

ANNEX A**BH-T1063****SCL/LMK****Design and implementation of apprenticeship impact evaluation in the Bahamas****TERMINOS DE REFERENCIA****Background**

Established in 1959, the Inter-American Development Bank (“IDB” or “Bank”) is the main source of financing for economic, social and institutional development in Latin America and the Caribbean. It provides loans, grants, guarantees, policy advice and technical assistance to the public and private sectors of its borrowing countries.

Productivity growth in Latin America and the Caribbean (LAC) has been stagnant for the last years (Fernández-Arias, 2014). Deficiencies in the quantity and quality of education, training and innovation affect human capital, particularly in some groups of the population, and therefore productivity (OCDE, 2016).

Human capital shortages also impose challenges to productivity in The Bahamas. Although the enrollment rate in primary education in the Bahamas is almost universal (97.5%), enrollment rate in secondary education considerably reduces to 82.7% (UNESCO, 2010). Additionally, according to the World Bank’s Enterprise Survey, employers report the lack of specific skills as the most important barrier to recruit workers (34%), followed by applicants’ lack of experience (29%) and applicants’ lack of soft skills (28%). Skills gaps are also perceived by 24% of firms as a main barrier to productivity, while problems with soft skills are the main cause of dismissals and turnover in firms (Fazio & Pinder, 2012).

Skills development programs can offer an effective solution to address skills shortages. The evidence suggests overall that training programs tend to have better results when they incorporate key elements considered successful in the literature, including: (i) participation from private providers; (ii) demand-driven orientation; (iii) an important component of vocational orientation and/or labour intermediation; (iv) emphasis on on-the-job training; and (v) financial incentives to employers (subsidies for the on-the-job training phase) and to beneficiaries (stipends to facilitate their participation) (Berniell y de la Mata, 2016; Card et al., 2017; Fares and Puerto, 2009; González-Velosa, Ripani and Rosas-Shady, 2012; Urzúa and Puentes, 2010;).

Within skill development programs, apprenticeships programs (APs) can be an effective tool to improve workers’ human capital, promote employment and attend employers’ demands. Relative to other training models, APs offer the trainees the following elements: (i) a job with a contract; (ii) a wage; and (iii) a structured learning plan in the workplace with fixed duration and an articulated off- and on-the-job training plan that is private sector led and (iv) that includes a formal assessment and industry-recognized certification (Fazio et al., 2016). Countries with long-tradition in APs include Australia, Canada, Korea, the UK, and the US. Despite the scarcity of experimental evaluations, available results in these countries show that APs have positive effects on employment (Hampf & Woessmann, 2016), earnings (Corseuil, et al., 2014), socio-emotional skills (Halpern, 2009), innovation (Rupietta & Bakes-Gellner, 2015), and unemployment duration (Bellman et al., 2000; Franz et al., 2000).

Based on the potential of AP to address the countries' human capital challenges, the Government of Bahamas (GoBH) will establish a nation-wide Apprenticeship Program financed by the "Skills for Current and Future Jobs in The Bahamas" (BH-L1037). The program seeks to: first, to increase the relevant skills and employability of workers, and their probability of employment in three strategic sectors (maritime, medical services, and IT/telecommunications) for the economy; and second, to promote communication between employers and training providers in these sectors in terms of skills needs, so as to ensure the development of a programme that promotes relevant skills and higher labour market productivity. Furthermore, will support to set quality assurance mechanisms for training that includes a formal assessment leading to industry-recognized certification.

The new apprenticeship programme to be established is targeted to the unemployed and school leavers between the ages of 16-40 years. The programme will seek to fulfil two main objectives: firstly, to increase the employability, and thus the probability of youth employment in three strategic sectors for the economy; and second, to promote formal and systematic feedback mechanisms between training providers and employers in these three sectors, so as to ensure the development of Programmes that promote higher labour market productivity. Specifically, the component will finance the following: A job-readiness Pre-apprenticeship Programme for 1,100 beneficiaries, making use of the existing capacity of the National Training Agency (NTA), to provide technical and soft skills training; An Apprenticeship Programme that will consist of on-the-job (80%) plus off-the-job (20%) training for 1,350 beneficiaries that either have: a) successfully completed the pre-apprenticeship Programme; or b) proven to already have the necessary skills to enter the apprenticeship Programme.

The GoBH has asked for IDB support in the design and implementation of an impact evaluation that provides evidence on the effectiveness of investing in this type of training programs and contributes to future policy decision-making.

Objectives

The consultancy has the following main objectives:

- Provide support in various activities related to the production of a document/collection lessons learned and best practices from, LAC and other key countries.
- Provide support in the design, implementation and analysis of the impact evaluation of the apprenticeship program in the Bahamas.

Main Activities

The Consultant will:

- Provide support in the design, implementation and analysis related to the impact evaluation of the apprenticeship program in the Bahamas.
- Provide support in the organization and systematization of evidence from a workshop with academics and policy makers in learning and skill measurement programs.
- Support the organization of workshops and teaching and awareness courses with impact evaluations in the Bahamas.

Reports / Deliverables

The consultant with the LMK team in charge of the supervision of the project mentioned above (BH-L1037) will establish a work plan and the requested reports and products.

Qualifications

- Degree / Academic Level & Years of Professional Experience: Master's Degree in Economics or Public Policy. At least 2 years of experience in economic analysis, monitoring, monitoring and evaluation of social programs.
- Languages: English (advanced level in writing and reading).
- Specialization Areas: labor economics, econometrics and impact evaluation methodologies.
- Skills: excellent management of STATA and data from household and administrative surveys. Desirable: (i) Have individual research experience. (ii) be familiar with the institutional, labor and productive context of the country.

Características de la Consultoría

- *Consultancy category and modality: Temporary Term Consultancy (TTC)*
- *Contract Duration: 6-12 months*
- *Place(s) of work: Bahamas or country of origin.*

Coordination: The project team leader, Fernando Pavon (SCL/LMK) will be responsible for the supervision of this contract and for the coordination with the GoBH for delivered products.

Payment and Conditions of Contract: Remuneration will be determined in accordance with Bank regulations and criteria.

CONFIDENTIALITY

All work related to this assignment, including outputs and information collected will be property of the Inter-American Development Bank and will remain strictly confidential at the discretion of the supervisor.

Consanguinity: Individuals with relatives working for the IDB within, and including the fourth degree of consanguinity and the second degree of affinity are not eligible for employment as staff or consultants. Candidates must be citizens of a member country of the Inter-American Development Bank.

Diversity: The IDB is committed to diversity and inclusion and to providing equal opportunities in employment. We embrace diversity on the basis of gender, age, education, national origin, ethnic origin, race, disability, sexual orientation, religion, and HIV/AIDs status. We encourage women, Afro descendants and persons of indigenous origins to apply.

TERMS OF REFERENCE***Blockchain Credentialing Pre-Pilot****Commonwealth of The Bahamas**BH-T1063****Support for the Implementation of the Impact Evaluation of the Apprenticeship Programs and a Blockchain pre-Pilot in The Bahamas*****1. Background and Justification**

- 1.1.** Productivity growth in Latin America and the Caribbean (LAC) has been stagnant for the last years (Fernández-Arias, 2014). Deficiencies in the quantity and quality of education, training and innovation affect human capital, particularly in some groups of the population¹, and therefore productivity (OCDE, 2016).
- 1.2.** Human capital shortages also impose challenges to productivity in The Bahamas. Although the enrollment rate in primary education in the Bahamas is almost universal (97.5%), enrollment rate in secondary education considerably reduces to 82.7% (UNESCO, 2010). Additionally, according to the World Bank's Enterprise Survey, employers report the lack of specific skills as the most important barrier to recruit workers (34%), followed by applicants' lack of experience (29%) and applicants' lack of soft skills (28%). Skills gaps are also perceived by 24% of firms as a main barrier to productivity, while problems with soft skills are the main cause of dismissals and turnover in firms (Fazio & Pinder, 2012).
- 1.3.** Skills development programs can offer an effective solution to address skills shortages. The evidence suggests overall that training programs tend to have better results when they incorporate key elements considered successful in the literature, including: (i) participation from private providers; (ii) demand-driven orientation; (iii) an important component of vocational orientation and/or labour intermediation; (iv) emphasis on on-the-job training; and (v) financial incentives to employers (subsidies for the on-the-job training phase) and to beneficiaries (stipends to facilitate their participation) (Berniell y de la Mata, 2016; Card et al., 2017; Fares and Puerto, 2009; González-Velosa, Ripani and Rosas-Shady, 2012; Urzúa and Puentes, 2010;).
- 1.4.** Within skill development programs, apprenticeships programs (APs) can be an effective tool to improve workers' human capital, promote employment and attend employers' demands². Relative to other training models, APs offer the trainees the following elements: (i) a job with a contract; (ii) a wage; and (iii) a structured learning plan in the workplace with fixed duration and an articulated

¹ For instance, according to the SIMS, LAC unemployment rate for youth is 14% vs overall unemployment rate 4% (IDB, 2016).

² For more evidence refer to: a) Ryan, P. (2001). The School-to-Work Transition: A Cross-National Perspective. Journal of Economic Literature, 39(1); b) Fazio et al. (2016). Apprenticeships for the XXI Century: A Model for Latin American and the Caribbean? Washington, DC: Inter-American Development Bank.

off- and on-the-job training plan that is private sector led and (iv) that includes a formal assessment and industry-recognized certification (Fazio et al., 2016). Countries with long-tradition in APs include Australia, Canada, Korea, the UK, and the US. Despite the scarcity of experimental evaluations, available results in these countries show that APs have positive effects on employment (Hampf & Woessmann, 2016), earnings (Corseuil, et al., 2014), socio-emotional skills (Halpern, 2009), innovation (Rupietta & Bakes-Gellner, 2015), and unemployment duration (Bellman et al., 2000; Franz et al., 2000)³.

- 1.5. Based on the potential of AP to address the countries' human capital challenges, the Government of Bahamas (GoBH) will establish a nation-wide Apprenticeship Program financed by the "Skills for Current and Future Jobs in The Bahamas" (BH-L1037). The program seeks to: first, to increase the relevant skills and employability of workers, and their probability of employment in three strategic sectors (maritime, medical services, and IT/telecommunications) for the economy; and second, to promote communication between employers and training providers in these sectors in terms of skills needs, so as to ensure the development of a programme that promotes relevant skills and higher labour market productivity. Furthermore, will support to set quality assurance mechanisms for training that includes a formal assessment leading to industry-recognized certification.
- 1.6. Specifically, activities to be financed by BH-L1037 include: a job-readiness Pre-apprenticeship Program (PP) for 1,100 beneficiaries, making use of the existing capacity of the National Training Agency (NTA), to provide technical and soft skills training; an AP that will consist of on-the-job (80%) plus off-the-job (20%) training for 1,350 beneficiaries that either have successfully completed the PP or proven to already have the necessary skills to enter the AP.
- 1.7. Currently, the certification process in the Bahamas lacks technological advances. Today, student records management is a lengthy and cumbersome process. Students do not own their own records of achievement, depending on issuing institutions to verify their achievements throughout their lives. This results not only in a verification process that can last weeks or months and involves hours of human labor and (fallible) judgement but creates inefficiencies in placing new students and processing transfer equivalencies. In extreme cases, when the issuing institution goes out of business, loses their records, or is destroyed due to natural disasters, students have no way of verifying their achievements and must often start from nothing. This results in an enormous waste of human capital. The Bahamas is in a singular position to highlight the value of blockchain-based digital records for both students and institutions. Not only does the Blockcerts standard (open standard for digital documents anchored to the blockchain) will allow Bahamian institutions to prevent records fraud, safeguarding and building confidence in their brands, but it allows them to leapfrog the digitization process, skipping many of the interoperability issues associated with legacy digital formats (i.e. PDF, XML). Blockcerts provide students with autonomy, privacy, security, and greater access all over the world, while allowing the Bahamian government to consolidate and streamline its credentialing operations in a way that produces real return on investment over a period. Primary use cases include: Student diplomas; professional certifications; awards; transcripts; enrollment verification; employment verification; verifications of qualifications; credit equivalencies;

³ For a complete review of the economic evidence of Apprenticeships evaluations see: Novella, R., & Pérez-Dávila, Y. S. (2017). Are Apprenticeship Programs Effective?: Lessons for Latin America and the Caribbean. *IDB Technical Note No. IDB-TN-1319*, 2017. Washington, DC: Inter-American Development Bank.

and more⁴.

- 1.8. The GoBH has requested IDBs' support for optimizing their certification processes through Blockchain Technology. GoBH requires technical assistance for designing a strategy for blockchain pilot for credentialing in the Bahamas for industry-recognized certification of the Apprenticeship Program. As a first step to implementing blockchain credentialing in the Bahamas, a pre-Pilot to Pilot has been identified to set the ground work for a possible Blockchain Strategy for Skills Development in the Bahamas.

2. Objectives

2.1. *(Provide a brief statement of what you expect to accomplish as a result of this project/contract. What are your overall goals and objectives (provide a bulleted tiered listing if necessary.)*

- 2.2. Better technology and optimized certification processes are needed. Blockchain technology is ideal as a new infrastructure to secure, share, and verify learning achievements (Smolenski, 2016). In the case of certifications, a blockchain can keep a list of issuer and receiver of each certificate, together with the document signature (hash) in a public database (the blockchain) which is identically stored on thousands of computers around the world. Digital certificates which are thus secured on a blockchain hold significant advantages over 'regular' digital certificates, in that (Grech et al., 2017):

- they cannot be forged – it is possible to verify with certainty that the certificate was originally issued by and received by the same persons indicated in the certificate;
- verification of the certificate can be performed by anyone who has access to the blockchain, with easily available open source software – there is no need for any intermediary parties;
- because no intermediary parties are required to validate the certificate, the certificate can still be validated even if the organization that issued it no longer exists or no longer has access to the issued record;
- the record of issued and received certificates on a blockchain can only be destroyed if every copy on every computer in the world hosting the software is destroyed;
- the hash is merely a way of creating a 'link' to the original document, which is held by the user. This means that the above mechanism allows for the signature of a document to be published, without needing to publish the document itself, thus preserving the privacy of the documents.

- 2.3. The objective of this project is to develop a Blockchain pre-Pilot for the issuance of industry-recognized e-Certificates for the Bahamian Apprenticeship. The project will set the groundwork for the adoption of innovative technological tools that support APs implementation in the Bahamas. **The project will design and implement a pre-pilot for blockchain credentialing in the Bahamas.**

- 2.4. This will help the Bahamas into guiding the key stakeholders in creating a Blockchain Strategy for Skills Development Roadmap to expand to wider implementation⁵, providing oversight and control of issuing processes across the country's educational and professional development ecosystem.

⁴ Institutions that are already issuing Blockcerts include: The Republic of Malta, The Massachusetts Institute of Technology, The University of Melbourne, Southern New Hampshire University, Central New Mexico Community College, The Federation of State Medical Boards.

⁵ Federated Issuing System: Centralize disparate credentialing processes and data collection within a federated issuing system overseen by a key entity/Ministry. The system generates data that will be mapped to the Labor Market Information System to produce analytics that found data-driven policymaking for education and workforce development.

3. Scope of Services

- 3.1. (Provide detailed consulting service requirements needed to make the project/contract successful.)*
- 3.2.** A full implementation features a Federated Issuing System, which gives the Bahamian Ministry of Labor oversight and control of issuing processes across the country's educational and professional development ecosystem. The system generates data that will be mapped to the Labor Market Information System to produce analytics that found data-driven policymaking for education and workforce development.
- 3.3.** As a first step to implementing blockchain credentialing in the Bahamas, a Pre-Pilot to Pilot Roadmap has been identified.

4. Key Activities

- 4.1. (Include a description of all tasks which need to be completed for successful completion of this project/contract.)*
- 4.2.** To accomplish the setup of Issuing Workspace on a dedicated Bahamian private web infrastructure that is scalable to the nation-state level, the project should focus (but not limit itself) to:
- a) Identification of first issuing cohort
 - b) Training of NTA staff
 - c) Preparation/design of certificates and data
 - d) Test issuing
 - e) First live issuance to the blockchain
 - f) PR events
 - g) Expansion of issuing
 - h) Pre-pilot postmortem and review

5. Expected Outcome and Deliverables

- 5.1. (Describe the general outcome(s) expected from this project/contract. Against each of the tasks and activities listed above there should be a corresponding deliverable.)*
- 5.2. (Bank policy GN-2765-1 does not allow the procurement of goods and related services except when such goods and related services are necessary to achieve the objectives of the Bank-executed Operational Work and are included in the consulting services contract and represent less than ten percent (10%) of the consulting services contract value.) If it is determined that acquisition of goods is necessary by the consulting firm, please add a very detailed technical specification of the minimum requirement of said goods.*
- 5.3. Establishment of a Pre-Pilot to Pilot Roadmap: Issuance of Alumni Credentials by the National Training Agency (NTA).** This entails the Setup of Issuing Workspace on a dedicated Bahamian private web infrastructure that is scalable to the nation-state level.
- 5.4. Deliverable 1: Proposed project schedule for pre-pilot of Issuing Workspace.**
- 5.5. Deliverable 2: Issuing Workspace established.** An Issuing Workspace that allows the NTA to define processes for optimized issuing with custom administrative access and permissions. *This deliverable*

should include a presentation and/or video for dissemination. The issuing workspace should include:

- Custom issuing domain (i.e. credentials.ntabahamas.org)
- Custom verification portal (example: credentials.UB.edu)
- Custom email
- White glove onboarding
- Certificate design services
- Data hygiene services
- Administrator training and ongoing support by phone and email
- Multi-chain issuing
- Automated re-issuing
- Communications Plan development
- Analytics and data visualizations

5.6. Deliverable 3: Planning/Roadmap of Pilot to implementing blockchain credentialing in the Bahamas:

- a) Identification of next pilot institutions
- b) Defining pilot timeframe and scope
- c) Aligning on Blockchain Strategy development process
- d) Defining public/private sector partnerships for pilot:
 - Issuing institutions
 - Sector Skills Councils (SSCs)
 - International standards bodies

6. Project Schedule and Milestones

6.1. *(Define the schedule of deliverables and milestones for this project/contract. It is imperative that all milestones, tasks, and schedule information be as accurate as possible since consulting firms will need to consider these items in their proposals.)*

Delivery Schedule	
<i>Deliverable</i>	<i>Date</i>
1. Proposed project schedule for pre-pilot of Issuing Workspace.	April 2018
2. Issuing Workspace established	May 2018
3. Planning/Roadmap of Pilot to implementing blockchain credentialing in the Bahamas	June 2018

7. Reporting Requirements

7.1. *(Describe the reports consulting firm will have to submit for each phase of the project. For example: the scope and timing of progress reports; the need for presentations/ workshops; the coverage and timing of reports, setting out the results of the consultancy. Also define the language of the reports)*

7.2. A progress/fulfillment report detailing the evidence of each of the deliverables shall be presented based on the project schedule in section 6.

7.3. All reports should be presented in English, in word format.

- 7.4. Supporting materials should be presented in its original format with full usage rights for dissemination (including any presentations, YouTube, social media, graphic material).

8. Acceptance Criteria

- 8.1. *(Define how you will accept the deliverables resulting from this TOR. The acceptance of deliverables must be clearly defined and understood by all parties. This section should include a description of how both parties will know when work is acceptable, how it will be accepted, and who is authorized to accept the work.)*
- 8.2. All deliverables shall be considered acceptable once they are presented in full contemplating both GoBH and IDB comments/inputs. The acceptance shall entail a notification from Bank official (section 10) after final submission.

9. Other Requirements

- 9.1. *(Describe any special requirements, such as security requirements, any IT access restrictions/requirements or system downtime/maintenance if required.)*
- 9.2. For evidence of deliverable 2, consulting firm shall provide access to issuing workspace to beneficiary entity. Such evidence shall be presented to the Bank for confirmation.

10. Supervision and Reporting

- 10.1. *Specify to whom the consulting firm will be reporting to, meetings, frequency, who will give comments to any reports, approve reports, documents, work, and give comments or any instructions for changes. It shall be Firm's responsibility for ensuring that such meetings are conducted, and such reports are submitted to the Bank.*
- 10.2. Unless otherwise notified by the Bank, Fernando Pavon (fernandop@iadb.org), shall act as the Bank's designated representative regarding this Agreement. The consulting firm shall report to the Project Team Lead, Fernando Pavon (fernandop@iadb.org) and Project Member, Timyka Davis (timykad@iadb.org).
- 10.3. Reports of the deliverables shall be presented based on the project schedule in section 6. Comments, approvals or any instructions for changes shall be channeled through the Bank's designated representative.
- 10.4. Consulting firm should address beneficiary entity's concerns/comments/inputs prior to presenting finalized deliverable to the Bank.

11. Schedule of Payments

- 11.1. Payment terms will be based on project milestones or deliverables. The Bank does not expect to make advance payments under consulting contracts unless a significant amount of travel is required. The Bank wishes to receive the most competitive cost proposal for the services described herein.
- 11.2. The IDB Official Exchange Rate indicated in the RFP will be applied for necessary conversions of local currency payments.

Payment Schedule	
<i>Deliverable</i>	<i>%</i>
4. Proposed project schedule for pre-pilot of Issuing Workspace.	25%
5. Issuing Workspace established	55%
6. Planning/Roadmap of Pilot to implementing blockchain credentialing in the Bahamas	20%
TOTAL	100%