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Jamaica – Forward to the Digital Age

Digital Competitiveness RadarView Perspective

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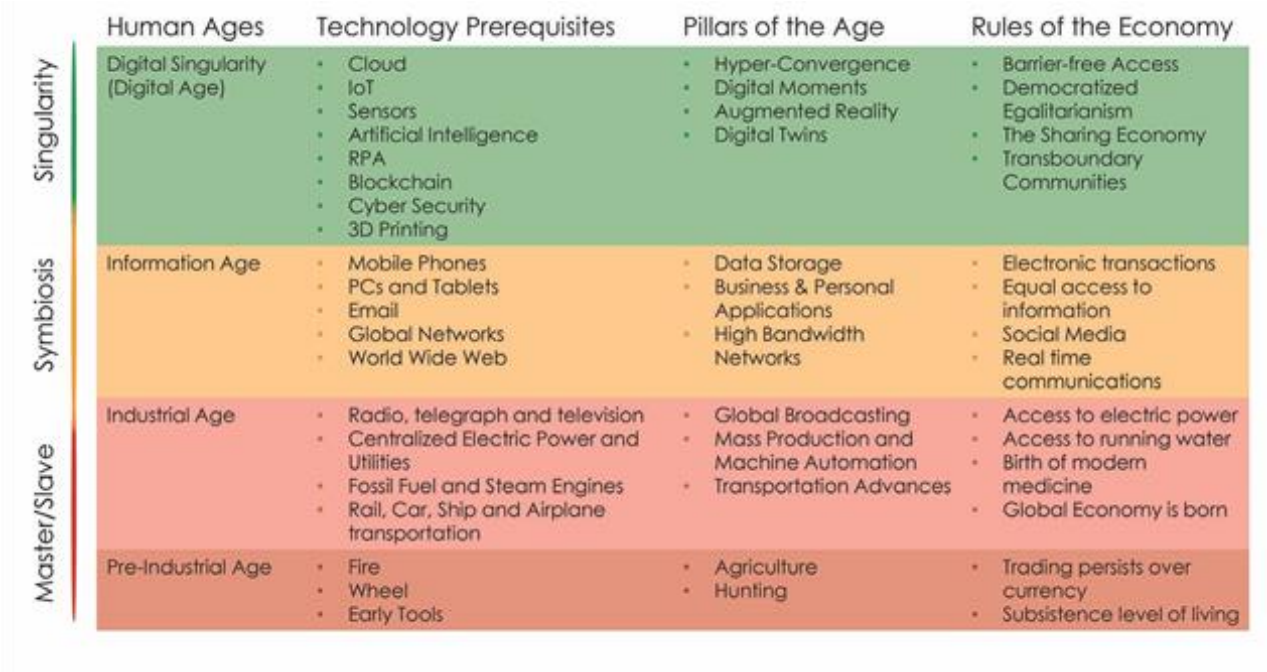
Tenets of the Digital Economy

Over the past major revolutions (i.e. the Pre-Industrial Age, Industrial Age, Information Age and the Digital Age), technology has served as the engine for human development, but at the same time, has largely impacted our way of living. Today is no different; in fact, emerging technologies such as robotics, artificial intelligence, blockchain, cloud, IoT, sensors, and cybersecurity are coming together so quickly, that our very nature is being disrupted, far beyond the previous ages. We are now amid the fourth industrial revolution, what we call Digital Singularity - "the point where technological omnipresence and the human experience converge".

The big question is, what is the fate of humanity in a fully digital world?



Human Ages	Technology Prerequisites	Pillars of the Age	Rules of the Economy
Digital Singularity (Digital Age)	• Cloud • IoT • Sensors • Artificial Intelligence • RPA • Blockchain • Cyber Security • 3D Printing	• Hyper-Convergence • Digital Moments • Augmented Reality • Digital Twins	• Barrier-free Access • Democratized Egalitarianism • The Sharing Economy • Transboundary Communities
Information Age	• Mobile Phones • PCs and Tablets • Email • Global Networks • World Wide Web	• Data Storage • Business & Personal Applications • High Bandwidth Networks	• Electronic transactions • Equal access to information • Social Media • Real time communications
Industrial Age	• Radio, telegraph and television • Centralized Electric Power and Utilities • Fossil Fuel and Steam Engines • Rail, Car, Ship and Airplane transportation	• Global Broadcasting • Mass Production and Machine Automation • Transportation Advances	• Access to electric power • Access to running water • Birth of modern medicine • Global Economy is born
Pre-Industrial Age	• Fire • Wheel • Early Tools	• Agriculture • Hunting	• Trading persists over currency • Subsistence level of living

Figure 1: Humanity's Relationship with Technology through the Ages

With the disruptive changes we are going through, countries therefore need to understand if they are positioned to capitalize on the opportunities that are being unveiled with the evolving economy. In so doing, countries need to take a comprehensive look at how future ready their digital infrastructure is, whether they have a sufficient base of digitally aware citizens and what the thrust of their government policies is in order to understand what they need to do in the near future to ride the wave of the new economy. These elements are elucidated further later in this paper.

Avasant's Digital Competitiveness RadarView™

As the global economy transforms to a digital one, the ability to adopt and leverage digital technologies in all spheres (government and private) will determine the development trajectory of countries in the future.

Avasant's Digital Competitiveness RadarView helps countries and governments to evaluate their readiness and provide a blueprint for areas of investments. It is based on three most critical dimensions (along the inner circle) shown in the figure below.

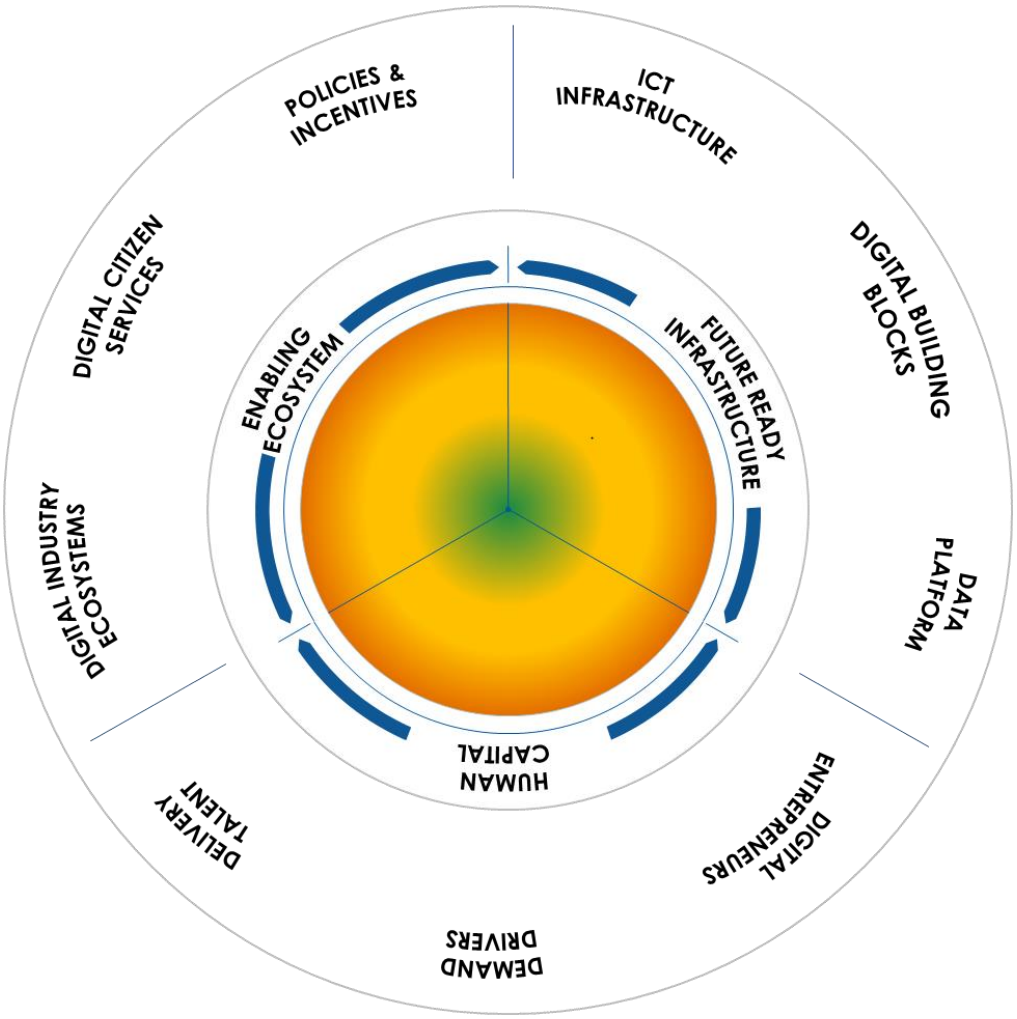


Figure 2: Avasant's Digital Competitiveness RadarView™

Each of the dimensions of competitiveness are composed of more granular key pillars as shown below.

Competitiveness Dimension	Pillars	Description	Sample Metrics Considered
Future Ready Infrastructure	ICT Infrastructure	Information technology and communication infrastructure	• Broadband/Mobile Connectivity • Presence of Computing Hubs • Adoption of Cloud services
	Digital Building Blocks	Foundational service-components on which digital services can be implemented	• Digital Identify • Digital Transactions / Payments Platform • Digital Signatures
	Data Platforms	Centralized or decentralized data architecture for inter and intra agency sharing	• Open Data Policy & Procedures • Open Data Platforms • Usage of data sets
Enabling Ecosystem	Policies & Incentives	Digital-friendly policies and regulatory environment	• Electronic Transactions Policies • Cyber Security and Privacy • E-Business friendly policies
	Digital Citizen Services	Government services access through digital channels	• E-Services Portal • Number of e-services available • Usage of e-services
	Digital Industry Ecosystems	Digital industry ecosystems & commitment towards technology innovations	• Digital readiness in non-IT industry • Industry wise tech ecosystems • Presence of Innovation Hubs
Human Capital	Delivery Talent	Availability of trained and skilled digital workforce	• Size and Quality of Talent Pool • Digital Workforce in economy • Digital Training & Incentives
	Demand Drivers	Early adopters of digital innovations	• Smartphone penetration • Digital Services Consumption • Demand for Digital Skills
	Digital Entrepreneurs	Vibrancy of digital entrepreneur ecosystem	• Number of digital start-ups • Venture funding to start-ups • Incubators and Accelerators

Figure 3: Digital Competitiveness RadarView Pillars and Sample Metrics

Each of the individual metrics is aggregated at a pillar, dimension, and country level. Based on the assessment and the characteristics of the country, it is classified into the defined maturity levels of the Digital Competitiveness RadarView – which also encompasses country best practices.

For Future Ready Infrastructure:

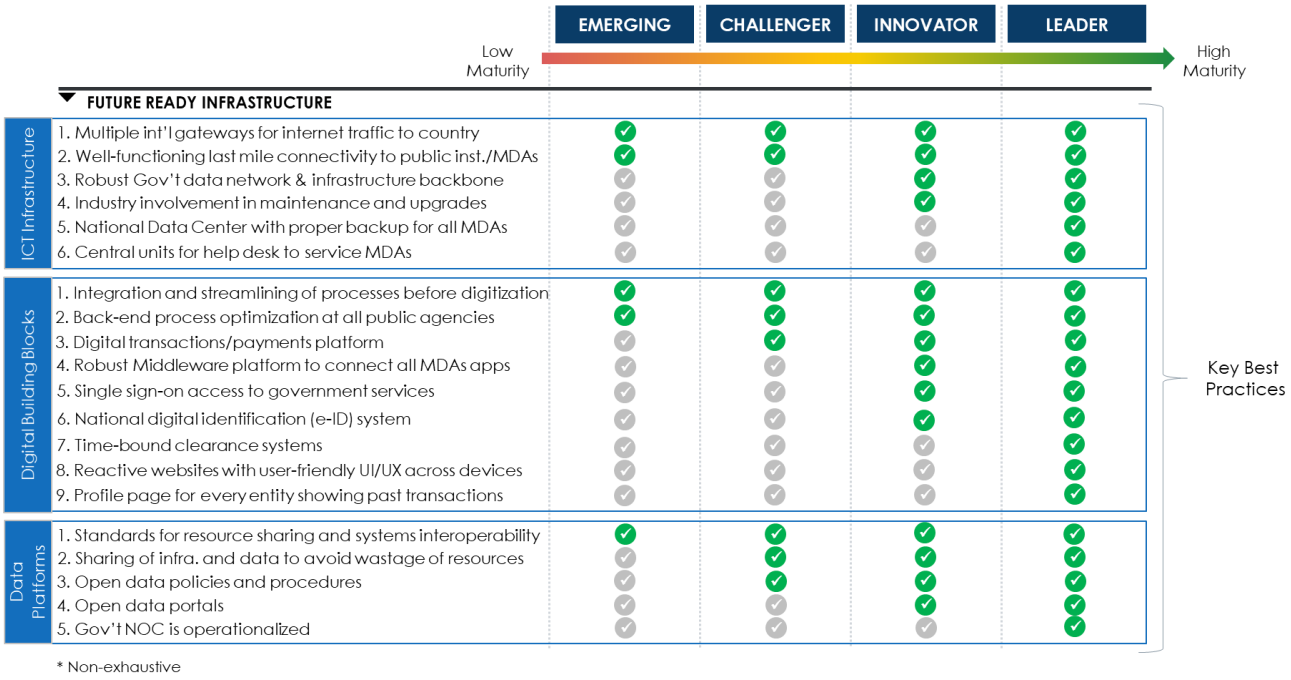


Figure 4: Digital Competitiveness RadarView Maturity Levels – Future Ready Infrastructure

For Enabling Ecosystem:

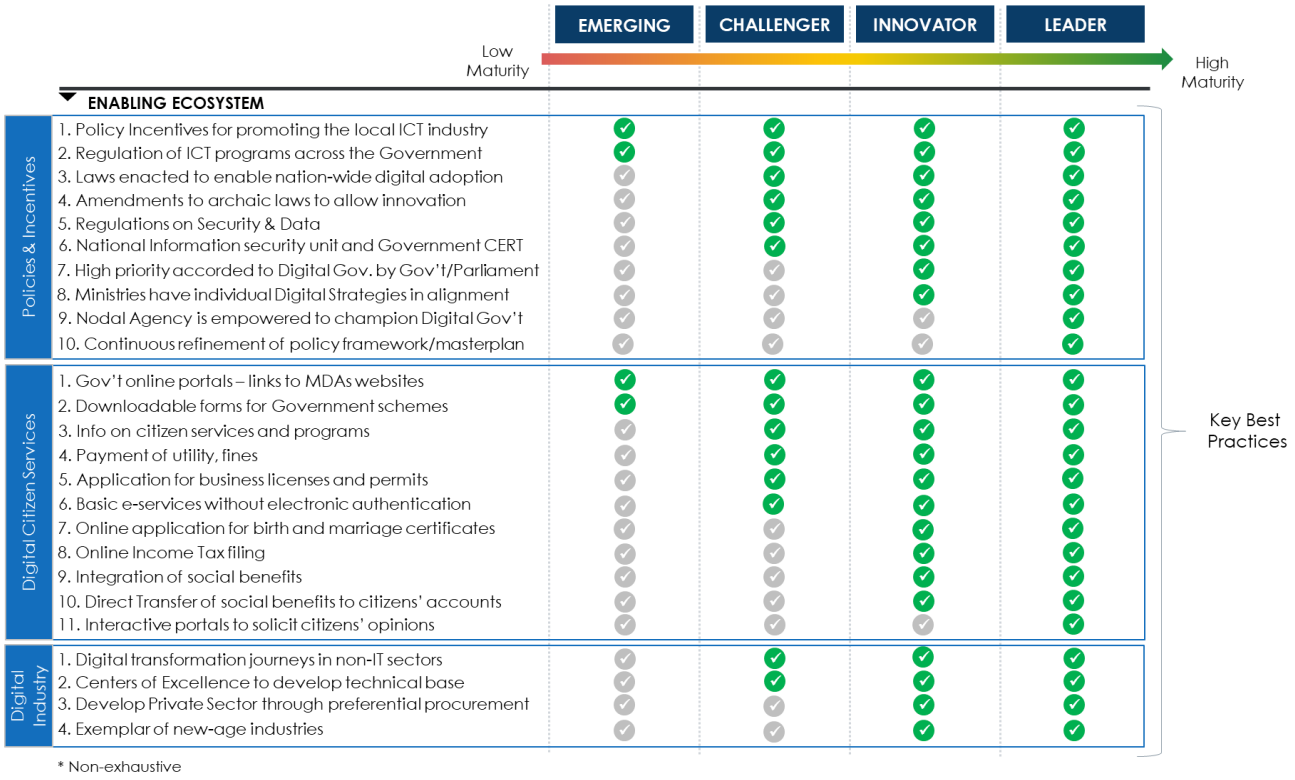


Figure 5: Digital Competitiveness RadarView Maturity Levels – Enabling Ecosystem

For Human Capital:

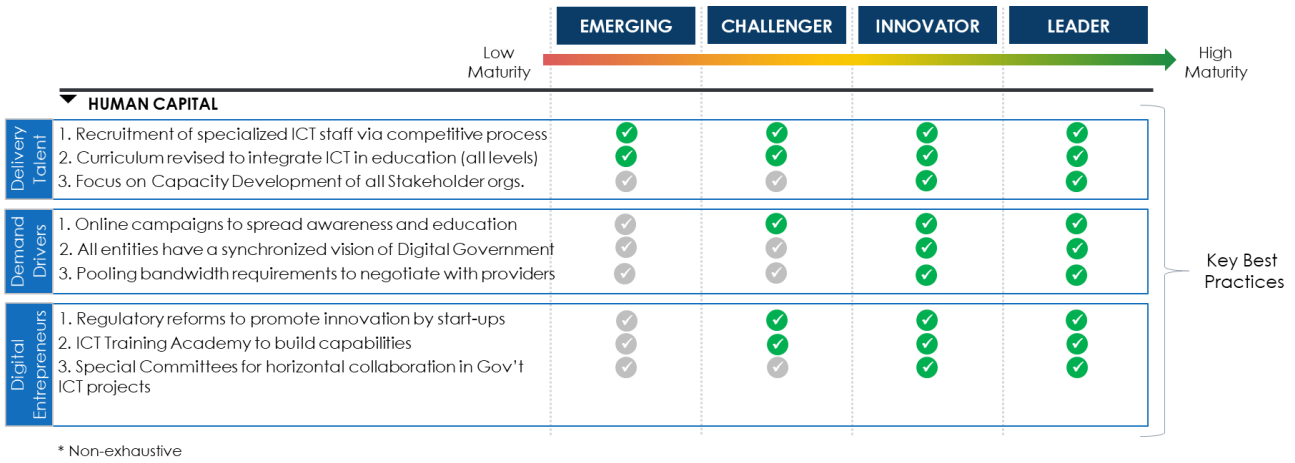


Figure 6: Digital Competitiveness RadarView Maturity Levels – Human Capital

Using the defined criteria, countries are then mapped on a Digital Competitiveness Maturity Curve, as expressed below.

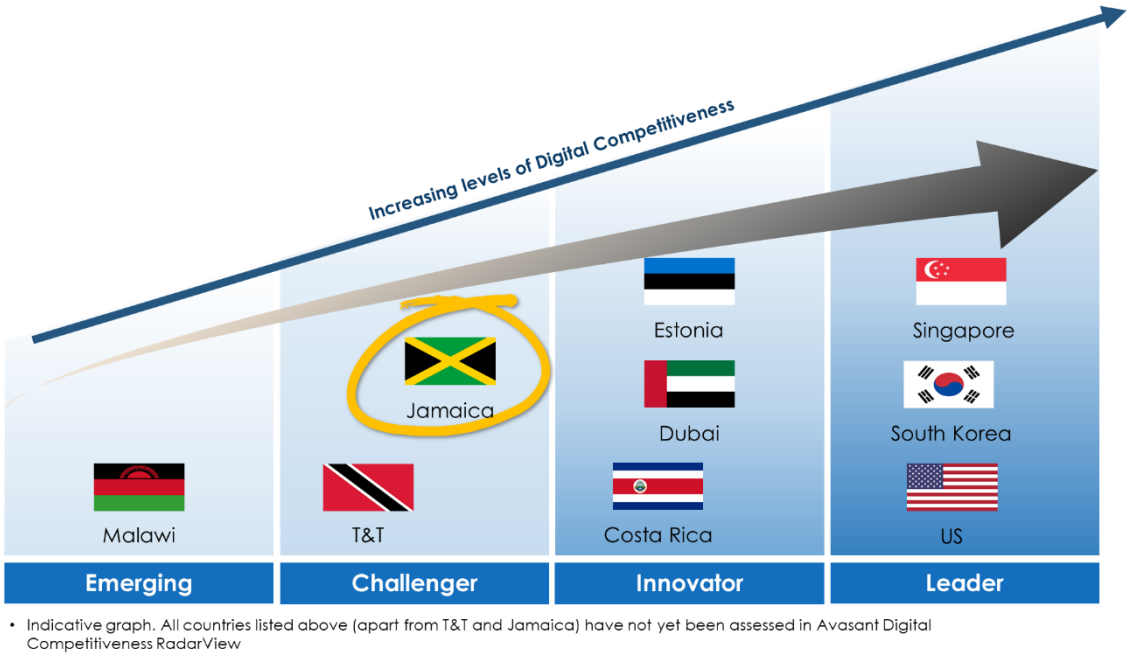


Figure 7: Digital Competitiveness RadarView Maturity Curve

Jamaica's Digital Imperatives

Countries and regions around the world are increasingly identifying digital transformation as a growth priority, given its potential for high economic and societal impact. Latin America and the Caribbean (LAC) has generally lagged in adopting emerging trends but has been making positive strides toward building a regional digital ecosystem.

As recent as April 2018, countries of the region approved the eLAC 2020 Digital Agenda[1], by means of the Cartagena Declaration (Colombia), which strengthens the drive toward regional cooperation and inclusion, through the digitalization of production and processes, workforce upskilling, as well the advocation of open government and governance structures. For Jamaica, this presents an opportunity to emerge as a leader in the spectrum of regional digital maturity, which also ties into its own digital agenda, among other digital imperatives.

Aspirations to Become the First Digital Economy in the Caribbean

Earlier in 2018 (February 26), the Government of Jamaica (GoJ) signed-off on a series of loans to be issued by the Inter-American Development Bank (IDB) aimed at putting digital transformation at the forefront of national development. Within the loan package, funding is allotted to[2]:

- **The Security Strengthening Project** – designed to enhance the capacity of national security agencies by using data and technology to combat crime (valued at USD 20 million).
- **The National Identification System (NIDS)** – will provide a comprehensive and secure structure to capture and store personal identity information for citizens and residents, as well as help to streamline the implementation of new public policies while reducing the burdens of accessing public services for citizens (valued at USD 68 million).
- **The Strategic Public-Sector Transformation Programme** – a combination of critical digital transformation projects aimed at improving the overall efficiency and quality of public sector services (valued at USD160 million).

These initiatives, once rolled-out, will induce a greater level of digital maturity and competitiveness for Jamaica, which will in turn signal to the international investment community that Jamaica is an ideal place for business in the 'digital age'.

[1] eLAC 2020 Digital Agenda is categorized into seven pillars: digital infrastructure; digital transformation and digital economy; digital government; culture, inclusion and digital skills; emerging technologies for sustainable development; the regional digital market; and governance for the information society. The Digital Agenda for Latin America and the Caribbean (eLAC 2018) was adopted in Mexico City in 2015.
[2] Source: Jamaica's on The Path to Becoming the Caribbean's First Digital Society, Businesssuiteonline

Need for Better Governance and Economic Stimulation

In 2017, Jamaica marked a 1.5 percent real GDP growth[3], but in comparison to the Caribbean region, and the world economy (see Figure 8), Jamaica is evidently underperforming – which is a fair indication of the need to trigger economic diversification and upward investment activity in the Caribbean state.

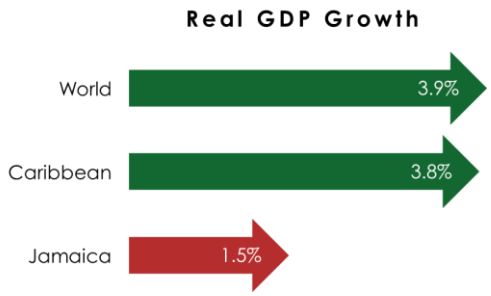


Figure 8: Real GDP Growth for Jamaica compared to Caribbean and World (2018)

Further, Jamaica ranked considerably low at 95 (out of 139 countries) on the World Economic Forum (WEF) Government Online Service Index[4], which measures the propensity of countries to interact with their citizens using digital channels. Jamaica also ranked a low 90 in *ICT use and Government efficiency*. Nonetheless, these are main areas being addressed by GoJ's pursuit of first Caribbean digital country status.

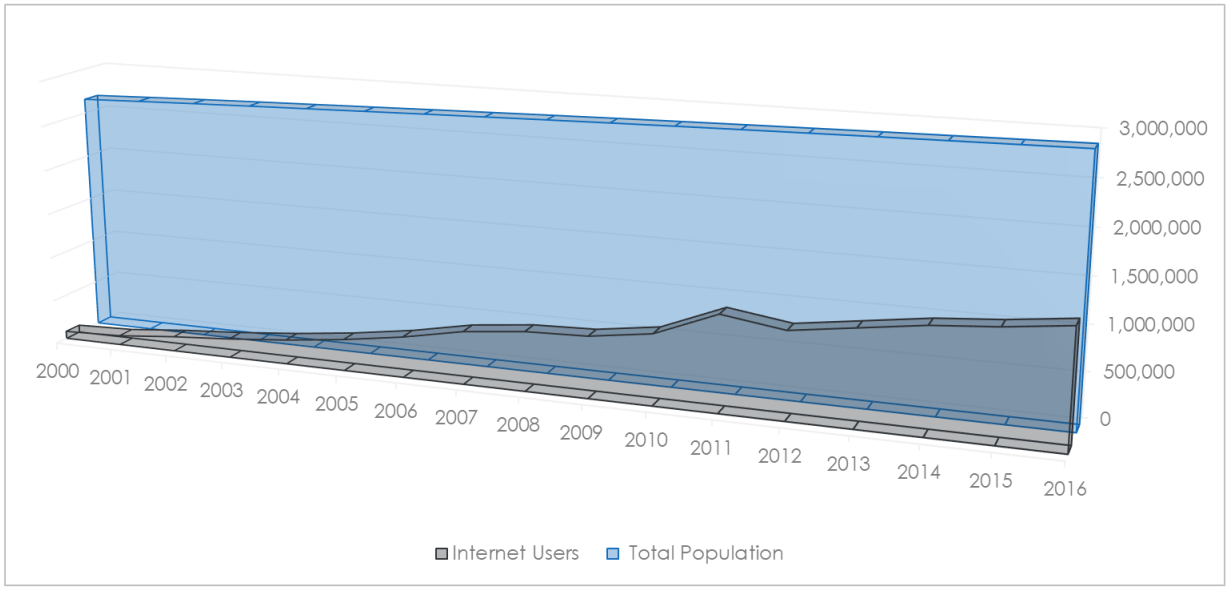
Given that some of Jamaica's key economic sectors are likely to be affected by digital disruption in the not too distant future is also an influencing factor. For instance, as the global Information Technology and Business Process Outsourcing (IT-BPO) industry continues to mature and associated technologies evolve (e.g. 'robo-advisors', robotic process automation (RPA), omni-channel platforms, etc.), the industry is seeing a marked shift from a cost-focused high-volume/low-value human resource-centric model, to a high-value technology-driven innovation-centric model. This means that Jamaica as one of the mature IT-BPO locations in the Latin America and Caribbean (LAC) must increasingly embrace digital to sustain relevance in the future IT-BPO landscape.

Similarly, due to the proliferation of mobile devices (such as smartphones and tablets) and the advent of modern technologies (such as cloud computing and mobile apps), travelers have been cultivating a do-it-yourself approach to managing their own tourism experiences. Tourists can now not only plan and book their entire travel itineraries online and from their homes but are being immersed in a digital world of travel where they can also manage their trips in-transit and in-destination. This attachment to online services is driving tourists' expectation to be digitally-served across all touchpoints of the travel cycle; which essentially means that aspects such as network connectivity and digital enterprises, are increasingly essential for improving the competitiveness of tourist destinations like Jamaica.

[3] Source: IMF DataMapper
[4] Source: WEF Global Information Technology Report 2016

Demand from a Growing Online Population

A key factor that helps to determine the digital demand in a country is the expanse of the domestic online community and their digital awareness. In 2016, the number of internet users[5] in Jamaica accounted for slightly less than half of its total population but considering Jamaica's online population was a mere 3 percent in 2010, this is a major jump. Yet, there is still much improvement required to nurture a digitally-inclined population/workforce given the low internet penetration.



Source: World Bank

Figure 9: Share of Internet Users Amongst Total Population

Embracing digital technologies to build human capital is also a clear focus for GoJ. In 2010, the Government equipped all 162 of its high schools with computers and network connectivity, under the National E-learning Project[6]. However, improvements can be made considering that just over half the total number of schools (both private and public) in Jamaica had internet access in 2015.

More recently, the Tablets in Schools (TIS) program which was launched in 2014, saw approximately 25,000 tablets being distributed to schools and teachers in 38 institutions, up to mid-2016. Since then, the Government has committed to carrying the pilot phase forward to a full rollout.

[5] Source: Individuals using the Internet (% of population), World Bank
[6] Source: Jamaica Information Service (JIS)

Jamaica's Digital Competitiveness Assessment

As the digital economy continues to expand, it will become more important for countries to improve their digital competitiveness. Assessing Jamaica's digital competitiveness now will go a long way in informing the approach to be taken by various stakeholders in identifying and leveraging digital opportunities for the economy and the people of Jamaica.

This section examines key dimensions of Avasant's Digital Competitiveness RadarView as they pertain to Jamaica.

Future Ready Infrastructure

ICT Infrastructure

With Jamaica's ambitions to become the first digital economy in the Caribbean, the quality of its ICT infrastructure will play a crucial role. However, as per the WEF Infrastructure Readiness Sub-Index in 2016, Jamaica ranked a low 93 – one of the lowest positions among key locations in the LAC region (as illustrated in Figure 10).

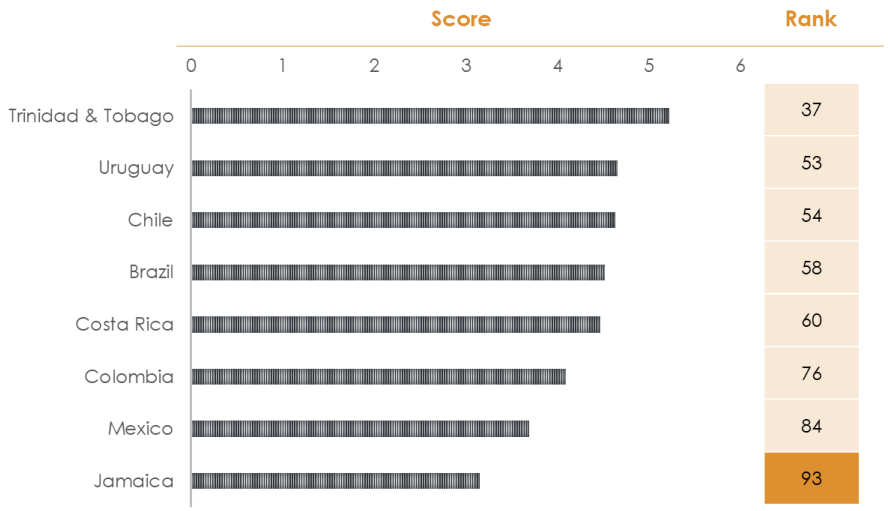


Figure 10: Network Readiness Index Ranking: ICT Infrastructure

Nonetheless, Jamaica currently has three (3) public data centers, up to Tier III certified, and 24/7 Network Operation Centers (NOC) – offering Colocation, Cloud Services, Business Continuity, Hosted Voice, Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS), Virtualization, Caged Environments, and Multiprotocol Label Switching (MPLS) / Virtual Local Area Network (VLAN) circuits.

Jamaica also has five (5) active submarine cable systems, providing up to 10 TB of unused capacity, and on-island latency is no more than 5 milliseconds. Its submarine cable network is also Metro Ethernet Forum (MEF)-certified for Gigabit connectivity[7].

[7] Source: Jamaica Promotions Corporation (JAMPRO)

One critical area that needs to be addressed is the energy costs in Jamaica, as this may limit the concentration of data center facilities as a requisite to supply the growing demand for data services (internal and external). Currently, the electricity rate in Jamaica is approximately USD 0.21 per kilowatt-hour (kWh)[8] which is one of the highest in the region. Recognizing this, GoJ is actively implementing initiatives such as energy conservation programs, retrofitting and upgrading of equipment and facilities for greater energy efficiency, as well as diversification into renewable energy sources such as solar and hydro.

Digital Building Blocks

In July 2015, GoJ, with part funding from the IDB, launched the country's first centralized e-tendering system to improve the efficiency and quality of public procurement.

Today, with the help of the digitally-advanced Estonia, **Jamaica aims to introduce the first fully-digitized government system in the Caribbean**. This would involve the creation of the NIDS e-ID system (mentioned above), which incorporates biometric data such as fingerprints and facial scans and provides citizens with a single identification card and number to access government and private sector services online.

As recent as April 2018, **Western Union's digital money transfer platform became live in Jamaica (Westernunion.com/jm) – which is the first country in the LAC to offer this service**. This platform will connect Jamaica with over 200 countries and territories for online money transfer services, and in alliance with GraceKennedy Money Services (GKMS), customers can also receive mobile money transfers via GraceKennedy's mobile wallet solution – GK MPay[9].

Interestingly, while Jamaica was well-poised to become a leader for mobile payments (m-payments) in the Caribbean, its domestic pioneer, Conec, announced in late 2017 that it will be closing-down operations due to the realization that the market is still not properly matured and ready[10]. However, the active rival services, GK MPay and Quisk – developed by the National Commercial Bank – shows some promising signs. This however means that the right level of strategic intervention is required to nurture the digital payments ecosystem, as this is a requisite for digital continuity and competitiveness.

Data Platforms

In September 2009, the ICT Task Force officiated the ICT Sector Plan 2009-2030, which highlighted key issues related to a lack of cohesion at the governance level, with the need for a properly defined e-governance framework, as well as insufficient integration

[8] Source: Jamaica Promotions Corporation (JAMPRO)
[9] Source: Western Union online platform now live in Jamaica, Loop, Jamaica News (April 2018)
[10] Source: Sun sets on Jamaican mobile money pioneer, The GSMA, Mobile World Live (Nov 2017)

of services across government entities. Some important planned initiatives were also outlined in response to these problematic areas (see box below).

KEY POINT

Key strategies outlined in the ICT Sector Plan 2009-2030 toward improving inter-agency and intra-agency data exchange:

Initiative	Timeline
Develop cross-ministry and interoperable communication networks to reduce silo approaches and foster joined-up government	Years 1 – 3
Establish stable and secure local area networks (LANs) in all key government agencies	Years 1 – 3
Establish GovNet as the Government WAN infrastructure	Years 1 – 3
Develop more efficient electronic systems for engagement in government-to-government (G2G), government-to-business (G2B) and government-to-citizens (G2C) transactions	Years 1 – 3
Establish formal Record Management Systems in ministries, departments and agencies (MDAs)	Years 1 – 6
Establish policy framework for the exchange of information within MDAs including data sharing and cost of information sharing	Years 1 – 3
Establish the position of Chief Information Officer (CIO) in MDAs	Years 1 – 3

Source: Ministry of Science, Energy & Technology, Final Draft ICT Sector Plan 2009-2030

To champion these initiatives (among others), and promote secured, integrated e-services across government ministries, departments and agencies (MDAs), GoJ recruited a central Chief Information Officer (CIO), as well as established eGov Jamaica Limited[11] (eGovJa) in 2013. These structural developments will ensure that GoJ becomes more cohesive and digital ready for the future.

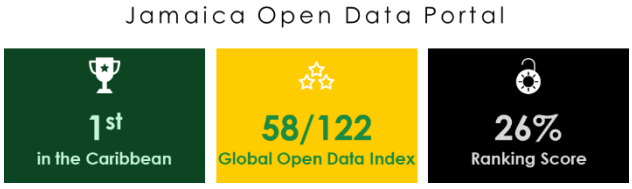


Figure 11: Global Open Data Index 2016/2017 Ranking

Yet, a major accomplishment that again positions Jamaica as a trend setter in the Caribbean region, was the **launch of the Jamaica Open Data Portal in June 2016**. Jamaica is currently ranked at 58th out of 122 countries in the Global Open Data Index 2016/2017, and 1st in the Caribbean.

[11] eGovJa was the result of a merger of two government entities, Fiscal Services Limited, which implemented large scale government ICT projects, and the former Central Information Technology Office (CITO) – Jamaica Information Services (JIS)

The Human Employment and Resource Training Trust, National Training Agency, referred to as Heart Trust/NTA, also steers the Labor Market Information Portal (LMIP)[12] and first-phase National Diagnostic Assessment and Referral (NDAR) system, which integrates with the Agency's Training Management System (TMS) to generate real-time data on local labor market conditions. The LMIP provides access to critical information pertaining to jobs and skills in demand, labor force trends, reports and publications, certification and enrolment, and training providers and programs. A useful feature of the LMIP is the Skills Bank which is an inventory of skilled persons with NVQ-J certifications.

Enabling Ecosystem

Government Focus on Policies and Incentives

The regulatory framework around ICTs in Jamaica is somewhat of a hindrance to the digital transformation journey of Jamaica. For example, there is the view that there are no specific provisions in the proposed Data Protection Act to support the establishment of the new e-ID system[13]. However, GoJ is presently making strategic efforts to improve the regulatory framework around ICT (as described in the box below).

K E Y P O I N T

The current review of the legal and regulatory environment for the ICT sector being undertaken by GoJ, includes:

- Repeal of the Telecommunications Act and promulgation of a comprehensive ICT Act;
- Establishment of a converged, single regulator for the ICT sector to replace the need for the multiplicity of regulators;
- Repeal of the Postal Services Act; as a first step in ushering in a new postal services industry driven by technology and the multiplicity of service offerings in a single location;
- Amendment to the Cybercrimes Act to provide more robust tools to facilitate the investigation and prosecution of cybercrimes and to keep the legislation apace with advances in technology; and
- Promulgation of a Data Protection Act, to promote confidence in ICT use by protecting the collection, use and storage of personal data.

Source: Ministry of Science, Energy & Technology

[12] The Ministry of Labour and Social Security's Labour Market Information System (LMIS) was enhanced and redeployed in 2013

[13] Source: NIDS, Data Protection Bill Clash? - Government Urged to Probe Harmony Between The Two, The Gleaner Company (Media) Limited (May 2018)

Notably, it was disclosed (May 2018) that the Ministry of Science, Energy & Technology will soon take the proposed National Science, Technology, and Innovation (ST&I) Policy to Cabinet. This policy is expected to promote the integration of Science, Technology, and Innovation across public policy procedures.

Another admirable regulatory feature on the horizon is the implementation of the National Cyber Security Strategy, which focuses on our (4) key areas: protection of critical infrastructure; strengthening the legal and regulatory framework for the investigation and prosecution of cybercrimes; building human resource capacities and increasing public awareness about cyber security. As part of this strategy, Cabinet is also expected to approve the Memorandum of Understanding (MoU) between the GoJ and Israel Aerospace Industries **to launch the Caribbean's first-ever Cyber Academy**[14] – which will position Jamaica as a regional leader in the cybersecurity space and help to develop a truly digital society. In 2016, Jamaica lost approximately USD 100 million due to cyber-criminal activity, according to the Ministry of Science, Energy and Technology[15].

Doing Business in Jamaica is also a good indicator of the presence of e-business friendly policies. Currently, Jamaica is placed at 70th out of 190 countries in the World Bank's Ease of Doing Business rankings – which is the 6th highest in the LAC. Further, Jamaica is ranked 5th worldwide for *stating a business*[16], and is 1st in the LAC in this regard.

Digital Citizen Services

In 2016, Jamaica was ranked 112th out of 193 countries in the United Nations E-Government Development Index (EGDI)[17], which is lower the World average, the regional average (Americas), and sub-region average (Caribbean). When considering a drop from 109th in 2014, and even 59th in 2005, Jamaica is highly uncompetitive in the delivery of e-Gov solutions, especially considering that the rankings were based on the same number of countries.

The issue is further exasperated by its placement at 133th in the E-Participation Index (EPART) 2016 – which is more specific to the use of online services by governments to citizens. Noticeably, the disparity between Jamaica and the World and Regional averages in the EPART is large, but not too far-off the Caribbean average; and was ranked at 72nd in 2005.

However, GoJ is taking positive strides to address its low performance in digital government solutions, evident by the **launch of the E-Portal – GOV.JM – in August 2017**. The portal serves as an online gateway to all government information and services, such

[14] Source: Cabinet to Approve MOU With Israeli Firm to Create Region's First Cyber Academy, The Gleaner Company (Media) Limited (May 2018)
[15] Source: Jamaica lost US$100m to cybercrime in 2016, Jamaica Observer (October 2017)
[16] Starting a business in Jamaica can take between 1-3 days, World Bank Doing Business 2018
[17] The EGDI is a composite measure of three important dimensions of e-government, namely: provision of online services, telecommunication connectivity and human capacity, United Nations

as tax and traffic fine payments, as well as queries; motor-vehicle registration; bill payments; and applications for passport, birth, death and marriage certificates and driver's licenses.

The Government also recently announced (February 2018) that a Research, Innovation and Product Development Department will be established at eGov Jamaica Limited to explore new opportunities for e-government services.

Further deployment of initiatives under the Strategic Public-Sector Transformation Program (mentioned above) will also increase capacity for digital government services in Jamaica.

Digital Industry Ecosystem

Jamaica is also keen to leverage digital technologies across non-IT sectors. For instance, the Security Strengthening Project (mentioned above), will integrate data and technology to re-enforce national security and reduce criminal footprint. Similarly, GoJ plans to spend JMD 47 million (about USD 0.37 million) to upgrade and computerize the national postal service to an international standard[18]. Farmers and small entrepreneurs are also encouraged to leverage the free internet access at Community Access Points (CAPs), as a means of marketing and promoting their products and services on a wider scale.

More aligned to the inevitable disruption of modern technologies on key sectors, the Ministry of Tourism hosted the Smart Destination 2018 initiative in May 2018, which is a continued effort to educate the public on how technology is revolutionizing the tourism industry. It was specifically targeted at small and medium-sized tourism enterprises to promote the adoption of technology to tap into new market opportunities.

In the banking sector, the National Commercial Bank of Jamaica recently received a World's Best Bank Awards 2018 in Latin America by Global Finance, for its innovative online account-opening solution. According to the bank, 40 percent of its customers now open their accounts online, and it claims that this service is a first of its kind in the English-speaking Caribbean[19].

[18] Source: Postal Service to be Upgraded, Jamaica Information Service (February 2018)
[19] Source: Global Finance Magazine

KEY POINT

Jamaican Healthcare to Harness the 'Power of Digital'

On May 16, 2018, the Ministry of Science, Energy and Technology stated that it will be launching a pilot project in the upcoming weeks, aimed at enhancing healthcare delivery across the island using technology. The program, called eCare, will enable:

- virtual doctor-patient interaction, so that persons can access medical consultation and advice from their home, without having to physically visit a clinic or medical practice;
- medical professionals to conveniently and electronically transmit prescriptions to the patient's pharmacy of choice;
- modernized assessment of specific health indicators such as blood sugar, blood pressure, and cholesterol levels;
- patients to avoid long waiting queues at public health centers, thus minimizing overcrowding at health facilities;
- better management of noncommunicable diseases (NCDs);
- significant cost savings; and
- will contribute to a healthier society as patients will be better able to manage their own health.

The initiative will be first introduced at targeted health centers and a select 5,000 persons, before it is rolled-out nationwide. The pilot is also being implemented in collaboration with the Universal Service Fund (USF) and the Diabetes Association of Jamaica.

Source: Jamaica Information Service

In terms of the presence of technology parks, Jamaica can also be regarded as a leader in the Caribbean region. In September 2017, the Musson Group officially opened the 58HWT project –which will consist of 230,000 square feet (sq. ft.) of office space, largely rented to BPO operators, inclusive of support services like ATMs, financial services, healthcare and food and beverage – and is expected to be completed by June 2018. The Government is also developing the Naggo Head Tech Park (approx. 21-acres on 26-acres of land), in Portmore, St. Catherine; and is expected to have around 750,000 sq. ft. of office space.

There is also the privately-owned (Musson Group) Barnett Tech Park located in Montego Bay, with about 315,000 sq. ft. current operating capacity – but has a potential total capacity of 800,000 sq. ft. in productive space and 200,000 sq. ft. for office space and support services. The Barnett Tech Park is currently the largest in Jamaica and is home to

VistaPrint, Conduent Jamaica (formerly Xerox), and Advanced Call Center Technologies (ACCT)[20].

Human Capital

Delivery Talent

Jamaica is one of the more mature BPO destinations in the Caribbean region, which is dominated by multi-national IT-enabled services (ITeS) providers (such as Sutherland, Xerox, Teleperformance, Hinduja Global Services, and Vista Print), who employ a vast number of the workforce and lead revenue generation. The sector has 55 BPO units across Montego Bay, Kingston and Portmore employing approximately 26,000 personnel - with an employment target close to 32,000 personnel by 2020[21].

Understanding the need to 'move-up the chain' has also become a high priority for the Jamaican Outsourcing industry – due to the increasing threat of technological disruption to the sector, and other global trends. In March 2018, GoJ through the Jamaica Promotions Corporation (JAMPRO), released a public request for proposals aimed at constructing a "Roadmap to Develop the IT Services Sector in Jamaica". The purpose of this strategy will be to reposition Jamaica away from legacy support to higher-end IT services and support. This means that the pipeline of digital talent must be strong to avoid any shortfall of resource demand.

For Jamaica, this is not an insurmountable task as there is a fair stream of IT graduates being outputted from the secondary and tertiary level. In 2016, there were approx. 15,268 tertiary graduates, of which 669 (or 4.4 percent) exceled in Computing[22]. Compared to Costa Rica, which has a much larger workforce population and graduate pool, the proportion of IT graduates as a percentage of total graduates is similar. In 2015, Costa Rica graduated over 48,000 higher-education graduates, but just 2,338 (or 4.9 percent) in Computing[23].

In terms of tertiary-level enrolment, there were over 75,000 students in 2016[24], of which the four main universities accounted for about half the number of students enrolled. The allotment is as follows:

- Northern Caribbean University – 3,641 (~4.9 percent);
- University College of the Caribbean – 3,301 (~4.4 percent);
- University of Technology – 12,565 (~16.8 percent); and
- University of the West Indies – 16,223 (~21.6).

[20] Source: Barnett Tech Park adds more BPO space, reclaims title, Jamaica Gleaner (November 2017)
[21] Source: Jamaica The Leading Outsourcing Destination in the Caribbean, JAMPRO
[22] Source: Jamaica Promotions Corporation (JAMPRO)
[23] Source: Costa Rican Investment Promotion Agency (CINDE)
[24] Source: Jamaica Promotions Corporation (JAMPRO)

All the universities offer degree programs in computer programming and software development, while some have implemented special initiatives to improve the skills and capabilities of their graduates (see box below).

KEY POINT

Examples of university initiatives to help build the caliber of IT talent:

- SAPNA, an initiative born out of the School of Computing and Information Technology (SCIT) at the University of Technology, aims to enhance the knowledge and technical skills of its student members through participation in enterprise software application development and deployment.
- The Northern Caribbean University (NCU) has been actively and consistently involved in the global Microsoft Imagine Cup. NCU students have been regional champions at least four times (2005, 2007, 2009, and 2010), and its team placed 3rd in the 2007 global finals in South Korea and won the Interoperability Award category in the 2010 global finals in Poland.

Source: Jamaica Promotions Corporation (JAMPRO)

The Heart Trust/NTA, which has a mandate to provide specialized training to ensure a steady supply of global services talent, also offers a broad range of IT training such as, Associate Degrees in Computer Network and Security, Information Technology, Web Design and Development; CISCO Certified Network Professional (CCPN) and CISCO Certified Network Associate (CCNA) courses; courses towards becoming Microsoft Certified; and a variety of other courses in areas such as Computer Repairs, Computer Technology, Office Software Applications, Webpage Designs, and Data Operations.

At the secondary-level, approximately 35,312 Grade 11 students registered to sit the 2016 CSEC examinations, of which around 12,000 sat the IT exam with a near 80 percent pass rate. However, improvement is required in the areas of mathematics and science, as the pass rate bordered just 50 percent in both areas[25].

Demand Drivers

Despite major thrusts to transform Jamaica into a digital economy, the consumption of digital services is low when considering the degree of internet penetration. Although the online population is growing steadily in Jamaica (shown above), it is still only about 45 percent of total population.

[25] Source: Jamaica Promotions Corporation (JAMPRO)

However, near 40 percent are active mobile social users, and like most developing nations, the share of web traffic is growing stronger in mobile devices over traditional devices (laptops and desktop computers). Currently, laptops and desktop computers have a 59 percent share of internet usage but is declining by about 8 percent year-on-year (YoY), while mobile phones hold a 35 percent share with 18 percent YoY growth[26].

Nonetheless, there is a lot of room for improvement to increase the pool of online users as this a critical factor pertaining to the sustenance of the digital objectives of Jamaica. It is also important in terms of fostering digital inclusion among the Jamaican people.

On the other hand, the Government is demonstrating its focus on building a knowledge-based digital society through several complementary initiatives. For example, approximately 1,000 youths were engaged in January 2018 for special ICT training and employment opportunities under the Technology Advancement Programme (TAP) – another initiative of the Universal Service Fund (USF)[27]. Further, the presence of large tech multi-national companies like IBM, Fujitsu, and Huawei, is an indication of the demand/supply of digital skills in Jamaica.

Digital Entrepreneurs

The digital entrepreneur network in Jamaica is very promising, with strong support from both the public and the private sectors. Some initiatives include:

- **Start Up Jamaica (SUJ)** – an accelerator program that helps young entrepreneurs tap into the global demand for creative mobile applications that solve real-world business and social problems, by building their business acumen and pitching them to equity investors ("Angels" or "Venture Capitalists") for potential investments. Currently, three Jamaican start-up companies, under the SUJ, received major investments from Oasis 500 – which is a leading investment company based in Jordan focusing on digital entrepreneurs. This was the first major investment by a foreign company in new local mobile start-up companies[28].
- **Youth Employment in the Digital and Animation Industries**[29] – a project aimed at fostering entrepreneurship and employability among Jamaican youth, with focus also on building a conducive and innovative ecosystem for the development of youth-led startups. Participants will receive training in animation, software coding, and online techniques; as well as angel investment, crowdsourcing and royalty-based funding opportunities. Establishment of the technology hub, Start Up Jamaica, is also a component of this initiative.

[26] Source: Digital in 2017: The Caribbean, Hootsuite
[27] Source: 1,000 youth to benefit from ICT training, employment, Jamaica Observer (December 2017)
[28] Source: An Oasis for Digital Start-Ups in Jamaica, World Bank (March 2015)
[29] The Youth Employment in the Digital and Animation Industries program is another initiative by the Ministry of Science, Energy and Technology, and is being funded by the World Bank to the amount of USD 20 million, during the period July 2014 to January 2020.

- **Digital Jam 3.0 "Caribbean Edition"** - a regional initiative that was launched by GoJ in partnership with the World Bank for a specific duration and was essentially a mobile app competition with follow-on e-lancing opportunities. According to the World Bank, over 4,000 youths gaining e-lancing jobs with digital enterprises in Jamaica, following the Digital Jam initiative[30].
- **Innovation Grant from New Ideas to Entrepreneurship (IGNITE)** – In April 2018, the Development Bank of Jamaica (DBJ) concluded its 18-month pilot phase of the IGNITE initiative, which was focused on enabling Jamaican entrepreneurs, particularly micro, small and medium-sized enterprises (MSMEs), with innovative business ideas to access grant funds to grow their business. The initial phase was marked as successful with the creation of over 200 full-time jobs and millions of dollars (JMD) in revenue generated by local entrepreneurs[31].

K E Y P O I N T

Jamaica Tech Entrepreneur to start the 'Amazon of the Caribbean'

Advanced Integrated Systems (AIS), a leading domestic tech company in Jamaica, plans to combine its expertise in digital systems with e-commerce expertise acquired through partnerships with Indian and other e-commerce experts, to launch the Caribbean's first major Internet retailer business, for regional products.

However, 14 percent of Jamaicans use credit cards which is an obvious obstacle for Jamaicans in the e-commerce space. The solution is likely the cashless and cardless Quisk platform (previously mentioned), which AIS brought to the market in association with the California-based mobile payments leader, Quisk.

AIS is also in the process of fully-digitalizing operations at the University Hospital of the West Indies (UHWI).

Source: Caribbean360 (February 2018)

[30] Source: Jamaica: A guardian angel of entrepreneurial talent in the Caribbean, World Bank (November 2015)
[31] Source: Prime Minister Lauds Development Bank of Jamaica, Jamaica Information Service (April 2018)

Key Takeaways

Overall, Jamaica's Digital Competitiveness shows some promising signs based on the past initiatives and planned activities. To summarize:

- In the **Future Ready Infrastructure** dimension, Jamaica shows strong competitiveness with the implementation of key initiatives such as the Jamaica Open Data Portal. However, full deployment of initiatives such as the NIDS will certainly help to improve Jamaica's overall position. High energy costs on the other hand may limit crucial developments such as Data Center facilities.
- The **Enabling Ecosystem** dimension, Jamaica demonstrates its intent to emerge as a digital leader in the Caribbean driven by its Public-Sector Transformation Program, establishment of eGoVJa, and several other initiatives as outlined in the ICT Sector Plan 2009-2030. To further improve, Jamaica will however need to ensure maturity of GOV.JM, and attract higher end IT services providers. Most importantly, Jamaica must focus on ensuring its policy environment is conducive to the successful launch of new digital initiatives.
- As for the **Human Capital** dimension, Jamaica has a very strong focus on developing IT talent and nurturing digital start-ups. However, a major downside is its low internet penetration which prohibits digital growth in Jamaica.

Based on Avasant's research and evaluation of various parameters, **Jamaica emerged as a "Challenger" in the Digital Competitiveness RadarView** (see below).

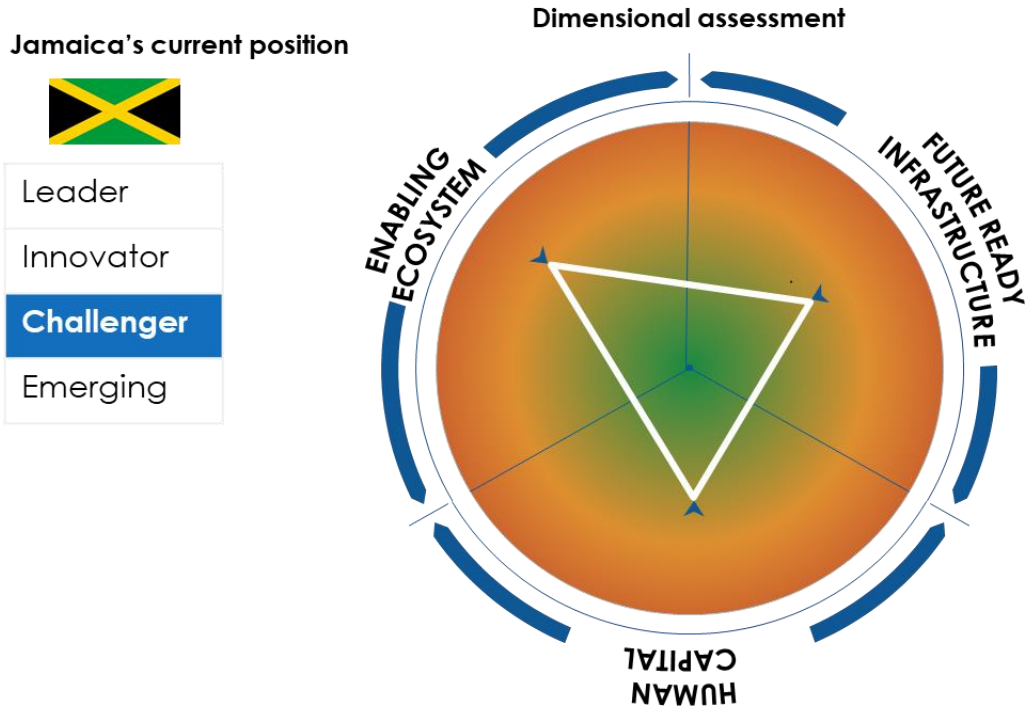


Figure 12: Digital Competitiveness RadarView for Jamaica

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About Avasant

With its headquarters in Los Angeles, California, Avasant is a leading management consulting firm providing digital transformation, sourcing advisory and governance services to Fortune 1000 clients around the globe. Our talented team of consultants, technologists and lawyers average over 20 years of industry-honed experience and have conducted 1,000+ engagements in over 40 countries worldwide. The combination of world-class resources and cross-industry experience enables Avasant to yield superior business outcomes for its global clients across five primary domains: Digital, Business & IT Transformation, Strategic Sourcing, Global Strategy, and Governance, Risk & Compliance.

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