

## **Digital business service transformation of Caribbean economies: A path to sustainability**

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**Abstract:** The convergence of economic globalisation and the rise of automation has shifted the economic drivers of many countries away from manufacturing to knowledge-intensive service industries. Caribbean states however, continue to lag their counterparts in other emerging economies, many of whom have embraced the opportunities provided by digital technologies to engage in the global economy. Thus far, attempts to spur innovation and diversify beyond the traditional sectors of tourism and primary commodities that drive most Caribbean economies have met with only modest success. Many of these efforts have been stymied by the institutional, location and capacity constraints characteristic of small island states. This paper analyses the opportunities offered by Information and Communications Technology (ICT) to overcome the limitations of thin resource endowments by revolutionizing existing business models and altering how economic value is created. It identifies several challenges that policy makers will have to overcome and provides recommendations for implementing a developmental model that applies ICT to transform the non-tourism service sector.

**Keywords:** Caribbean economies, digital business transformation, economic diversification, ICT enabled services, information technology, non-tourism services, small island states

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### **Introduction**

Reflective of their small size, the islands of the Caribbean are represented by tiny dots on the world map, with only six territories having a population greater than one million people. Although culturally diverse, many of these island nations share a common characteristic of low economic diversification and economic vulnerability to exogenous shocks (Herbert, 2019). Due in large part to their narrow economic base and limited domestic markets, these small island states have never attained the economies of scale needed to fully integrate into the global economy. The establishment of preferential trade agreements with the former colonial powers post-independence further exacerbated the situation, by stunting the drive to become more innovative and achieve true economic independence (Farrell, 2012).

The economic performance of the Caribbean region, while showing slight improvement in 2018, continues to be characterised by anaemic growth and declining or stagnant economic activity (Figure 1). The trajectory of the services sector has reflected this downward trend, with significant economic destabilisation being manifested in small states like Barbados and St. Lucia, where over 80 per cent of economic activity can be attributed to service-related activities (Gomez et al., 2017).

**Figure 1: Caribbean GDP growth rates (%), 2013-2018.**

	2013	2014	2015	2016	2017	2018
Anguilla	-0.7	5.1	3.1	-1.3	-7.7	-5.0
Antigua and Barbuda	-0.1	5.1	4.1	5.3	3.1	4.2
Bahamas	-0.4	-0.1	1.0	-1.7	1.4	2.5
Barbados	0.0	0.0	0.7	1.8	0.6	0.0
Belize	0.7	4.0	3.8	-0.5	0.7	2.6
Dominica	-0.6	4.4	-2.6	2.5	-9.5	-6.4
Grenada	2.4	7.3	6.4	3.7	5.1	3.5
Guyana	5.0	3.9	3.1	3.4	2.2	3.0
Jamaica	0.5	0.7	0.9	1.4	0.6	1.3
Montserrat	5.3	2.2	-1.9	0.5	-2.8	3.7
Saint Kitts and Nevis	5.5	6.1	2.1	2.2	1.3	2.4
Saint Lucia	-1.3	3.6	-0.9	3.4	3.8	2.1
Saint Vincent and the	1.8	1.0	1.8	1.3	0.5	1.3
Suriname	2.9	0.3	-2.6	-5.1	1.5	2.7
Trinidad and Tobago	1.0	-0.3	1.5	-6.0	-2.3	1.5
<b>Caribbean</b>	<b>0.9</b>	<b>0.7</b>	<b>1.1</b>	<b>-1.9</b>	<b>0.0</b>	<b>1.7</b>
<b>Goods Producers</b>	<b>1.6</b>	<b>0.4</b>	<b>1.1</b>	<b>-4.7</b>	<b>-1.2</b>	<b>1.9</b>
<b>Service Producers</b>	<b>0.3</b>	<b>0.9</b>	<b>1.2</b>	<b>0.8</b>	<b>0.9</b>	<b>1.6</b>

Source: Economic Commission for Latin America and the Caribbean (ECLAC).

Note: Weighted growth rates presented for Caribbean, goods producers and service producers.

Although there was an overall increase in Gross Domestic Product (GDP) in the Caribbean to 1.7% in 2018, projected growth rates remain low (McLean et al., 2019). Moreover, a holistic review of the economic outlook for countries within the Caribbean region reveals a far different prognosis than what obtains for similarly sized territories in other regions and emerging markets. Malta for instance, has shown remarkable resilience despite global economic turbulence (Baldacchino, 2019). This has largely been due to Malta's adoption of economic policies that leverage its expertise in financial services and information technology while creating a business climate that stimulates innovation and entrepreneurship. The overall conclusion is that while other small emerging economies have successfully adopted policies that led to economic growth, the Caribbean region has struggled to find the appropriate economic prescription to follow suit.

In light of this grim economic outlook, regional governments have increasingly looked towards the private sector to act as a driver of sustainable economic growth. As such, policy makers have undertaken a number of initiatives geared towards strengthening the local business sector and

enhancing national economic growth prospects. In Jamaica for example, the government launched the Self-Start Fund (SSF) to provide up to J\$1 million in financing to SMEs operating in the manufacturing, services, agro-industry, ICT and creative industries (McLean & Charles, 2020). To stem the emigration of skilled labour and bolster the development of a “knowledge economy”, several Caribbean countries – including Antigua and Barbuda, Barbados, Dominica, Grenada, St. Lucia, St. Vincent and the Grenadines, Jamaica and Trinidad and Tobago – have implemented various forms of bonding or service requirements for tertiary level students receiving government scholarships (Brissett, 2019). Additionally, virtually all Caribbean governments have used tax incentives to steer resources towards non-traditional sectors, such as film production in Trinidad and Tobago, where various rebates and credits are available based on qualifying local expenditure (Hart, 2017). However, the results of these efforts have been uneven, given that the regional private sector faces obstacles such as the size of local markets and the vulnerability of small developing countries to external shocks.

Caribbean Small Island Developing States (SIDS) also face several specific challenges that may not be applicable to other small island economies. Many regional governments are highly indebted and, based on World Bank statistics, perform far worse than small states in the Pacific and sub-Saharan Africa. This situation can be primarily attributed to large primary and current account deficits, resulting from low growth and insufficient fiscal restraint. The high levels of debt, coupled with weak reserves, have made it difficult for many Caribbean states to access international capital markets needed for investment in development projects.

The economic cost of natural disasters continues to be a significant factor, as the region regularly experiences catastrophic hurricanes that devastate the physical and economic infrastructure of many countries. The frequency of these natural disasters reduces government revenue and diverts valuable resources away from planned development investments toward disaster preparedness and reconstruction.

Additionally, despite the existence of several external partnership agreements, Caribbean countries have found it difficult to gain access to larger export markets due to burdensome regulatory requirements and bureaucratic hurdles that act as an artificial barrier to entry. Weak governance practices also inhibit economic growth and negatively impact overall competitiveness. This can largely be attributed to a lack of political will by regional governments and the power of public-sector workers to block reforms deemed disadvantageous to their current economic position. Increased corruption, particularly in state enterprises, also inhibits their profitability and export potential. The recent decision by the UK, one of the region’s top trading partners to withdraw from the EU has created added uncertainty about future market access.

Another serious challenge for the region stems from the uncompetitive telecommunications environment that typically leads to inefficiencies and increased cost. While significant investments have been made in developing modern digital telecommunications infrastructure, the persistence of telecommunication carrier monopolies and duopolies across the region unduly inflates the cost of services such as high-speed Internet access. Legacy agreements and licences in most countries often favour the dominant telecommunication operators and encourages monopolistic pricing policies. In turn, this often stymies efforts to provide ubiquitous infrastructure access to key economic sectors and creates obstacles to growth.

In this turbulent economic context, policymakers need to expand their focus and take a holistic approach to development by addressing structural impediments that hamper the productive capacity of their countries. In the current study, we suggest that as part of ongoing diversification efforts, Information and Communications Technology (ICT) can be harnessed to revolutionize the existing business models of Caribbean service firms and allow the region to achieve its developmental goals. Business process outsourcing (BPO) and professional business services have been identified as important emerging sectors in the region with the potential for growth (The Economist Intelligence Unit, 2015). Our central argument is that ICT is the catalyst for unleashing this potential and overcoming the resource constraints faced by small Caribbean island states.

This paper makes a number of contributions to the ongoing debate surrounding sustainable development in the Caribbean. First, it builds on prior research which has broadly examined efforts to develop an information society in Latin America and the Caribbean (Hilbert and Katz, 2003) by providing an assessment of the challenges and opportunities provided by ICT to expand the non-tourism services sector. Despite their small size, many of the larger islands of the English-speaking Caribbean have advanced telecommunications infrastructure fuelled by the expansion and dominance of the service sector in these economies and their geographic proximity to the United States (Sealy, 2003). ICT is thus positioned as a critical driver of service innovation, which research has shown to be a key ingredient in enhancing firm performance and building a sustainable competitive advantage at the national level (Arias et al., 2013). Moreover, the transformative impact of ICT is likely to be felt more powerfully in small economies where technology can be more quickly diffused at a national level.

Although the potential of ICT to spearhead national development is now widely recognized, there still exists a paucity of research on ICT's application in small states with relatively lower levels of economic development. The current paper thus extends prior work on economic diversification within the Caribbean (Mohan, 2016) by outlining a strategic approach to integrate ICT in a specific subsector of the economy – non-tourism services – which provides a new pathway to regional economic transformation. A review of the literature suggests that much less focus has been placed on this sector of the service economy, in comparison to the tourism industry, which has attracted significant research attention (Rubalcaba et al., 2016). To address this gap, the current research analyses the examples of several countries that have successfully used ICT to develop the non-tourism services sector to derive policy interventions and best practices to overcome the implementation challenges involved in applying ICT within a resource constrained environment.

In the following sections, we assess the status of the service sector in the Caribbean and highlight the opportunities provided by ICT empowered non-tourism services for accelerating economic diversification and growth. The paper focuses on the English-speaking small island member states of the Caribbean Community (CARICOM), which represents a cross-section of countries that differ in terms of development levels and resource bases. Among the ten countries included in this analysis (Antigua and Barbuda, Bahamas, Barbados, Dominica, Grenada, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, and Trinidad and Tobago) three distinct groupings of countries can be identified. First, there are countries such as Antigua and Barbuda, Bahamas, Barbados, Jamaica, St Lucia and St. Kitts and Nevis, that are heavily dependent on tourism. The next group comprises those countries of the eastern Caribbean (Dominica, Grenada, Saint Vincent & the Grenadines) with agrarian economies producing

traditional crops such as bananas and spices. Trinidad and Tobago is in a category of its own, with its more advanced level of industrialisation and an economy dominated by the petrochemical sector.

Despite their apparent diversity, a common feature of these islands is their focus on creating more service-oriented economies as a way to reduce their reliance on the traditional drivers of economic growth.

While ICT applications create conditions for ‘leapfrogging’ development barriers, it is unclear to what extent small Caribbean economies, struggling to create sustainable forms of national competitiveness, can benefit from such initiatives. Therefore, after an assessment of the challenges involved in pursuing such a strategy, we outline how information technology can be used to successfully transition regional economies in this direction. The paper concludes by providing several recommendations to policy makers on how best to leverage the power of ICT to transform the non-tourism services sector in order to create a vibrant and sustainable economic ecosystem.

### **The Caribbean Service Sector**

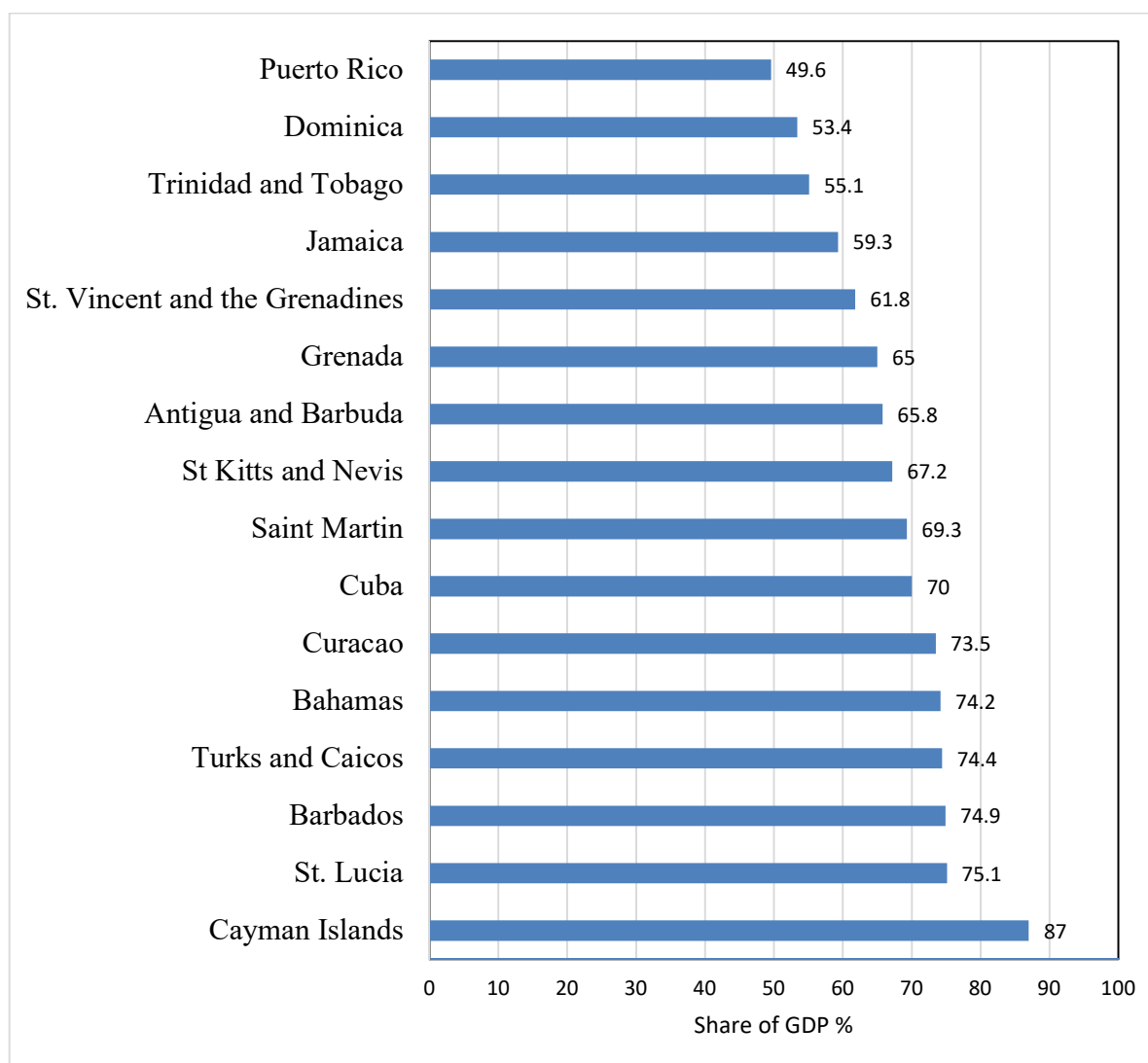
The services sector has been the most dynamic segment of the global economy, with services export share of the global economy doubling from around 9 percent in 1970 to over 20 percent by 2014 (Loungani et al., 2017). Investment into the sector has grown to such an extent that the modern services trade has now surpassed growth in the goods trade (Nasir & Kalirajan, 2016). While traditional services (social and personal services and hotels and restaurants) have registered weak productivity growth rates, modern business services (transport, financial intermediation, and telecommunication services) have registered growth rates comparable to those of some high-growth industries within manufacturing (Ghani & O’Connell, 2014).

Many emerging markets have recognized the potential of services in driving economic growth and are increasingly participating in the growing market for business services exports. South Asia's share of global exports of computer and information services for instance, increased from 10% in 2000 to over 25% in 2011 (Nasir & Kalirajan, 2016). Not surprisingly, the service sector is also a significant contributor to the GDP of many Caribbean states and territories ([Figure 2](#)), from 50% in Puerto Rico to 87% in the Cayman Islands, although much of the investment has been directed towards the tourism industry (World Bank, 2020). Indeed, the Caribbean derives a higher percentage of GDP from tourism than any other region in the world (Harrison, Jayawardena & Clayton, 2003). In 2019 for instance, the travel and tourism industry in the Caribbean supported some 2.8 million jobs and was responsible for 13.9% (US\$58.9 billion) of regional GDP (World Travel & Tourism Council, 2019).

The dependency by many Caribbean states and territories on the tourism sector to generate economic activity however, has increased the vulnerability of many economies to external shocks. The upward trend in visitor arrivals to the region since 2010 has masked the fact that globally, the Caribbean region continues to lose market share (Caribbean Hotel and Tourism Association, 2016). Moreover, Strizzi and Meis (2001) note that the increasing popularity and use of videoconferencing serves to depress the volume of business travel to and within the region. One factor that has inhibited the industry's growth potential is that access to the tourism product is costly and much of the control of the hotel industry lies with foreigners who do not possess the

same country interests as locals. The real benefits of tourism activities are thus often not fully optimized. Additionally, the tourism industry continues to be negatively impacted by the ineffective management of resources to avoid wastage and destruction of the natural environment (Harrison et al., 2003).

**Figure 2: Service Sector Share of GDP by Caribbean Country (%), 2018.**



Source: World Bank: World Development Indicators

<https://databank.worldbank.org/reports.aspx?source=2&series=NV.SRV.TOTL.ZS&country=>

In response to these limitations, Caribbean countries have sought to diversify their economies to reduce the negative effects of economic concentration (Moore & Carter, 2015). Attempts to stimulate the agro-processing and manufacturing sectors however, have met with limited success, resulting in Caribbean economies turning towards non-tourism services as a driver of economic growth (Ali, Berezin & Santana, 2002). The diversification process has resulted in a variety of service types emerging in different regional territories. Barbados, Dominica, St. Kitts

and Nevis, and the Bahamas for instance, have become major hubs for offshore banking. Jamaica has had notable success in expanding its creative sector while Trinidad and Tobago has focused on developing its engineering, marketing and financial service industries.

On a whole, however, few of these emerging service sectors have proven to be globally competitive. The blacklisting of several small Caribbean states and territories as tax havens (Eggenberger, 2018) and numerous downgrades of national economies by entities such as Standard & Poor's (Bustillo, Perrotti & Velloso, 2019) have stagnated the development of the financial services and off-shore banking sector in the region. Additionally, the Caribbean's foray into the provision of education services has suffered from concerns over accreditation and academic standards while efforts to provide medical back office services has not attracted many telemedicine operations, largely due to prohibitive telecommunication costs. The business processing service sector in the Caribbean also faces intense price competition from low-wage countries like the Philippines who target the lower end of the value chain. To compound this problem, many territories appear to be targeting similar service sectors, creating an unsustainable level of intra-regional competition.

It is within this context that many Caribbean countries have begun to systematically explore the opportunities offered by disruptive digital technologies to transform their national economies (Suominen, 2017). From a macroeconomic standpoint, using data from the World Bank Enterprise Survey, Grazzi and Jung (2016) suggest that countries that have accelerated access to high-speed internet connections have benefitted from an increase in firm productivity and performance. In south-east Asia, for example, significant investments by the Malaysian government in developing ICT infrastructure in recent years, has resulted in major improvements in the education, health and business sectors (Islam et al., 2012). This trend is also evident in the Caribbean, where Barbados-based Blockchain startup Bitt, launched the region's first blockchain based mobile money platform "mMoney" in Barbados in 2017 to provide low cost digital payment options to consumers and merchants. Additionally, Dunn (2016) describes how liberalisation and expansion of the telecommunications sector in Jamaica has enabled taxi drivers to operate their independent taxi services by using mobile telephony to reliably connect with their regular customers. Embracing the online services revolution thus presents a clear opportunity for Caribbean economies to leverage their competitive advantages of lower cost and access to a relatively well-educated English-speaking labour force. To date, however, Caribbean businesses and policy makers have not actively adapted their policies or business models to seize the opportunities presented by the rapidly evolving digital landscape, which has stymied economic development.

### **Global Examples of Services Transformation by ICT**

While there are numerous examples of countries that have leveraged digital technologies to foster economic development, these have tended to be larger, more developed nations that do not face the unique challenges imposed by geographical smallness. The transition to a technology-driven, knowledge-based service economy has thus proven challenging for small Caribbean territories that have historically relied on tourism or the export of commodities to generate foreign exchange. Within the Caribbean, only a few SMEs, particularly in Trinidad & Tobago and Jamaica, have successfully utilized ICT to expand into international markets and improve service quality (Mutula & van Brakel, 2006). Several governments have signalled their support for ICT integration through the development of National ICT Plans (Houng, 2004). However, Caribbean states and territories have not made enough of a concerted effort to improve the competitive

strength of existing service sectors (e.g. finance and health), nor to explore fully the opportunity to develop nascent ICT enabled service (ICTES) sectors, such as back office operations (e.g. accounting) and content development (e.g. animation).

In several Caribbean states and territories, structural inefficiencies and the lack of technology skills in the local workforce have had an adverse impact on the development and use of ICT in the service sector. For example, efforts in 2013 by a US designer of digital health solutions to recruit software developers in Trinidad and Tobago failed, due to the deficit of skilled programmers in the country (Burnett, 2014). In commenting on this development, the Trinidadian Minister of Planning and Sustainable Development bemoaned the lack of “apps” capability in the country. The company was eventually forced to shift recruitment efforts to Jamaica where there was a larger pool of skilled ICT talent available (Collinder, 2014).

Investment by several Caribbean countries, including Jamaica, Barbados, St. Lucia, and Trinidad and Tobago, to develop their local animation industry has also met with limited success. To date, only a few successful animation studios have been established within the region, primarily in Jamaica and Trinidad and Tobago, despite the provision of technical assistance grants and investment funding by international lending agencies (World Bank, 2014). The low barriers to entry in the animation industry and reductions in the cost of high-powered computer hardware has only served to increase the global competitive pressures faced by Caribbean animators and stymied growth in this sector.

Even the call centre industry, which has been the ICT-enabled service sector with the most significant growth in the Caribbean, has not been immune to disruption from Asian competitors which have a competitive advantage due to their economies of scale (Richardson, 2012). The fickleness of the industry within the region, which is primarily driven by demand from large corporate customers headquartered in foreign metropolises, was starkly exposed by the experience of a major call centre in Barbados, whose contract to service North American banks was terminated in favour of a location in the Philippines due to corporate cost cutting measures (Thompson, 2012). This example vividly illustrates the risk to Caribbean firms operating at the low end of the business process outsourcing (BPO) value chain.

Caribbean nations do not, however have to reinvent the wheel when it comes to using ICT as a diversification catalyst but can learn from the experiences of other developing countries and small states that have managed this transition successfully. Examples of select countries - which differ greatly in size, geographic location and level of development - that have strategically applied ICT to transform their service sectors are presented below.

### ***Low-Middle Income States in the Process of ICT Transformation: The Case of Costa Rica, Peru, Kenya and Ethiopia***

#### Technology services: The case of Costa Rica

Costa Rica is probably best known for agriculture, manufacturing and tourism; but, in recent years, the country has been making a push toward reinventing itself as the tech-hub of Central America. Costa Rica has a long history in technology dating back as 1997 when Intel Corporation established a microchip manufacturing facility there. Since then, Costa Rica has implemented policy measures to attract more globally recognized technology firms. Two of the



measures that have been successful in attracting foreign direct investment (FDI) were the establishment of technology parks and consistent investment in technology education.

Technology parks provide multiple services (e.g. data centres and high-speed internet services) and tax benefits to encourage the establishment of ICT companies and have attracted companies such as as VMware, IBM, HP, Microsoft and Amazon to the country. Additionally, according to *Diario El Financiero*, between 2000 and 2015, the education system produced close to four times the number of bilingual graduates in technology and science. Through these measures, there are over 546 IT companies in Costa Rica operating across fourteen sub-sectors including software development, e-commerce, digital media and e-learning. In 2018, Costa Rica accounted for 0.04% or US\$300 million, worth of global ICT exports.

#### Financial services: The cases of Peru and Kenya

The financial services sector in the emerging economies of Peru and Kenya has successfully utilised ICT capabilities to develop more efficient and cost-effective payment systems and improve overall performance through continuous innovation of its products and processes. According to the International Financial Corporation (2017), similar to the Caribbean, the financial system in these countries is characterised by low levels of bank penetration and underdeveloped technology ecosystems where telecommunication companies are the leaders. However, these countries were able to circumvent these issues via the use of their existing ICT capabilities. In Peru, the Association of Banks, along with individual banks, mobile phone companies and the government, launched BIM (*billetera movil* or mobile wallet) in 2015 as a mobile money platform for interoperable services offered by both financial institutions and mobile phone companies. Kenya also developed a mobile money system (M-PESA), which has transformed the payment system in the country, hitting a record US\$33 billion in 2016 and accounting for 67 percent of transactions tracked by the National Payments System. Additionally, the commercial banks introduced a system to provide lending services directly on to mobile phones, resulting in US\$277.2 million in disbursed loans in 2014.

#### Health services: The case of Ethiopia

In a World Bank Report, Lixi and Dahan (2014) highlighted that ICT capabilities have revolutionised the efficiency of health service delivery in many developing countries. Advancements in mobile communication technology have improved disease prevention, treatment support, patient tracking and logistics management systems. Ethiopia, for instance, utilized ICT to implement an electronic medical records (EMR) system called SmartCare that is used to store and retrieve health data. The use of EMRs by health care providers and pharmacists is a well-established contributor to the reduction of errors in diagnosis, treatment and prescriptions. The country's health system was bolstered by the use of telemedicine and mobile clinical decision support systems that provide expert support for field health workers.

In 2007, Ethiopia participated in the Indian Space Research Organization (ISRO) Project that provided telemedicine links with ten leading specialist hospitals in India via satellite. This model was later replicated in Botswana (2009), Nigeria (2009) and Rwanda (2008). Additionally, the *mHealth* clinical decision support system provides health workers with real-time support from internists, general practitioners, pharmacists, laboratory technicians and social workers. A similar system called *104 Advice* was introduced in India to provide medical advice for over 10 million

consumers and health practitioners. Since their introduction, there has been a substantial improvement in the quality of healthcare services provided.

***Small High-Income States that have Successfully Utilized ICT for Economic Transformation: The Case of Luxembourg and Mauritius***

Financial services: The case of Luxembourg

Luxembourg, which until the 1970s was an industrial nation known for mining and steel, has built its reputation as one of the largest exporters of financial services in the world, accounting for 14.12% or US\$91.2 billion worth of global financial exports in 2018. This achievement is noteworthy since Luxembourg is one of the smallest sovereign states in Europe with a population of only 614,000 persons. Growth of the ICT sector has paralleled the growth in the financial space and in 2016, the country launched a strategy to further accelerate the growth of the ICT sector and move towards becoming a digital nation.

Luxembourg used its favourable regulatory environment to attract large ICT companies such as Skype, Amazon, PayPal, eBay and Sony to establish operations in the country and then leveraged their presence to facilitate R&D transfer for the development of the ICT industry. As a result, Luxembourg was ranked fifth overall in the EU on the European Commission's Digital Economy and Society Index (DESI) and second in the connectivity category in 2018. The country has transformed into a European "big data" hub with an ecosystem of ICT companies that supports other sectors such as the financial, media, clean tech, logistics and automotive sectors. The financial sector in particular, benefits from the data storage, connectivity and security services offered by the ICT firms, which has allowed the sector to evolve from offering traditional services to specialize in fintech services such as ecommerce payment solutions, Blockchain, insuretech and fundtech, amongst others. These efforts have contributed to an increase in Luxembourg's GDP/capita by around 28%, from US\$81,570 in 2005 to US\$113,314 in 2018.

ICT enabled services (ICTES): The case of Mauritius

With a population of some 1.27 million, Mauritius has successfully leveraged ICT to generate robust economic growth since independence. Between 1968 and 2017 real GDP grew 4.7% on average, experiencing significant productivity gains along the way as the country moved from an agro-based factor driven economy to a manufacturing and services hub, particularly IT enabled services (ITES) and business process outsourcing (BPO) services. ITES and BPO contribute some 7% of GDP, employing around 18,000 people and primarily servicing the USA and European markets. Therefore, not surprisingly, the country is ranked in pole position on the African Transformation Index (ATI). Some enabling factors that allowed Mauritius to achieve such transformative growth include the relative ease of doing business, advanced infrastructure and a favorable regulatory environment governing the ICT sector.

The evolution of the IT enabled services sector into what it is today is a result of a series of carefully calculated decisions dating back to the early 2000's when the Government implemented significant legislative, regulatory, human capital and infrastructure development initiatives. Priority measures included developing strong fiber optic connectivity, liberalizing the telecommunications sector, the establishment of technology parks and embedding ICT training throughout the education system. Additionally, regulatory and legislative reforms were introduced

to achieve compliance with international standards for cybercrime, data security and usage, electronic transactions and other critical areas of ICT.

### **Lessons learned and opportunities for diversification**

What emerges from a critical analysis of the above country profiles is that ICT cannot singularly account for economic growth in and of itself, but acts synergistically in an enabling environment as a catalyst for national development. The examples suggest that economic transformation via investments in ICT can occur, irrespective of a country's size or stage of development. It is also clear that small states can also leverage their comparative advantages to successfully compete at various locations on the global value chain. Somewhat reassuringly, the economic trajectories of these countries illustrate that small size and limited resources does not automatically equate to economic collapse due to globalisation. Indeed, these countries are proof that small states can succeed economically in spite of their vulnerability if they adopt policies conducive to good economic governance. This provides significant opportunity and promise for the small island states of the Caribbean region, who are seeking to overcome significant resource constraints and lack of overall economic competitiveness.

Although individual states have their own unique historical experiences and economic circumstances, several lessons can be gleaned from observing the services transformation process across these diverse economies. Most glaringly, the examples highlight the importance of state planning and effective policy-making in facilitating the growth of an ICT-based service economy. This is particularly relevant for developing countries where the private sector is often constrained in its ability to function as the engine of economic growth. The role of the government in mobilizing resources to develop the digital infrastructure, so vital to the supply of ICT enabled services, is thus central to the transformation process. Paradoxically, while often viewed as a constraint to development, smallness appears to offer advantages to microstates by enabling more effective centralised control and implementation of government policy

Additionally, the experiences of Costa Rica and Mauritius illustrate the degree to which the provision of ICT-enabled services is dependent on developing the national pool of human capital. Investments in the education sector, especially in technical subjects, appear to have spill-over effects in providing a workforce that can fill the jobs created within the evolving service industries. Finally, a hallmark of successful economic growth in these economies has been the creation of a business-friendly economic environment that is capable of attracting investment into value-added sectors of the economy. The presence of robust institutions and regulatory frameworks within these countries can thus be viewed as necessary components of any successful diversification strategy. Forecasting economic winners and losers is often prone to error. But Caribbean countries benefit from a few competitive advantages that provide scope for diversification into the non-tourism service sector. The ability to communicate in English and relatively high levels of literacy in the region make Caribbean states attractive locations for services such as call centres that require a significant amount of customer contact. The proximity to major US and European markets with compatible time zones during business hours also provide Caribbean territories with a competitive locational advantage over lower cost Asian providers for the provision of business services that require real-time connectivity (e.g. secretarial support).

Moreover, most Caribbean territories have continued to shift away from nationalistic policies enacted post-independence that were aimed at protecting local industries and embraced free-market reforms. As a result, many jurisdictions allow unrestricted capital flows and have relatively stable currencies, which provide a more hospitable climate for private investment by foreign-based information-processing firms. The information-processing industry is an attractive option for diversification since it provides absorptive capacity at various points on the value chain (e.g. low skilled data entry operations to computer-aided design applications). Not surprisingly therefore, business process outsourcing has been identified by the Caribbean Development Bank (2016) as one of the few service sub-sectors projected to grow in the region.

Other comparative advantages include stable governments, low wages relative to rates in most developed countries, and significant upgrades to the telecommunications infrastructure that are underway in many territories. These cost advantages provide the foundation for Caribbean service providers to operate at competitive price points, comparable to that obtained in other developing countries. Marrying these environmental factor conditions with the unique cultural attributes characteristic of the Caribbean, well positions the region to provide services to the film and animation industries. Capitalising on this opportunity however, will require timely intervention and support by both public and private stakeholders in order for this underdeveloped industry to realise its full potential.

Opportunities also still exist in the area of financial and banking services. Territories like Barbados and the Bahamas have established a strong reputation as leading destinations for offshore financial services. Historically, the growth of the industry was spurred by the opaque and lax regulatory environment present in those jurisdictions. Recently, analysts have begun questioning the sustainability of the offshore banking industry in the Caribbean due to the increased scrutiny by financial regulators and the need for countries to meet the requirements of the Foreign Account Tax Compliance Act (FACTA). The “blacklisting” by the EU of several CARICOM off-shore financial centres as non-cooperative jurisdictions for tax purposes does not augur well for the growth of the industry. One way in which countries in the region can leverage the existing expertise developed in the financial sector is by providing business processes to banking and financial firms based in developed countries. As the pace of de-risking of global banks from the Caribbean intensifies, it provides opportunities for the creation of new jobs such as transaction processing and investment banking analytics. It may also be possible to establish joint ventures between international financial services providers and regional partners to serve the needs of global clients.

While the efficiencies associated with outsourcing have led many financial corporations in the developed world to rely on business services offered by companies located in emerging markets, using ICT capabilities to transform existing services and provide a diversified range of new ICT enabled services in Caribbean states comes with potential challenges. Several factors that threaten efforts to leverage ICT as a transformative agent in developing non-traditional service industries within the Caribbean are outlined in the following section.

### **Challenges in applying ICT for economic transformation**

Despite the extensive fiscal support that has been provided by Caribbean governments to nurture the non-tourism service sector, generating economic growth has proven difficult for a range of reasons stemming from limited human resources, inadequate infrastructure, high wages but, above all, the inability to achieve economies of scale due to small domestic markets (Connell 2013). Attempts to establish call centres and cyber parks within the Caribbean region, for example, have failed to achieve the economic objectives that have been secured in other South American and Asia-Pacific jurisdictions (Burgess, Drinkwater & Connell, 2005). Additionally, protectionist policies designed to nurture infant industries have often yielded economically feeble enterprises that wield substantial political power (Shrank & Kurtz, 2005). These industries are more likely to seek continued support and protection from the state, rather than develop the dynamic efficiencies necessary to gain a competitive advantage.

Erikson and Lawrence (2008) have highlighted the shortage of skilled personnel to staff positions within the service industry due to the outbound migration of talent from the region as a major challenge facing the various service sectors that have been targeted for growth. This is a particularly thorny issue to deal with since the percentage of the workforce that has formal training in advanced ICT related areas is quite small, thereby limiting the human resource talent pool from which to recruit personnel for the ICTES sector. The root of this problem seems to lie with the education system in the region, which does not focus on high level ICT related training and skill development as a priority area at any level. Plans to create a cadre of knowledge workers by integrating Information Technology into the school curriculum have thus far yielded uneven results. Pilot projects to provide computers to children at the primary and secondary school level have been criticised for their provision of limited quantities of hardware and software that have quickly become obsolete (Phillip, 2011). The IT curricula have also been accused of focusing on academic qualifications rather than practical skills revolving around programming-related elements and app development (Gay, 2011).

Labour shortages are compounded by rising levels of criminal activity within several states and territories: Jamaica, St Kitts and Nevis, St Lucia, St Vincent and the Grenadines, Dominica and Trinidad and Tobago are ranked among the countries with the highest per capita murder rates in the world (LaFree, Curtis & McDowall, 2015). This trend has accelerated the flight of human capital from these countries. Some 3.6% of the Caribbean's GDP is lost due to direct crime related costs (Jaitman, 2017). The migration of high-skilled workers due to the fear of crime is particularly deleterious for a region where the pool of technologically proficient workers is shallow and not easily replenished.

Another limiting factor is the relatively underdeveloped infrastructure environment in the region, particularly in the telecommunications sector, which has increased the cost of conducting business. According to Alam and Noor (2009), SMEs in developing economies are less likely to adopt ICT when the initial set-up cost is high, so a special effort will have to be made to lower transaction costs as far as possible. Direct costs usually include the cost of ICT equipment and networks, software and re-organisation, as well as ongoing costs. Additionally, indirect costs of associated technical services and materials (power, logistical support, maintenance and repair, troubleshooting) may be equally high. However, since small service firms are more likely to have difficulty in obtaining financial resources, ICT adoption becomes less of a priority compared to covering more operational costs. The fiscal incentives provided by governments to attract

investments into non-traditional sectors has also met with limited success since investors are prone to reduce their involvement once these incentives are no longer available.

The transformation of traditional services is further challenged by the fact that small service firms may not be convinced about the relevance or suitability of ICTs to their businesses. Alam and Noor (2009) suggest that SME owners may not have the time, information and knowledge to fully appreciate the transformational power of ICT adoption, thus making it more difficult to implement. Indeed, in many Caribbean territories the primary business goal for small firms tends to be short-term survival rather than innovation or long-term economic growth.

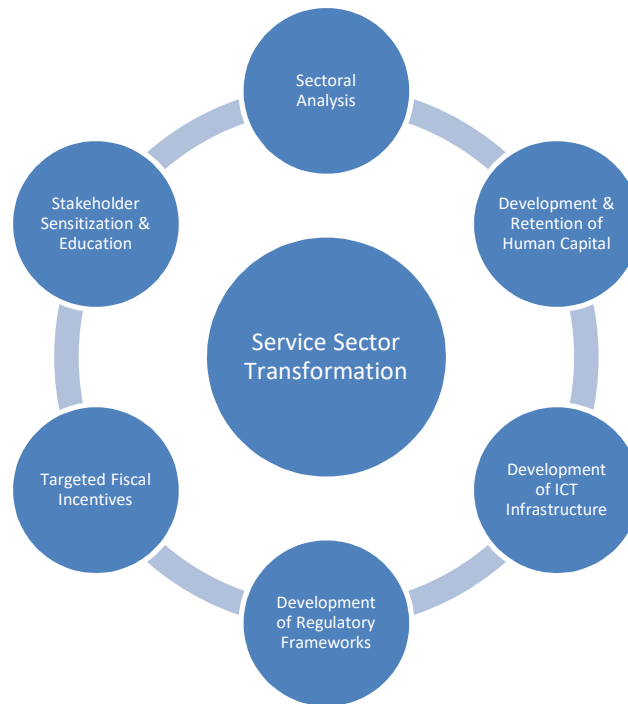
Deficiencies in the current legislative framework regarding the use of ICT and protection of data and intellectual property have also had a negative impact on the adoption of ICT by service firms. Many of the current laws do not adequately protect users against cyber related issues such as privacy, fraud and other cyber-crimes. Only twelve (41%) of 29 Caribbean states currently have data privacy and protection legislation in place: this is among the lowest diffusion rates for such legislation worldwide (Greenleaf, 2019). While developed countries have expended considerable effort strengthening and updating their data privacy laws, the Caribbean region has only recently begun formulating and enacting such legislation. The institutional voids in many territories also calls into question how effectively the existing laws can be enforced (a much more difficult undertaking). Therefore, in the Caribbean, governance of ICT related issues remains a grey area which makes it less attractive for companies to rely on ICT as a competitive advantage.

Each of the factors identified above matters individually, but their cumulative impact is sufficient to act as an impediment to effectively leverage ICT to transform the service sector in regional economies. In order for Caribbean states to improve their global competitiveness, investments need to be made to develop a critical mass of talent and expertise in the non-traditional service sector. The introduction of radical technological innovations may also allow poorer, underdeveloped Caribbean economies to “punch above their weight” and compete effectively against their more industrialized rivals in global markets. Exploiting the potential of ICT therefore requires targeted policy interventions, some of which are specific to the service sector while others affect the overall business environment. These are discussed in detail below.

### **Policy implications**

For Caribbean economies, rapid economic development may require proactive government intervention rather than relying on market forces to promote structural transformation (Hausmann and Klinger, 2009). The rationale for Caribbean governments investing in ICT, as summarised in this current work, remains compelling since it has been estimated that such investments would yield a 1-2% increase in GDP for such key sectors as agriculture, tourism and education (McNaughton et al., 2016). A summary of recommended policy interventions required to successfully implement ICT in the services sector is provided as [Figure 3](#).

**Figure 3: Policy Agenda for Service Sector Transformation.**



*Source:* Author conceptualisation.

As a first step, an assessment would determine the most attractive ICT enabled service sectors for development. This will require strategic thinking by governments and business stakeholders about ways in which the non-tourism service sector can be developed so as to leverage the region's competitive advantages. In so doing, they need to be mindful of the imperative to move beyond simply competing on cheap labour and develop a service sector that can compete at multiple positions on the global value chain. The efficient deployment of resources toward high growth sectors with strong value propositions should provide an opportunity to create a sustainable competitive advantage over service providers in more established localities. Addressing the factors that act as bottlenecks toward investment and growth of these sectors then becomes an urgent policy imperative for regional economies seeking to escape the trap of economic concentration.

An urgent priority for Caribbean states who wish to use ICT to unlock the potential of service industries is to develop the region's human capital. Achievement of this transformation requires a highly skilled service-oriented labour force. Therefore, efforts should be made to develop basic ICT skills from as early as the primary and secondary school levels. At tertiary level, the education system should bring a closer alignment between education institutions and businesses to ensure that individuals are provided with relevant higher order ICT skills and vocational training that meet the needs of the service sector.

ICT can also be used to mitigate the effect of the region's brain drain and overcome size disadvantages by leveraging the digital networks linking skilled personnel within the national diasporas and those residing within the region. By removing these geographic boundaries, ICT facilitates access to a wider pool of human resources than would otherwise be available for economic development. A critical prerequisite for the retention of skilled personnel, however, is reducing the effects of crime. Caribbean destinations need to become more attractive to employees and prevent them from being lured by the safer neighbourhoods and the more lucrative employment opportunities available outside the region.

The provision of modern reliable ICT infrastructure, such as efficient high-speed broadband and mobile networks, is a basic ingredient for ICT-enabled modern services. The cost of leased circuit telecommunication lines to the United States in the Caribbean for instance is sharply higher than what exists in countries like Mexico and India; this stifles the development of the ICTES sector (Berizin et al., 2002). Significant upgrades to the ICT infrastructure within the region are thus necessary in order to capitalise on the benefits available from employing digital technologies.

Companies conducting business on ICT platforms require the confidence that there are regulations and legislation in place to deal with cyber-related issues such as security, privacy and consumer protection. Therefore, cyber-security, spam, cross-border cooperation and provisions for low-cost online dispute resolution mechanisms need to be prioritised on the legislative agenda. Steps in this direction have been taken with the setting up of 'National Information and Communication Technologies (ICT) Strategic Plans' in Barbados, Trinidad and Tobago and several other territories. The protection of intellectual property rights takes on added importance for service providers operating in a digital world and the region needs to take firm steps to ensure that the necessary regulatory framework is deployed to encourage the application of ICT in the service sector. Finally, there is a need for regional efforts to reduce regulatory barriers to trade in services and spur intra-regional services exports.

The main instrument that governments have historically used and which they continue to wield is the provision of tax incentives for economic sectors that meet predefined criteria. Rather than the current broad-based approach, which provides incentives for firms across a range of industries, consideration could be given to implementing programs that specifically target service firms that incorporate digital elements. The removal of duties and taxes on imports of technology inputs to the service sector, for example, would provide an incentive for these SMEs to embark on costly upgrades to their ICT infrastructure. Tax laws would also need to be reconfigured so as to encourage service exports and the development of a vibrant domestic service sector. Despite the obvious benefits of such a policy, it is questionable whether countries in the region can afford to provide sufficient incentives due to the fiscal constraints many are now experiencing. Initially low incentive levels may thus have to be increased over a longer timeframe as part of a sustainable economic strategy.

While many business owners rely on their smart phones for business operations, they often lack a deep understanding about the transformative effects of technology. There is a pressing need therefore to embark on awareness and education campaigns aimed at increasing the knowledge of service providers interested in incorporating ICT as part of their business model. Far too often, decisions surrounding ICT initiatives are made by the state without adequate input by key stakeholders, leading to a lack of buy-in during implementation. Engagement with the sector



should thus be a central feature of an ongoing process to explore and promote the use of alternative service delivery channels (including via mobile devices) and business process realignment. Strengthening collaboration between industry practitioners and academia engaged in ICT research and development can help bridge the knowledge gap and speed the adoption of ICT within the sector. Specialized government units may need to be established to support and encourage service firms to incorporate ICT as an integral part of their operations and provide guidance on legal or technical issues that they may encounter.

## **Conclusion**

Caribbean states and territories today face a challenging economic environment; and the resource-based model that has dominated development policy within the region does not appear to offer a viable strategy for their sustainable economic growth. While tourism remains a cornerstone of many small Caribbean economies, a more diverse service sector is needed to address the vulnerabilities that are inherent in relying on a single sector. Advancing the deployment of ICT infrastructure to strengthen the region's non-tourism service sector is proposed as an alternative framework to spur economic activity and maximise the region's future prospects for development. Transforming the service sector via effective policy interventions and private sector initiatives provides the Caribbean with opportunities for economic growth; but this is contingent on overcoming the structural challenges confronting ICT adoption. The recommendations made in this paper can thus be viewed as an attempt to mitigate the 'policy sclerosis' existing within the region (Ruprah, Melgarejo & Sierra, 2014) that can stymie the achievement of this critical economic objective.

## **Disclaimer**

This article has not benefited from research funding.

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