



**GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH
BANGLADESH BUREAU OF STATISTICS (BBS)
ECONOMIC CENSUS 2023 PROJECT**

**REQUEST FOR PROPOSAL (NATIONAL)
FOR SELECTION OF CONSULTING FIRM FOR
CAPI/MOBILE APPLICATION DEVELOPMENT AND MANAGEMENT
SERVICE FOR THE ECONOMIC CENSUS 2023 PROJECT**

**Invitation for Proposal No: 52.01.0000.635.07.025.24.652
Issued on: 12/05/2024
Proposal Package No: SF-1a**

RFP Docs

মুহাম্মদ আরিফুল ইসলাম
উপপরিচালক
অর্থনৈতিক প্রমাণি ২০২৩ থেকে
বাংলাদেশ পরিসংখ্যান ব্যৱৰ্তো

মোঃ মিজানুর রহমান
ডপপ্রকল্প পরিচালক
অর্থনৈতিক প্রমাণি ২০২৩ থেকে
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এস এম শাকিল আখতার ii
প্রকল্প পরিচালক (যুগ্মচিব)
অর্থনৈতিক প্রমাণি-২০২৩ প্রকল্প
বাংলাদেশ পরিসংখ্যান ব্যৱৰ্তো

Section 6. Terms of Reference (TOR)

CAPI/ Mobile Application Development and Management services for Economic Census 2023 Project

1. Project Background

Bangladesh Bureau of Statistics (BBS) is the national statistical organization (NSO) of Bangladesh. It operates under the Ministry of Planning and is responsible for collecting, compiling, analyzing, and disseminating official statistics in the country. BBS plays a vital role in providing accurate and reliable statistical information for evidence-based decision-making, policy formulation, planning, and monitoring of development activities in Bangladesh. BBS conducts three main censuses, namely Population and Housing Census, Agriculture Census, and Economic Census. The Economic Census covers all sectors of the economy, including industry, services, and formal and informal sectors. The last Economic Census was held in 2013. BBS has planned to conduct the 4th Economic Census and approved a project, namely the 'Economic Census 2023 Project'.

BBS uses state-of-the-art technology to collect, compile, operate, discriminate, and preserve data. However, some relevant activities need to be considered, such as computer-assisted personal interview/mobile application software for smooth operation. Under this project, BBS is impatiently looking forward to digitally conducting the Economic Census 2024, thus reducing cost & time and improving data quality to support building Smart Bangladesh.

2. Objectives of the Assignment

- a) To develop and provide CAPI/Mobile applications, API and Web applications for data collection, processing, analyzing & dissemination services for Economic Census Listing Operation & Main Census data collection;
- b) To integrate the Census Personnel Profile (DivCC, DCC, UCC, Zonal Officer, IT Supervisor, Supervisor, Enumerator, etc.) and Census Data with Integrated Census Management System (ICMS) by API;
- c) To host the Web application at National Data Center (PE will fix the Data Center & will provide the details to the Service Provider) during the Listing and Census Operation and after the Census host the Web Application at BBS Data Center;
- d) To VAPT, Load Test, Performance Test and other Security test of the developed applications by SQTC, BCC or as defined by the PE and will implement the feedback;
- e) To provide the relevant support for smoothly conducting the Economic Census;

- f) To train up the BBS Official for Capacity Building/ Technology Transfer.

3. Study Area

The proposed study area will be covered throughout Bangladesh.

4. Features and Terms & Conditions of the Assignment

Mobile Application (CAPI System) and Web Application features for Economic Census 2023 Project will be:

4.1 Mobile Application (CAPI System)

- a) Data Collectors will capture the GPS location of each enumerated household using the Application;
- b) Data Collectors will automatically receive the particular Questionnaire form into his/her TAB using the applications.
- c) Data Collectors can collect data both in online and offline with the facility of sending offline data when the TAB is online.
- d) Data Collectors can check and even edit the data, which is collected through their TAB in offline.
- e) There must be some skipping options for the questionnaires, in which the mandatory fill-up features are needed.
- f) The Applications must have access control and be protected by User Admin and password. Without the permission of System Admin, the user can not log in another device with same User ID and Password.
- g) The questionnaire will be displayed by modules in the application which must be displayed on the screen one by one/chronologically with swapping and navigation features.
- h) The Smart backend should be Web/mobile Applications (up-to-date version) for managing, monitoring and decision-making for survey data.
- i) The data collection panel should show the progress of filling up the questionnaire during data collection.
- j) Intelligent dashboard must be in the application for a different level of users with some graphical and different features of smart analysis.
- k) Once the data collection from each household is fully completed, the data will be stored in encrypted format in the TAB and after confirmation, a copy of that will be sent to the server.
- l) The application should support diverse types of household questions like short/ long text, Geo-location (GPS enabled with latitude/longitude) numerical, multiple choice including provisions for mandatory or optional question, and so on.
- m) There should be an option to synchronize CAPI data with the server-based web application on the availability of the internet connectivity.
- n) All systems should be deployed as per instructions by the project authority.

4.2 Web (Browser) Application:

- a) The interface should be user friendly with easy to access dashboard.
- b) The Application should be centralized, web-based solution and support cross browser platform (Chrome, Internet Explorer/ Microsoft Edge, Firefox, Opera etc.).
- c) Front-end development tool should be open source to avoid any license purchase and Back-end central database should be Oracle.
- d) Must have role-based user authentication and central user access control system to multilevel user creation and privilege set-ups options by System Admin.

- e) Must have intelligent dashboard for different level of users with some graphical and different features of smart analysis.
- f) Must have option for user registration and geo-code management with Integrated Census Management System (ICMS) thru API.
- g) Monitoring facilities of data collection with the multiple supervision levels.
- h) Different types of data table, related dynamic charts and information will be displayed with download facilities in the supervision dashboard according to the requirements of Authority.
- i) Generate real-time progressive data collection report (e.g. data collector wise report, date/month/year wise report, error wise report, area wise collection report, complete/ incomplete report etc.) via map and grid-based view etc.
- j) Features to review detail report from the Map against a specific enumerators/data collector for a specific area.
- k) Detect fraudulent data from the map by reviewing data set's GPS coordinates.
- l) Data export and download facility from the system.
- m) Any other issues in relation to the mobile and web application will have to be carried out according to the requirements of the project authority for the successful completion of data collection.
- n) Supervisory levels can monitor the survey data and will also be able to give feedback so that the enumerator can update.
- o) Application should have fraudulent data finding feature.
- p) Application should have data edit feature with data validation logic same as mobile application.
- q) All systems should be deployed as per instructions by the project authority.

5. Administrative Features and Dashboard:

- a) The Administrator can check the data sent to the server by users, can control, create, edit or delete users of the application and their access, can generate and view data collection report etc.
- b) Supervising and monitoring level users should be incorporated to oversee the submitted data within their jurisdiction.

6. Compatibility:

The both applications must be compatible with the Oracle Database (version will be fixed by the Client) as Central Database and latest RedHat Linux as OS.

7. Type of Data:

The application must be able to collect multiple type of data, like- single choice; multiple choice; geo location; image; normal text; live date and time etc.

8. Handset Compatibility: The Applications must be compatible with updated version Android of Tablet Device and Web Browser.

9. Screen Resolution: The Applications must able to fit for any screen size of PC, Laptop, Smartphone and Tab that is supported by Android and Web Applications.

10. Language Support: The Applications must have to support Unicode Bangla and English.

11. Online Synchronization: The Web and Mobile apps must have the ability to synchronize with particular online server and upload data when it will connect with the internet.

12. Integration: There should be an option to integrate CAPI and web application with Integrated Census Management System (ICMS).

13. Support: The consultant will provide all kinds of technical support during the contract period (12 months).

14. Warranty: The consultant will provide warranty for 06 (six) months after the end of contract period with free of cost.

14. Feature Description

- The Consultant must manage any and all software related resources like SSL certificate /domain or sub-domain / real IP for deploying/ using / managing of the services.
- Ensure Application security with 02 (Two) years SSL Certificate and Encryption with advance SSL security.
- System should be scalable and capable of delivering on user requests.
- The Consultant must ensure maximum concurrent connection and load balancing capabilities, with hardware/software resources as deemed necessary, for smooth operation of these activity;
- Must be tested by Certified Ethical Hacker (CEH) and SQTC (Software Quality Test Centre from BCC).
- Protection from Nation-Organized L3-L4 DDOS, DNS DDOS, L7 DDOS, API DDOS attack on services and applications to slow/down application process and service (System should be cyber secure).
- End-to-End Application and User Communication Security with SSL 2K Certificates and TLS 1.3 Encryption with OWASP-TOP 10 protection, L7 DDOS protection, BOT Attack Protection, Mobile API attack protection mechanism.
- System should be installed in Unix/Linux environment.

15. Sizing, Performance and Scalability Requirements

- a) The system shall be designed to handle estimated 120,000 simultaneous connection (online users) when it is ultimately rolled out.
- b) Page load time, login response-time, on-click load time for the web application should be less than 3 seconds while this is accessed over the intranet.
- c) Average transaction response time, on-submit response-time, or any other database access/ search time should be less than 5 seconds when the system solution is accessed over the intranet.
- d) Considering the network infrastructure challenges in Bangladesh, the solution must support low bandwidth conditions for the services defined in the functional requirements.
- e) The proposed solution should be highly scalable to accommodate current and future requirements within the scope of the scope mentioned in the TOR

16. UI/UX

The Consultant must propose a UI/ UX plan containing UI designing method and tools, prototype or Mockup design (if applicable), UI review method, process for study and analyze UX, collaboration of basic web and mobile UX issues and expected result and outcome of UX, finalizing the UI/UX design. Apart from this, the Consultant should consider the following issues as requirement at the time of UI/UX plan.

- a) The system interfaces should be highly user friendly, easy to navigate and ensure fast loading.
- b) The UI shall design by using well-established, supported and lightweight UI framework so that it follows widely used industry flow patterns.
- c) UI shall be easily configurable if any changes are needed.
- d) Menu, content and navigation shall be based on the user entitlements, roles and permissions.

17. System Design

At this phase, the detail functional scope defining and designing as per the standard of software engineering approach for the proposed system tasks are being performed. This is very vital and important phase of any SDLC. Considering the ultimate development and implementation scope, the proposed system design should be robust, scalable, user friendly and interoperable enough. At this system-designing phase, Consultant may performs following designing related task and will produce various standard System Designing Documents (SDD):

- a) Identifying module, components, tasks, I/O and functional features
- b) Specifying technical and functional requirements
- c) User Interface design
- d) Preparing the use cases
- e) Designing system architecture
- f) Determine process and data flow
- g) Database design
- h) API design

Here Consultant is requested to cover details system designing plan in their technical proposal, which may include relevant activities, approaches, methods, documentations and deliverables.

18. Data Management:

- The consultant will provide full data set and partial data whenever necessary.
- Provide data storage related technical services.
- The consultant will clean the data according to the instruction of the project authority.
- The consultant will generate tables as the requirements of the client.
- The consultant will be able to present the data in required format including graphics.
- The consultant will develop a tool in the web application to generate table.

19. Assignment Duration

The consulting services will be carried out over a period of months comprising key professional staff as detailed in Table below.

Sl.	Position	No of professionals	Man-months		
			Listing	Main Census	Total Month
1	Team Leader	1	1	4	5
2	System Analyst	1	1	4	5
3	Software Developer	3	1	4	5
4	Mobile Apps Developer	3	1	4	5
5	Cyber Security Expert	1	1	2	3
6	Quality Assurance Engineer	1	1	2	3
7	System Engineer	1	1	2	3
8	Trainer	1	0	1	1
9	Technical Document Writer	2	1	2	3
Total		14	8	25	33

20. Key Positions responsibility and qualification Requirements

The project considers the following resources are the key experts. The CVs of the following position must be provided since it will be one of the bases for the proposal evaluation. It is to be noted that the Consultant is not allowed to alter the key position without prior consent of the client. In case of any alteration has to be done due to unavoidable circumstances, the Consultant must propose equivalent or better candidate for client review and approval.

Team Leader (1 Nos)

- Be responsible for overall management of the project activities
- **M.Sc. in Computer Science/IT/CSE/CIT or related equivalent.** Master degree in those field will be given preference.
- At least 07(Seven) years of demonstrated experience working in the projects of similar size and nature.
- At least 05 (five) of these years should consist of working as Project Manager/Team Leader.
- Demonstrated knowledge and experience in the area of Training, education or similar programs.
- Prior experience of working with Government organizations and structures.

System Analyst (1 Nos.)

- Be responsible for gathering client requirements, understanding & documenting the requirements, requirement analysis & system design, client communication etc.
- Minimum B.Sc. in Computer Science/IT/CSE/CIT or related equivalent degree with Oracle Certified Professional (OCP).
- At least 7 (Seven) years of experience in related field.
- Experienced on web-based and mobile application analysis and development

Software Developer(3 Nos):

- Be responsible for developing the web applications as per client requirements and assist to develop the data collection mobile apps of Economic Census 2023
- Minimum B.Sc. in Computer Science/IT/CSE/CIT or related equivalent degree.
- At least 5 (Five) years of experience in related field.
- Experienced on web-based and mobile application analysis and development.

Mobile AppsDeveloper(3 Nos):

- Be responsible for developing the data collection mobile apps as per client requirements and assist to develop the web application of Economic Census 2023
- Minimum B.Sc. in Computer Science/IT/CSE/CIT or related equivalent degree.
- At least 5 (Five) years of experience in related field.
- Experienced on web-based and mobile application analysis and development.

Cyber Security Expert (1 Nos):

- Be responsible for ensuring the cyber security feature of web and mobile applications of Economic Census 2023.
- Minimum B.Sc. in Computer Science/IT/CSE/CIT or related equivalent degree with CEH Certificate.
- At least 5 (Five) years of experience in related field.
- Experienced on web-based and mobile application analysis and development.

Quality Assurance Engineer (1 Nos):

- Be responsible for planning and performing different stages of testing of the applications.
- Identifying bugs and potential problems within the applications.
- Documenting test progress and results
- Minimum B.Sc. in Computer Science//IT/CSE/CIT or related equivalent degree.
- At least 3 years of experience in related field.

System Engineer (1 Nos):

- Be responsible for maintaining Server Configuration, Computer Networks and solving any problems that may occur during the operation.
- Minimum B.Sc. in Computer Science//IT/CSE/CIT or related equivalent degree.
- At least 3 years of experience in related field.
- Certification on CCNA, CCNP.

Trainer (1 Nos):

- Be responsible for conducting the technical training during the census operation and will also conduct the CAPI Apps training to BBS Officials.
- Minimum B.Sc. in Computer Science//IT/CSE/CIT or related equivalent degree.
- At least 3 years of experience in related field.
- Good Communication skill in English and Bengali.

Technical Document Writer (2 Nos):

- Be responsible for preparing the technical documents of this Task and will also prepare the CAPI Apps Technical Manual.
- Should have at least 3 years of experience in related field.
- Minimum B.Sc. in Computer Science//IT/CSE/CIT or related equivalent degree.
- Good Communication and writing skill in English and Bengali.

21. Deliverables

- a) The consultant will provide prepared mobile applications of Listing Operation and Census Operations. Editing & Coding application for streamlining census data.
- b) The consultant will provide properly prepared Web application as per requirement of the client.
- c) The consultant will provide printed 100000 CAPI Apps Color Technical Manual (approximately 12 Pages) to Client Office. User manual for CAPI & Other applications will be provided by the service provider to the BBS in soft copy format (as required by the Client);
- d) The consultant will provide tools for data management, data processing, data analysis and reporting.
- e) All source code and technical documents will be provided through CD/DVD Media.
- f) Vulnerability Assessment certificate for all developed applications.
- g) The consultant will submit Inception report, Technical Report, Assignment Related Reports and Final Report to Client Office.
- h) The developed software will be validated and accepted by the Software Validation Team of the Client. The consultant will submit the Validation and Acceptance Report to the Client.

- i) Technology will be transferred through intensive training. The Client will arrange different types of training like Software Usage Training, Operational Training, CAPI & Web Application Administration Training, etc. at BBS HQ. The Consultant will provide skill trainer to the training and the trainee will get the training allowance from the client.

22. Activities for software and relevant accessories

- Listing & main census CAPI/Mobile application development and management software;
- Support pre/during data collection;
- Development of application and support during editing & coding;

23. Qualification Requirements of the Consultants

- Must have nationwide electronic data collection knowledge on system development for Bangladesh.
- Must have experience handling private and public cloud platforms, with security hardening ensured in cloud computing platforms for application and infrastructure levels.
- Must have software development of real-time applications maintaining high TPS.
- Must have a minimum of 04 (Four) years of sound experience in developing and managing mobile apps integrated with Oracle/SQL Server/MySQL database in the local or international context.
- Must have a minimum of 04 (Four) years of sound experience in developing and managing web-based applications integrated with Oracle/SQL Server/MySQL database in the local or international context.
- Must have proven experience in delivering at least 01 (one) similar type of system development for statistical survey data collection with a completion certificate.
- Must be experienced in successfully implementing the system to roll out at least 02 (two) projects, including Bangladesh Government /Autonomous body/reputed private organization/ International Institutions or Universities/ Foreign Government.
- The service provider should be familiar with large-quantity optimal data storage and retrieval procedures.
- Must have a pool of domain experts capable of designing and developing a secure and standardized web application or CAPI system, as well as data backup, restoration, and access security control management.
- Experience in supporting/working with Digital Census will be an added plus.
- Vendor must have at least 10+ years of work experience in cloud computing and 5+ years in database.
- Vendor must have experience in implementing or migrating to major cloud infrastructures.
- Should have valid legal entities (Registration from a respective government authority, Trade License, VAT and TIN Registration, and others) for working in Bangladesh.
- Must be a member of the Bangladesh Association of Software and Information Services (BASIS).
- Must have Audit report for the last 03 (Three) years.

1. The short-listing criteria are:

- Age of the firm
- Experience of the firm in similar works
- Availability of Resources

- iv. Experience of Key professionals
 - v. Financial Ability
2. Other Specifications:

- i. Application for EOI: Introductory letter on letterhead providing complete contract details, including the name of the contact person, mailing address, telephone, fax, and email address. This letter should explain how the firm is best suited to deliver the task.
- ii. Registration paper of the firm.
- iii. Descriptions of Similar Assignments.
- iv. Experience in Similar Conditions and Operating Environments.
- v. Any other/additional information relevant to this assignment.

24. Maintenance

This agreement covers maintenance for the Economic Census 2023 project, active March 2024 - December 2025. It may automatically extend for any approved project extension to ensure continued service.

25. Scope of Services

Functional Requirements

Data Collection, Processing, Analysis & Dissemination Services:

- a) Develop CAPI (Computer-Assisted Personal Interviewing), Mobile, API, and Web applications for census activities.
- b) Conduct training on application usage for census coordinators.
- c) Provide technical and user manuals.
- d) Develop software for census data collection and processing.
- e) Conduct Vulnerability Assessments for applications.
- f) Deploy all systems as per project instructions.

Non-Functional Requirements

Usability:

- a) The CAPI, Mobile, API, and Web applications should have intuitive user interfaces to facilitate easy navigation and usage by individuals with varying technical expertise.
- b) Technical and user manuals for the applications should be comprehensive and user-friendly, aiding users in understanding functionalities and troubleshooting common issues.

Reliability:

- a) The developed applications and systems should demonstrate high reliability, ensuring minimal downtime during critical census operations.
- b) Vulnerability assessments should be conducted regularly to identify and mitigate potential security risks, thus enhancing the overall reliability of the systems.
- c) During technical evaluation vendor should demonstrate their secured API server with sufficient user load at their own arrangement.
- d) A demo mobile application with login, save and edit/update needs to be demonstrated by vendor during technical evaluation.

Performance

- a) The data collection, processing, and analysis services should be capable of handling large volumes of data efficiently without compromising performance.
- b) Response times for accessing and updating data within the systems should be optimized to ensure timely decision-making and reporting.

Security:

- a) Robust security measures should be implemented to safeguard sensitive census data against unauthorized access, manipulation, or breaches.
- b) Access controls and encryption mechanisms should be in place to protect data confidentiality and integrity throughout the data lifecycle.
- c) Software should be secure from every corner point.

Scalability:

- a) The developed applications and systems should be designed to accommodate future growth and expansion of census operations, including increased data collection activities and user populations.
- b) Scalability considerations include supporting additional users, data storage requirements, and processing capabilities without significant performance degradation.
- c) Software should be scalable to deal with 2 lakh concurrent users.

Compatibility:

- a) The CAPI, Mobile, API, and Web applications should be compatible with various devices, operating systems, and web browsers commonly used by census personnel.
- b) Integration capabilities should be ensured to facilitate seamless data exchange and interoperability with existing census infrastructure and systems.

26. Authorities Reservation

The authority may cancel the agreement if the main party does not comply with the aforesaid activities, scope of work, deliverables, and other relevant tasks.

27. Validity of contract/Agreement

The project Economic Census 2023 started activity from July 2023 to December 2025. Activity will start in March 2024 and end in December 2025. If the duration of the project extends, this agreement will automatically be valid up to the extended period to provide necessary services.

28. Duties and responsibilities

Government Agency:

- a) Coordinate overall planning and execution of the Census Project.
- b) Allocate necessary resources for census implementation.
- c) Ensure compliance with legal and ethical standards.
- d) Collaborate with stakeholders for project support.

Technical Experts:

- a) Support design survey methodologies and data collection instruments.
- b) Conduct training sessions for field staff.
- c) Provide technical support during census operations.
- d) Ensure data integrity and quality control.

Field Staff:

- a) Conduct household interviews and administer questionnaires.
- b) Verify accuracy and completeness of collected data.
- c) Adhere to data confidentiality and ethical standards.
- d) Report issues to designated supervisors.

29. Software Validation Team

The client will form a Software Validation Team (SVT). The SVT will develop the Validation Rules of the applications. As per Validation rules the software have to be developed. The SVT will monitor and guide the activities of the consultant for developing the applications. The SVT will also pretest and pilot the applications and the client will provide necessary support to SVT. The SVT will also be responsible for providing User Acceptance Test (UAT) Report and Software Validation Report of the applications.

30. Copyright

BBS shall be entitled to all proprietary rights including but not limited to patents, copyrights and trademarks, with regard to many Consultants. All kinds of source code including code documentation and other approved documents (all versions trail, products, developed applications, documents and all kinds of deliverables which bear a direct relation to or is made in consequence of the services provided by the Consultant under this scope of this TOR.

At the request of the BBS the Consultant shall assist in securing such property rights and transferring them in compliance with the requirement of the applicable law. After the completion of the project such rights will be handed over to the BBS.

RFP Document আরিফুল ইসলাম
উপপরিচালক
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এস এম শাকিল আখতার
প্রকল্প পরিচালক (যুগ্মসচিব)
অর্থনৈতিক বমারি-২০২৩ প্রকল্প
বাংলাদেশ পরিসংখ্যান ব্যৱৰ্তো