

BENAZIR INCOME SUPPORT PROGRAMME
TERMS OF REFERENCE
LEAD DATA SCIENTIST
CRISIS-RESILIENT SOCIAL PROTECTION (CRISP) PROGRAM

1. Background:

Initiated in July 2008 by the Government of Pakistan (GoP), Benazir Income Support Programme (BISP) is the first ever comprehensive and countrywide Social Safety Net (SSN) Programme. BISP's primary aim is to eradicate poverty through provision of unconditional and conditional SSNs. Unconditional SSNs through cash injection enhance buying capacity of the disadvantaged families. Through conditional SSNs schooling of the children aged 05-12 is supported. Between 2008 and 2012, BISP carried out a National Socio-Economic Survey (NSES), to take stock of the socio economic status of entire population of the country by applying a comprehensive Proxy Mean Test (PMT).

It is widely acknowledged that household demographics change to a considerable extent over a duration of five years, and often economic registries have errors at three levels i.e. (i) design, (ii) Implementation and (iii) time/aging factor which in turn affect the measure of accuracy. In consideration of these, BISP has initiated a fresh National Socio Economic Survey to update its National Socio-Economic Registry (NSER).

The World Bank is actively engaged with GoP and BISP since 2009. The World Bank's initial support to BISP came through sectorial Development Policy Credit (US\$ 150) in 2009, accompanied by Social Safety Net Technical Assistance (TA) Project (US\$60million). In 2012, the TA Project was restructured with additional financing of US\$ 150 million to support expansion of the programme and strengthening administration & performance by introducing disbursement linked indicators (DLIs).

World Bank has further extended its support through National Social Protection Programme (NSPP), a US\$ 100 million credit from IDA. It will support the GoP through, a Programme for Results (P for R) in an amount of US\$ 90 million by making disbursement against the key results as part of the Government's Programme; and an Investment Project Financing (IPF) TA component in an amount of US\$ 10 million

to finance critical areas to achieve the quality of results.

Recently, World Bank has further extended its support through Crisis-Resilient Social Protection (CRISP) Program. Benazir Income Support Programme, Govt. of Pakistan has received financing of US\$ 600 million (US\$ 5 million for TA), from the World Bank towards Crisis-Resilient Social Protection (CRISP) Program, and it intends to apply part of the proceeds to payments for goods, related services and consulting services to be procured under this project.

The Program is for Results Operation with PDOs to support the development of a more adaptive social protection system that will contribute to future crisis-resilience among poor and vulnerable households. The program has three (3) result areas focusing on; a) Building a crisis resilient delivery system; b) Establishing a Hybrid Social Protection system for resilience of poor against future crisis; c) Protecting human capital through demand-side education and health initiatives for children.

2. Objective of the Assignment:

BISP intends to strengthen its MIS through filling of vacant position of Lead Data Scientist. Core Database of BISP resides on Oracle Based Exadata Machines at PR and DR sites. The Lead Data Scientist will work under the direct supervision of the Director (MIS) and will be mainly responsible for analyzing and interpreting complex data sets, designing and implementing data models, creating and maintaining databases. The incumbent will serve as the consultant and will be responsible for developing and implementing data-driven solutions to support business operations and decision-making. S/he should possess ability to clean, extract, transform and perform analysis on Big Data

3. Scope and Responsibilities:

The Lead Data Scientist will be assigned the following tasks:

- Data scientist should know Python and SQL will be typically responsible for analyzing and interpreting complex data sets, designing and implementing data models, creating and maintaining databases.
- They may also be responsible for developing and implementing data-driven solutions to support business operations and decision-making.
- Strong knowledge and Hands-on experience on Python and SQL
- Ability to work with different databases and integration

- Experience with data analysis and statistical modeling
- Develop clean, robust, scalable and maintainable code
- Monitor and handle data requirements from relevant stakeholders and clients.
- Work with relevant stakeholders/clients to figure out which data/analysis is required.
- Develop and implement advanced analytics and infrastructure solutions to support payment management systems.
- Use data science techniques to build predictive models and other solutions that drive value for the organization.
- Ability to clean, extract, transform and perform analysis on Big Data
- Certifications in related fields like Data Science, Machine Learning, Data Engineering.
- Ability to work independently and in a team environment.
- Some additional skills that are Good to have are:
- Familiarity with big data technologies like Hadoop and Spark
- Experience with visualization tools like Tableau or Power BI
- Experience with cloud computing platforms like AWS, Azure, or Google Cloud
- Strong programming skills in languages like R, Java, or C++.

4. Reporting:

The Lead Data Scientist will work under the direct supervision of Director (MIS).

5. Time frame of the Assignment:

Initial contract will be for one year, subject to yearly extension based on satisfactory performance, requirement and availability of fund.

6. Remuneration:

Market based salary package depending upon the qualification and experience of the selected candidate.

7. Selection Method:

A consultant shall be selected in accordance with the method contained in Section VII, paragraphs, 7.36 and 7.37 of the “World Bank’s Procurement

Regulations for IPF Borrowers”, July 2016 [Revised November 2017 and August 2018] (“WB Procurement Regulations”), which can be perused at the website: <https://projects.worldbank.org/en/projects-operations/products-and-services/brief/procurement-new-framework>

8. Deliverables

Deliverables	Timeline = 2 Years (Tentative)
Inception Report on respective domain projects along with Domain Review	8 Weeks
Feasibility Study of existing Databases along with GAP Analysis which includes key areas like -Data Analysis and Performance Reviews - Methodology Used - Data Sets and repository check, Tool evaluation , data cleansing methodology in place etc - Data visualization methodology finalization - Industrial Best Practices Recommendations for data retrieval Architecture and Scalability for Projects	12 weeks
Performance testing of data fetching along with their respective applications according to the submitted Feasibility Study Report.	18 Weeks per app and 54 weeks for total applications
Trainings and mentoring Team Members on newer Technologies	12 weeks
Transfer of Technology and devising continuous monitoring mechanism for future Database Optimization	12 Weeks
Final Signoff with Reports of lessons learnt and Recommendations	6 Weeks

9. Qualifications:

Minimum Second Class or Grade ‘C’ or 2.5/4.0 CGPA, University degree (16 years of Education) or equivalent in Computer Sciences /Engineering/IT degree/ computer science (with preferred subjects of discrete mathematics, Algorithm Design etc.) or equivalent from a HEC recognized University / Institution.

10. Experience:

- Minimum 07 Years of Hands-on Experience in Data Analytics
- Work experience from certified software development & product companies is preferred
- Must have prior experience in taking over code-intensive applications in the middle and enhancing them.

- Knowledge and experience using the MySQL, PostgreSQL, ORACLE database is desirable. Knowledge and experience in JAVA preferable.
- Proven ability to work in a collaborative, multi-tier team environment.
- Good communication, people management, and writing skills. .
- Knowledge of machine learning and predictive modeling techniques
- Experience with database design and management
- Strong problem-solving and critical thinking skills
- Strong communication skills to present findings and insights to non-technical stakeholders

11. Certifications:

- Relevant Training or Certification
- Candidates possessing relevant advanced Certifications would be preferred.