Terms of Reference (ToR) for hiring consulting firm to Develop a Mobile Application for IoT Based Poultry Farm Management

1.0 Background

The Rural Microenterprise Transformation Project (RMTP) is being implemented by PKSF with the joint financing of the International Fund for Agricultural Development (IFAD), and DANIDA. The project is working to extend the financial services of microenterprises and improve the income, food security, and nutrition status of small and marginal farmers, entrepreneurs, and other market actors involved in the value chains of selected high-value agricultural products. The project is implementing value chain development activities to expand the markets for comparative advantage, market demand, and growth of agro-based products. There are provisions for product processing, certification, and marketing by brand image creation in the country and abroad through this project. Also, there are provisions to introduce various new technologies, and methods such as Artificial Intelligence (AI), Internet of Things (IoT), Blockchain, Crowd Funding Platforms under this project for poverty alleviation.

The livestock sector in Bangladesh has shown its strong presence with a fast-growing market for meat and dairy products. To provide its 165 million populations with sufficient, safe and nutritious food, the government has deployed great efforts in reforming the whole livestock sector, of which dairy and beef sub-sectors have been given particular emphasis. As an agriculture-based country, the majority of the rural households adopt a mixed farming system by cultivating crops and rearing livestock at the same time. Among the animals raised, cattle are considered as the most valuable asset for small-scale farmers in terms of its meat and milk producing functions. However, the bottlenecks existing in cattle rearing as well as along the entire downstream value chain largely constrain rural households to climb out of poverty. According to DLS, the livestock subsector provides 20% of the population with direct jobs and 45% with part-time jobs. This is particularly important for unemployed youth and women, as well as landless farmers, to lift themselves out of poverty.

RDRS Bangladesh works with the rural poor and their organisations in order to establish and claim their rights as citizens; to build their capacity and confidence to advance their empowerment; and to promote good governance and improved access to opportunities, resources and services. Established in 1972 to assist with relief and rehabilitation of the neglected and backward Rangpur-Dinajpur region in northwest Bangladesh immediately following the War of Independence, the RDRS programme evolved into a sectoral then comprehensive effort to assist disadvantaged and marginalised rural communities, households and individuals. Formerly the Bangladesh field programme of the Geneva based Lutheran World Service, RDRS turned into an autonomous national NGO in 1997 guided by a national Board of Trustees. However, RDRS maintains strong international connections with different donor/partner agencies, and the government agencies.

As part of the RDRS' works for the national and international level promotion through a number of ways, RDRS produces video documentaries to explore its initiatives and activities on regular basis. This year RDRS is going to produce another video documentary on its emerging, exploring as a development emblem especially in the north of the country through its distinctive initiatives and activities throughout the last 5 decades, its achievement, on the occasion of its 50th anniversary.

"Market development of safe poultry and poultry products" a value chain development sub-project has been implementing under RMTP in different regions of Bangladesh by several partner

organizations (POs). Among them 'RDRS' a PO of PKSF from Rangpur City is implementing this sub-project in Rangpur City (Rangpur City Sadar). This sub-project launched for strengthening existing business cluster through Good Agriculture Practices (GAP), improve technologies and market linkages as well as to enhance the income of poultry farmer community.

"RDRS" has taken initiative to improve technical assistance mechanism of entrepreneurs through developing an android-based advisory (weather forecasting, service provider network, advisory services etc.) and market price information-based platform for poultry supply chain actors. A consulting firm will develop this IoT based Poultry Management platform.throughout Bangladesh. This process will act as the preliminary step to amplify the linkages among the actors of the poultry supply chain.

2. Objectives of the assignment:

The system will be developed with a view to creating-

a) a communication channel among the poultry supply chain actors.
b) Monitor shed environment like Ammonia, Methane, Temperature, Humidity.
c) Also control light, fan, sprinkler using IoT device.

3. Scope of the assignment:

The consulting firm will develop this android application focusing the supply chain actors from Rangpur City. The details of technical works to be done by the consulting firm are as follows.

a) The consulting firm shall have to design the mobile application to have functionality to categorize the poultry supply chain actors (farmer, faria, depot/arot, egg collection center, egg supplier and retailer, wholesaler, input supplier, company representatives, feed producer, feed and drug supplier, transporter, local service provider etc.). The mobile app should follow the current trend of UI design.

b) All of these actors will register through this application according to their products and professional services. So, the mobile app will have login facility. Based on the logged in user's permission, app components will be available to the user. Moreover, only registered users can see the contact number or address of a particular actor and a general user can see the actors profile excluding the contact number or address.
c) Actors will be categorized based on their location (address and GIS-based location). They can be registered in association with the POs as they will get a field to input their associated POs.
d) Initially Retailers and Wholesalers will be able to input the daily prices of the season wise products (egg/chicken) of each arot/wholesale market in association with the concerned person of POs. Later other actors may be included
e) Language of the app will be in Multilingual (Bangla and English).
f) The consulting firm shall have to design the registration input forms with mandatory fields according to the required information's for particular actor like name, image, product (name, image, price, stock register), phone, address (local market, district, sub district, union), minimum order of products, etc.
g) Manage real-time database connection with android platform.
h) A user manual should be developed in Bangla and English.

4. Deliverables:

a) Consulting firm will have to submit an inception report, detailed work plan and time schedule in line with time limit mentioned in this ToR, a detailed requirement specification for this assignment, should be agreed by 'RDRS.

b) Consulting firm should provide draft report including demo application and its findings to 'RDRS' within stipulated timeframe. Draft report should be included with specific learning, challenges and recommendations that will suggest what to do in future. Concerned person from the consulting firm will have to give a presentation at 'RDRS' on the draft report highlighting major findings and recommendations regarding the requirements.

c) Final report of the assignment has to submit within 07 days from the date of presentation given on the draft report. The report should be written in English and in such a way that it is understandable to a non-specialist. The final report should have the reflections of the comments made in draft report presentation. Consulting firm have to provide a brief of the findings corresponding to the object of the assignment in plain language that can be widely circulated. The brief of the assignment could be within 5-10 pages. A user manual in bangla and english also need to submit with the final report.

d) The hard copy of the final report including soft copy with source code in a CD/DVD/USB drive must be submitted to 'RDRS. 'RDRS will be the sole proprietor of the android based advisory and market information platform of supply chain actors. The source code under this application should not be shared with or used by any other person or organization without the written consent of 'RDRS.

5. Timeline:

The time limit for submitting the inception report will be 7 days from the contract sign. After contract signing. The demo application with draft report submission time limit will be 2 months from the contract signing. The final report with user manual of the assignment should be submitted within 15 days after the presentation given by the consulting firm on the draft report (2 months and 15 days from the contract signing). So, the assignment completion timeframe will be 2 months and 15 days.

6. Qualification and Experience of the Consulting Firm:

a) The consulting firm should have at least 6 years of experience in software project design and development.
b) Income tax assessment certificate/acknowledgement certificate; Trade license; VAT certificate; and Registration certificate;
c) Provide bank solvency certificate
d) Required logistics (such as computers, printers, photocopiers, etc.);
e) List of completed assignments during the **last 3 years** including one (01) successfully developing software project regarding livestock or poultry sector**.**
f) A brief description regarding the most expertise areas especially related to this assignment;
g) List of completed assignment

7. Team Composition: The team will consist of 3 professional experts. Qualifications and competence of each expert (Software Engineer) for the assignment are given below:

a) Educational qualifications: Minimum 4 Years Bachelor's degree in Software Engineering **(SE)**/ Computer Science (CS)/ Computer Science and Engineering (CSE)/ IT/ Mathematics/ Physics.

a) Experiences: List of mobile application (Android/iOS) based assignments completed in the last 03 years. Freelance experiences will be considered too.
Software/application development experience in android, php frameworks like codeigniter or laravel, firebase, application programming interface (api) using relevant frameworks in php or others.

b) Other Skills: Software testing and debugging**,** Computer networking, Graphics, etc

8. Technology platform (Please provide some detailed description)

a. Back End Language

i) PHP Laravel frameworks.
ii) For responsive web applications, Bootstrap and CSS3.

b. Frontend Language

i) Proposed Language

Ract, NEXT.js

ii) **Proposed Database**

The proposed database for this system is MySQL.

Technical Support:

a) Technical Support for the database (update, backup, restoration) up to June 2026 after the final installation and delivery.
b) Technical support for the mobile application (content management, structure modification) will be up to the project period/ from the date of final installation and delivery.

API:

All the API development for this system will follow RESTful API protocol.

9. Consulting Firm (National) Selection Process:

Quality and Cost Based Selection (QCBS) method on lump-sum contracts of Schedule 1 of the Public Procurement Rules-2008 of the Government of Bangladesh shall be followed in the preparation of short-listing the firms, evaluation of documents containing a request for submission of proposals, selection the firm, negotiation, signing of contract and receipt of survey reports for conducting this study.

10.Mode of Payment

Tender will be submitted as per company / Firm pad

'RDRS' will pay the cost of the assignment to consultant subject to the completion of all outputs and acceptance. Payments will be made based on the following percentages and milestones:

a) 1st Payment (50% of total contract value): The 1st payment will be made upon demo submission and acceptance by 'RDRS'.
b) Final Payment (50% of total contract value): The final payment will be made upon acceptance of the final report by 'RDRS
c) VAT and TAX will be deducted as per government rule.

The last date for sending application and proposal is 22 February/2025. The application and proposal must be sent to the authority.

Md. Nazrul Islam
Senior Manager (Procurement)
RDRS Bangladesh
Mobile:01730328007
nazrul@rdrsbangladesh.org