

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

**THE BAHAMAS**

**SUPPORT FOR THE IMPLEMENTATION OF THE IMPACT EVALUATION OF  
APPRENTICESHIP PROGRAM AND BLOCKCHAIN PRE-PILOT IN THE  
BAHAMAS**

**(BH-T1063)**

**TC DOCUMENT**

This document was prepared by the Project team consisting of: Fernando Pavón (SCL/LMK), team leader; Ethel Muhlstein; Raquel Fernández; Tania Lucia Gaona; Timyka Davis (SCL/LMK); Mario Castaneda; Rene Herrera (VPC/FMP); Bettina Henning; and Liza Lutz (LEG/SGO).

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**BH-T1063**

**CERTIFICATION**

I hereby certify that this operation was approved for financing under the **Ordinary Capital Strategic Development Program for Social Development (SOC)** through a communication dated February 14, 2018 and signed by Mariana Mendoza (ORP/GCM). Also, I certify that resources from said fund are available for up to **US\$200,000** in order to finance the activities described and budgeted in this document. This certification reserves resource for the referenced project for a period of six (6) calendar months counted from the date of eligibility from the funding source. If the project is not approved by the IDB within that period, the reserve of resources will be cancelled, except in the case a new certification is granted. The commitment and disbursement of these resources shall be made only by the Bank in US dollars. The same currency shall be used to stipulate the remuneration and payments to consultants, except in the case of local consultants working in their own borrowing member country who shall have their remuneration defined and paid in the currency of such country. No resources of the Fund shall be made available to cover amounts greater than the amount certified herein above for the implementation of this operation. Amounts greater than the certified amount may arise from commitments on contracts denominated in a currency other than the Fund currency, resulting in currency exchange rate differences, represent a risk that will not be absorbed by the Fund.

CERTIFIED BY:

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Sonia M. Rivera  
Chief  
Grants and Co-Financing Management Unit  
ORP/GCM

\_\_\_\_\_  
Date

APPROVED BY:

\_\_\_\_\_  
Carmen Pages-Serra  
Division Chief  
Labor Markets Division  
SCL/LMK

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Date

## TC Document

### I. Basic Information for TC

▪ Country/Region:	The Bahamas
▪ TC Name:	Support for the Implementation of the Impact Evaluation of Apprenticeship Program and Blockchain pre-Pilot in The Bahamas
▪ TC Number:	BH-T1063
▪ Team Leader/Members:	Fernando Yitzack Pavón (SCL/LMK), team leader; Ethel Muhlstein; Raquel Fernández; Tania Gaona; Timyka Davis (SCL/LMK); Mario Castaneda, Rene Herrera (VPC/FMP); Bettina Henning; and Liza Lutz (LEG/SGO)
▪ Taxonomy:	Operational Support (OS)
▪ Number and name of Operation Supported by the TC:	BH-L1037 – Skills for Current and Future Jobs in the Bahamas
▪ Date of TC Abstract authorization:	14 February 2018
▪ Beneficiary:	The Commonwealth of The Bahamas
▪ Executing Agency:	Inter-American Development Bank (IDB)
▪ Source of funding:	OC Strategic Development Program for Social Development (SOC)
▪ IDB Funding Requested:	US\$200,000
▪ Local counterpart funding, if any:	N/A
▪ Disbursement period:	24 months
▪ Required start date:	30 March 2018
▪ Types of consultants:	Individual consultants and consulting firms
▪ Prepared by Unit:	Labor Markets Division (SCL/LMK)
▪ Unit of Disbursement Responsibility:	Social Sector (SCL/SCL)
▪ TC Included in Country Strategy (y/n):	Yes
▪ TC included in CPD (y/n):	Yes
▪ Alignment to the Update to the Institutional Strategy 2010-2020:	Social Inclusion and Equality; Productivity and Innovation

### II. Description of the Associated Loan

- 2.1 This Technical Cooperation (TC) will provide support to the Government of Bahamas (GoBH) towards preparatory work for the implementation of the Skills for Current and Future Jobs Project loan (BH-L1037). 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,<sup>1</sup> and therefore productivity (OCDE, 2016).
- 2.2 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

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

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).

- 2.3 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;).<sup>2</sup>
- 2.4 Within skill development programs, Apprenticeships Programs (APs) can be an effective tool to improve workers' human capital, promote employment and attend employers' demands.<sup>3</sup> 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, which 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).<sup>4</sup>
- 2.5 Countries in LAC (Brazil, Chile, Colombia, Costa Rica, Mexico and Peru) have also implemented programs that comply with some aspects of Fazio et al. (2016) definition of apprenticeships. For instance, in Brazil, the Apprentice Act offers a formal contract with structured training, a combination of on-the-job and off-the-job training but does not include an industry-recognized certification. In Peru, even when the AP complies with almost all aspects of a formal definition, there is a high rate of informal contracts between employers and apprentices. Evidence about the effectiveness of APs in LAC is even scarcer than in developed countries. The only available impact evaluation in LAC, based on a rigorous methodology, shows that the Brazilian Apprentice Act has positive effects on the probability of finding a non-temporary formal job and on wages (Corseuil et al., 2014).<sup>5</sup>
- 2.6 Based on the potential of APs to address the countries' human capital challenges, the GoBH will establish a nation-wide Apprenticeship Program financed by the IDB

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<sup>2</sup> To the best of our knowledge, there are no published evaluations of training programs in The Bahamas.

<sup>3</sup> 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.

<sup>4</sup> 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.

<sup>5</sup> Corseuil et al. (2014) use a longitudinal dataset and quasi-experimental methods (Regression Discontinuity and Instrumental Variables) to estimate the effects of the AP.

through the loan “Skills for Current and Future Jobs in The Bahamas” (BH-L1037). The program seeks to: (i) 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 (ii) promote communication between employers and training providers in these sectors in terms of skills needs, so as to ensure the development of a program 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.

- 2.7 Specific activities to be financed by BH-L1037 include: (i) 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; and (ii) 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.
- 2.8 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 also 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<sup>6</sup> digital records for both students and institutions. Not only does the Blockcerts<sup>7</sup> 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

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<sup>6</sup> A blockchain is a distributed ledger that provides a way for information to be recorded and shared by a community. In this community, each member maintains his or her own copy of the information and all members must validate any updates collectively. The information could represent transactions, contracts, assets, identities, or practically anything else that can be described in digital form. Entries are permanent, transparent, and searchable, which makes it possible for community members to view transaction histories in their entirety. Each update is a new “block” added to the end of a “chain.” A protocol manages how new edits or entries are initiated, validated, recorded, and distributed. With blockchain, cryptology replaces third-party intermediaries as the keeper of trust, with all blockchain participants running complex algorithms to certify the integrity of the whole. Grech et al. (2017) and adaptation from Piscini et al. (2016).

<sup>7</sup> Blockcerts is an open standard for creating, issuing, viewing, and verifying blockchain-based certificates. These digital records are registered on a blockchain, cryptographically signed, tamper-proof, and shareable. The goal is to enable a wave of innovation that gives individuals the capacity to possess and share their own official records.

verification, employment verification, verifications of qualifications, credit equivalencies, and more.<sup>8</sup>

- 2.9 The GoBH has requested the support of the IDB in: (i) evaluating the impact of the AP in workers' labor market outcomes; and (ii) optimizing their certification processes through Blockchain Technology. For the first point, the GoBH requires technical assistance for designing and implementing an evaluation methodology for its AP. For the second point, GoBH requires technical assistance for designing a strategy for blockchain pilot for credentialing in the Bahamas for industry-recognized certification of the AP. As a first step to implementing blockchain credentialing in The Bahamas, a pre-Pilot has been identified to set the ground work for a possible Blockchain Strategy for Skills Development in The Bahamas.

### III. Objectives and Justification of the TC

- 3.1 More evidence on apprenticeships' effectiveness is needed for supporting the implementation and continuity of these programs in LAC and The Bahamas. As discussed above, the scarce evidence in LAC and developing countries in other regions highlights the importance of measuring APs impact on labor market outcomes. Evidence on AP effectiveness will contribute to take an informed decision about implementing or continuing with these programs.
- 3.2 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.
- 3.3 Digital certificates which are secured on a blockchain hold significant advantages over 'regular' digital certificates, in that (Grech et al., 2017): (i) 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; (ii) 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; (iii) 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; (iv) 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; and (v) 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.
- 3.4 **The objective of this TC is twofold:** (i) to develop a rigorous impact evaluation methodology that be generally applicable to the Bahamian Apprenticeship Program and that can be adaptable to other countries in LAC; and (ii) to develop a Blockchain pre-Pilot for the issuance of industry-recognized e-Certificates for The Bahamian Apprenticeship. This TC will focus on the design of an impact evaluation methodology based on rigorous practical and methodological experiences that can be applicable to

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<sup>8</sup> 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.

The Bahamas and LAC. The implementation of the impact evaluation methodology of AP in The Bahamas will be financed through the associated loan operation (BH-L1037). This TC will also promote the adoption of innovative technological tools that support APs implementation in The Bahamas. The TC will design and implement a pre-pilot for blockchain credentialing in the Bahamas. This will help the Bahamas into guiding the key stakeholders in creating a Blockchain Strategy for Skills Development Roadmap to expand to wider implementation,<sup>9</sup> providing oversight and control of issuing processes across the country's educational and professional development ecosystem.

- 3.5 **Strategic alignment.** The TC is consistent with the Update to the Institutional Strategy (UIS) 2010-2020 (AB-3008) and is aligned with the development challenges of: (i) social inclusion and equality, by increasing access and use of employment services and diminishing inequities in the labor market; and (ii) productivity and innovation, by increasing equality, access and use of labor training, and life-long skills development, and labor intermediation services, specifically for inserting youth, and the unskilled into the workforce. The TC is aligned with Ordinary Capital Strategic Development Program for Social Development (SOC) (GN-2819-1) to strengthen public institutions' efforts to become more effective and efficient in social programming, group targeting, and social sector project execution. The TC is also aligned with the priorities of the sector strategy "Social Policy for Equity and Productivity" (GN-2588-4) by: Individuals (all, men, women, youth) benefited from programs to promote higher labor market productivity. The TC is consistent with the private sector development priority area of the IDB Country Strategy (CS) with The Bahamas (2013-2017) (GN-2731) and the Labor Sector Framework Document (SFD) (GN-2741-7). It contributes to the goal of CS to improve alignment between the labor supply and the needs of employers (strategic objective 4.4). At SFD level, it is consistent with: workers and companies have access to relevant and cost-effective workforce training mechanisms.

#### IV. Description of Activities/Components and Budget

- 4.1 **Component 1: Capacity Building for Implementation of Apprenticeship Programs.** This component's objective is to design a methodology that can be applied to evaluate the impact of APs in The Bahamas. The specific objectives are: (i) to design an impact evaluation based on the country's context and successful and rigorous practical and methodological experiences; and (ii) to validate the evaluation design in The Bahamas.
- 4.2 The following activities will be carried out: (i) development of a general evaluation design that includes a conceptual framework (e.g., theory of change, relevant outcomes, causal identification) and accounts for specific program's characteristics (e.g., institutions, eligibility, benefits); and (ii) development and testing of data collection tools (e.g., individual questionnaires and tests for technical, cognitive and socio-emotional skills) in order to measure the program effectiveness.
- 4.3 **Component 2: Implementation of Blockchain technology for Apprenticeship Programs in The Bahamas.** This component will finance the introduction of Blockchain technology as a tool for boosting technological innovation in the AP

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<sup>9</sup> 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.

implementation in The Bahamas. It will also offer an accessible and safe tool to apprentices for keeping their training records, and to employers for accessing this information. This will empower industry-recognized certificate recipients since they will own the credential and does not require the issuer or verifying third-party to be involved after receiving the credential. Furthermore, it will ease the "verification" process (even across borders): the credential is verifiable by third parties, including employers, admissions committees, and verification organizations once issued.

- 4.4 Activities financed under this component will include: (i) support in the implementation of a pre-pilot for issuing e-Certificates through Blockcerts technology; and (ii) a study tour<sup>10</sup> to understand the applicability of this technology in the training certificates context.
- 4.5 The total amount of funding requested is US\$200,000, from Ordinary Capital Strategic Development Program for Social Development (SOC), nonrefundable, showing allocations for each component per the budget below.

#### Indicative Budget (US\$)

Activity/Component	Description	IDB/Fund Funding SOC
<b>Component 1: Capacity Building for implementation of Apprenticeship Programs</b>		<b>80,000</b>
<b>1.1 Development of a general evaluation design</b>	Consultancy services to (i) develop a general evaluation design including methodologies that can be applied and the process to do it; and (ii) develop and test measurement tools to assess the quality of the program and skills acquisition.	80,000
<b>Component 2: Implementation of Blockchain technology for Apprenticeship Programs in The Bahamas.</b>		<b>118,000</b>
<b>2.1 Blockcert pre-Pilot for the Apprenticeship Program</b>	Design and implementation of a pre-pilot Blockchain technology to issue e-Certificates (Blockcerts) for The Bahamas Apprenticeship Program	100,000
<b>2.2 Blockchain Technology Uses for eCertificates Study Tour</b>	Study tour directed towards policy makers to understand the applicability of Blockchain in the context of certificates.	18,000
<b>Contingencies</b>		<b>2,000</b>
<b>Total</b>		<b>US\$200,000</b>

## V. Executing agency and execution structure

- 5.1 At the request of the GoBH, the IDB, through the Labor Markets Division (SCL/LMK), will execute this TC to facilitate the execution given that (i) the Bank, through its Labor Market Division (SCL/LMK), has technical expertise in labor market programs, based on international best practices; (ii) administrative burdens can be reduced on the government, particularly in the identification and contracting of international experts, and (iii) the Bank is better positioned to provide execution and oversight of the consultancies that will be carried out under this TC. The results of these consultancies

<sup>10</sup> Participants will be high-level officials (3) from institutions involved in the credential issuance process in The Bahamas such as Ministry of Education and Ministry of Labor.



are intended to bring key and timely preparation inputs to the loan (BH-L1037). SCL/LMK will be responsible for the direction, supervision and coordination of this TC. The Bank will coordinate its work extensively with GoBH benefitting entities, most directly, the Ministry of Labour and National Insurance (MLNI).

- 5.2 The Team Leader will be responsible for the execution and expenditure management.
- 5.3 **Procurement.** Procurement of consulting and non-consulting services will be carried out in accordance with IDB's policies. The contracting of consulting firms will be carried out in accordance with the Policy for the Selection and Contracting of Consulting Firms for Bank-executed Operational Work (GN-2765-1), and its corresponding Guidelines (OP-1155-4); the contracting of individual consultants in accordance with the Complementary Workforce Policy (AM-650) and additional services, if required, will be contracted in accordance with the Corporate Procurement Policy (GN-2303-20).
- 5.4 **Monitoring and Reports.** SCL/LMK will provide specialists as a focal point to monitor the activities planned in this TC. If there is a need to travel to these countries, the staff will cover their travel expenses with the Bank's supervision budget for this TC. SCL/LMK specialists will oversee the submission of annual progress reports, completion reports (4 months after the date of completion of the operation), and others regarding this TC, as required by the Grants and Co-financing Management Unit (GCM).
- 5.5 **Execution and disbursement periods.** The execution and disbursement periods will be 24 months. Nonetheless, the designs drafted from this TC funding will be implemented with the BH-L1037 under which there GoBH will establish a National Apprenticeship Program with its sustainability plan.

## VI. Major issues

- 6.1 There are no major risks associated with the execution of this TC except for the limited availability of data/information that might be required and the high degree of cooperation between the public and private sectors that is required for the AP evaluation design. To mitigate this risk, this TC will capitalize on implementation arrangements set forth with the PEU under the BH-L1037 for data collection (M&E specialist).

## VII. Exceptions to Bank policy

- 7.1 None.

## VIII. Environmental and Social Strategy

- 8.1 Due to the nature of this TC, there are no expected significant negative social and environmental impacts and this project received classification "C". See safeguard reports at [Safeguard Policy Filter](#) and [Safeguard Screening Form](#).

### Required Annexes:

- Annex I: [Request from client](#)
- Annex II: [Results Matrix](#)
- Annex III: [Terms of Reference for activities/components to be procured](#)
- Annex IV: [Procurement Plan](#)