Climate smart production will initially focus on region 1-3, covering 3 atolls and 40 inhabited islands. Of these, 26 are inhabited agriculture islands with 280 hectares of registered land cultivated by 2,150 registered farmers, and 85 hectares cultivated by 645 non-registered farmers. Within this production area there are 6 active commercial islands cultivating a total of 250 hectares.
- Component 3 of Market connection will initially focus on regions 1-3 during the first two years and then expand to regions 4-7 and eventually cover the whole country.

4. Background of the assignment

The overall purpose of this assignment is to develop a mobile application compatible to both Android and ios mobile devices (in English and Dhivehi) that can facilitate ease of dissemination of agriculture advisory information. This application should also provide a new communication pathway for the agriculture community to interact with agriculture advisory personnel.

The service provide (SP) will be responsible for the development of a multi-user system application followed by bug fixes and troubleshooting. Thereafter, the Expert will conduct awareness raising programmers for farmers and ToTs for the extension officers, which requires the support of the SP. A variety of information materials (videos, leaflets etc.) will further facilitate the training programs.

Provide technical trainings for famers and Technical Officers, to men and women, equally.

5. Overall objectives

The Programme's goal is to sustainably increase the incomes, food security and nutrition status of small farmer households.

The development objective is to strengthen and enable the environment for sustainable and climate-resilient agriculture. This objective will be achieved through identification of improvements in the existing policies, development of new regulations to strengthened

the institution and the services, to enhance agricultural technologies and access to financing and markets for small farmer households.

6. Objectives of the assignment

The overall purpose of this assignment is to improve make agricultural technical information are easily accessible to farmers and creating mutually beneficial relationship between research and extension personnel and farming communities.

7. Scope of work

7.1. Develop a software requirement specification (SRS) and approve it by the PIU/MoAAW technical team.

7.2. The SRS must include both functional and non-functional requirements and system implementation procedures of the application. Major functional requirements include:

    a. Six pillars of the application, Extension/Information dissemination, Market platform, Agriculture production data, Discussion forum, Making appointments with technical people, Chat engine

        • Extension (Key Features)

          - Pest & disease identification

          - Enable to provide crop cultivation recommendations based on crops selected by the user. Administrators should be able to schedule to send automatic recommendations until the completion of crop

          - Fertilizer recommendation based on crop stage

    b. Assign roles to multiple staff to manage multiple features of the application. For example, verify posts, comments shared by users, respond to quarries etc.

    c. Opportunity for input suppliers to advertise their products and services

        - Enable to showcase flash and short video adds

        - Enable users to view advertisement policy / guideline and obtain quotation for the adds

        - Enable to make electronic payments for adds

        - Verification process and schedule publishing for certain periods. For example, show advertisement for the period of 6 months and unpublish automatically unless the policy is renewed

    d. Sellers rating mechanism

    e. Generate automatic and manual push notifications / Alerts for all users and specific group of users

7.3. The mobile application is going to be a further enhancement of the "Dhanduveriya" web application.

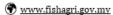7.4. The service provider shall design UI/UX for all the components of the application based on SRS.

7.5. In addition to the existing functions and features of application, service provider should develop a chat engine that would be built-in with this mobile application which must be able to handle live chats.

7.6. Enable to send push notifications to the users of application based onan event taking place in a specific location,

7.7. Enable to generate automatic push notifications / alert to the role assigned staff based on assigned task

7.8. Features to enhance system interoperability to enable better interfacing with Ministry website and other existing applications where needed.

7.9. Integrate "Moosun" application and enable to to send tips to farmers based on weather events

7.10. Utilize E-faas for login authentication.

7.11. Ensure enhancements are developed and structured to optimize system performance.

7.12. In developing the enhancements, consult with MoAAW to ensure enhancements are in line with policy, procedures and meet legal/regulatory requirements.

7.13. Design and develop application that facilitate optimization of end users experience.

7.14. The market component of the application must be in both Dhivehi and English language, the rest of the components of the application should be in Dhivehi. In addition, the enhancements shall be compatible for integration with Agriculture Online System (AOS).

7.15. Provide a comprehensive user manual describing its features, the actions available in these features and the resulting exceptions/output for each action.

7.16. Provide test scripts/mechanisms to test all functions, procedures and any other code used for the application.

7.17. MoAAW will solely own application source code. The application source code must be shared with ministry via a private Git repository at all times.

7.18. Bug fixing and component feature testing must be carried out during development and final submission should be made after fixing

7.19. After sales service for the period of 12 months.

8. Reports and schedule of deliverables

8.1. Develop a Software Requirements Specification (SRS) document to provide a detail description of the functionalities of the proposed mobile application to strengthen national capacity in agriculture extension services.

8.2. Develop and submit a workplan along with time line of activities of the project within the second week from project contract signing date.

8.3. A comprehensive user manual must be developed describing the enhancements, its features, the actions available in these features and the resulting exceptions/output for each action.

8.4. Test scripts/mechanisms must be developed to test all functions, procedures and any other code used for system enhancements implemented.

8.5. Conduct training program for MoAAW and project team on back-end management of the application

8.6. Develop user manuals (both internal and external) for all interfaces developed for service modules.

8.7. Share developed System source codes with MoAAW at the end of the consultancy period.

The developed system must align with Unique Entity Identifier (UEI) and Unique Product Number (UPN) framework.

9. Consultant's qualifications and experience

Key expert 1: Software Engineer

Qualifications and skills
The lead consultant should have an MSc Degree in software engineering.

General professional experience
- Proven track record of web and mobile application development for multiple disciplinary organizations
- A team with well-organized and self-directed individuals with sound technical skills, analytical ability, good judgment, and a strong operational focus.

Specific professional experience
- Experienced in requirement gathering, documenting and analysis.
- Experience in managing ICT infrastructure of state or national level e-governance projects will be an advantage
- Working knowledge of the relevant computer systems and applications

Key expert 2: System Developer

Qualifications and skills
Consultant must have a degree in Information Technology or a related course from a recognized university with a minimum of 5 years of experience in lT-related fields.

General professional experience
- A well-organized and self-directed individual with sound technical skills, analytical ability, good judgment, and strong operational focus.

Specific professional experience
- Experience providing training; experience setting up training programmes and workshops preferred
- Demonstrable knowledge and experience in managing and overhauling ICT Infrastructure

Key Project coordination

9.1. Consultant shall operate under the overall guidance and supervision of the Project Director, and Chief Technical Advisor of the Project. Operational support and direct supervision from the PIU and technical guidance from IFAD in collaboration with MoAAW and the relevant national stakeholders must be ensured.

10. **Services and facilities to be provided by client**

10.1. Assistance required on the client's part in obtaining relevant permissions from authorities (if necessary) to carry out the Services.

10.2. Available relevant data and information requested by the Consultant that are deemed by client to be useful to planning and carrying out the Services.

11. **Services and facilities to be provided by the consultant**

11.1. The Consultant shall carry out all the services using own material, labour and equipment. The logistics of labour, equipment and tools shall be arranged by the Consultant.

11.2. The Consultant shall ensure that their personnel always carry themselves in good behavior and maintain a cordial friendly atmosphere with other personnel including employees of MoAAW, MAP, and other organizations.

11.3. The Consultant shall provide professional, objective, and impartial advice, at all times holding the client's interest's paramount, strictly avoiding conflicts with other assignments or its own corporate interests, and acting without any consideration for future work. The Consultant has an obligation to disclose to the client any situation of actual or potential conflict that impacts its capacity to serve the best interest of the client.

SHORTLISTING CRITERIA

Criteria	Points
General Experience	**Max 30**
Firm has been active for past 4 years	*20*
Team of experts with relevant experience	*10*
Specific Experience	**Max 70**
Experience in developing software for both IOS and Android	*30*
*Experience in managing the complete software development from conception to deployment in **Dhivehi** language*	*30*
Expertise in full stack development including UI/UX and backend development	*10*
Minimum score of 70% is required to qualify for the RFP	