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Article

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OPERATIONS, INFORMATION & TECHNOLOGY | RESEARCH ARTICLE

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Conceptualizing the foundations of a regional e-commerce strategy: Open networks or closed regimes? The case of CARICOM

Pearson A. Broome^{1*}

Abstract: Although there has been much to boast about in advanced countries regarding e-commerce as a viable business strategy, many doubt its application to developing countries. Several papers examine individual case studies from advanced developing countries but few have presented a systemic focus on the ecosystem of an e-commerce sector, and even fewer on small island developing states (SIDS) such as the Caribbean, and those often lack a comprehensive awareness of the sector, and/or are dated. The central aim of this conceptual paper therefore is to address this lacuna by discussing the importance of understanding the broader political, social, cognitive, and economic issues and their implications and applications inherent in the development of an e-commerce sector. From this, the main objective will be to conceptualize an e-commerce strategy for their development. To realize this main aim, the article leverages a historical comparative perspective that critically examines causal analysis, experiences, and iterative processes gleaned over time from a structured analytical comparison of several national and regional case studies to conceptualize the factors and conditions under which e-commerce may contribute to, and can be adopted for development. As its main objective, the paper then presents a policy framework of recommendations guided by mutually

ABOUT THE AUTHORS

Dr. Pearson Broome is a lecturer in Political Science and the **Programme Coordinator for the MSc. e- Governance for Developing Countries** and joint **Programme Coordinator for the Post-Graduate Diploma in Public Sector Management**. He has diverse working experience in the Caribbean and served as a Consultant for UNDP, the Commonwealth Secretariat and CSME Unit, CARICAD, CARICOM Secretariat. His research interests include: e-governance/e-government/e-commerce/e-democracy, with particular emphasis on the theoretical approaches and the institutionalization of ICTs; ICTs and the globalisation process focusing on outsourcing, trade, investment and technology transfer flows; the evaluation of national ICT Policies and National Systems of Innovation, the politics of science and technology policy, deregulation and Telecommunications policy, new public management and the restructuring of state bureaucracies, and public policy and its application to public sector management in developing countries.

PUBLIC INTEREST STATEMENT

Although there has been much to boast about in advanced countries regarding e-commerce as a viable business strategy, many doubt its application to developing countries. Several papers examine individual case studies from advanced developing countries but few have presented a systemic focus on the ecosystem of an e-commerce sector, and even fewer on small-island developing states (SIDS) such as the Caribbean, and those often lack a comprehensive awareness of the sector, and/or are dated. The central aim of this conceptual paper therefore is to address this lacuna by discussing the importance of understanding the broader political, social, cognitive and economic issues and their implications and applications inherent in the development of an e-commerce sector. From this, the main objective will be to conceptualize an e-commerce strategy for development. Such a macro discussion is necessary if, as development advocates and citizens, developing regions like CARICOM are to realize any gains.

reinforcing macro processes of change that converge at the intersection of business, policy, and information technology to inform development advocates, policy planners, and citizens within the region of what such a strategy should entail.

Subjects: Area Studies; Development Studies; Economics, Finance, Business & Industry; Geography; Social Sciences

Keywords: e-commerce strategy for national and regional development; ICTs in CARICOM/Caribbean; regional electronic marketplaces; small and medium enterprises (SMEs); CARICOM e-commerce strategy; Caribbean e-commerce

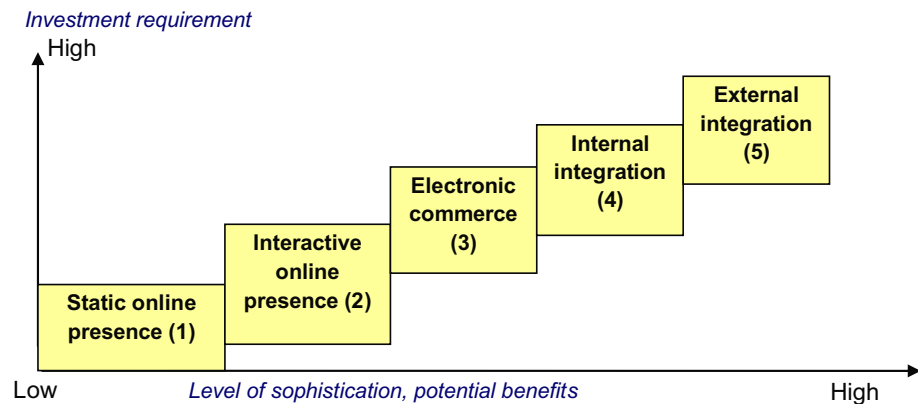
1. Introduction

A new reality beckoned to the Caribbean Community¹ made achievable through rapid improvements in information and communication technologies (ICTs). This reality included the potential for significantly facilitating development through policy interventions by exploiting applications of the internet and other forms of ICTs. Initially, CARICOM countries adopted a posture of accommodation, opting for positioning themselves to take advantage of the United States of America's quest for cheap offshore data entry and other basic information services. As such, policy decisions focused on the need to make adjustments to their telecommunications regimes in order to become more attractive as a host for offshore information-based business entities (Broome, 2003; ICT Pulse, 2011a, 2011b; Barbados Advocate, 2009). Recent evidence suggests decreasing and lackluster returns from the offshore outsourcing sector (ICT Pulse, 2011b) and so the emphasis has shifted in many countries towards crafting a reasoned, structured response to the opportunities created by e-commerce as an integral part of their development agenda, but not without its challenges. The central aim of this conceptual paper therefore is to discuss the importance of understanding the broader political, social, cognitive, and economic issues and their implications and applications inherent within an e-commerce sector, with the main objective of conceptualizing an e-commerce strategy for development. Section one, argues that for there to be effective development of e-commerce, several interconnected and mutually reinforcing factors that will impact on its growth and development need to be examined. In addition, while many of the e-commerce benefits have been realized by firms in developed countries, section two argues that most businesses within the Caribbean are small and medium-sized enterprises (SMEs) and face considerable challenges such as an immature banking sector and the challenges of introducing and facilitating new technological orientations such as regional and national internet exchange points (R/NIXPs). Thus, rather than the genuine emancipatory benefits promised by the open networks of the internet, path-dependent hierarchical structures are reinforced, contributing towards a closed regime. Section three lays out some policy guidelines and mutually reinforcing changes that must emerge at the intersection of business, policy, and information technology to inform a regional policy.

2. Framing our analysis: Interpretive methodology

Although there is much work on e-commerce in developing countries it is disparately scattered into silos of information that prevent policy planners from formulating effective regional ICT strategies. This article takes an *exploratory qualitative approach*, tracing the evolutionary development of e-commerce in developing countries by analyzing extensive secondary materials such as comparative policy documents of case studies from a range of developing countries at various stages of e-commerce development as seen through the building stages of Figure 1. Like other regional groupings such as Sub-Saharan Africa, the countries of the Caribbean region have the lowest penetration of e-commerce (Internet Society, 2014; UNCTAD, 2015). This is so because they reflect differing levels of development characteristics both infrastructural and socioeconomic, that have created, but also impeded the acceptance and growth of e-commerce. Likewise the CARICOM region must significantly consider the rapid progression and changes affecting international financial markets and other regional and international trends impacting the global transfer of capital that can affect CARICOM integration. And so, because of their shared history and desire for a common future it is important to treat the Caribbean as a single case study.

Figure 1. Modified ebusiness/ecommerce stages of growth adapted from McKay and Marshall (2004, p. 11).



This historical comparative approach is relevant because it allows a comprehensive analysis that enables the researcher to focus on determining the political, social, economic, and cognitive issues that seriously impact on meaningful development of the sector. Moreover, a lack of official and comparable statistics on e-commerce in CARICOM makes a quantitative analysis of developmental trends near impossible at this time. This article therefore employs an interpretative approach that synthesizes the challenges and opportunities that explain the diffusion of e-commerce in the region. From this, one can see the emergence of a conceptual framework with which to frame a regional policy that can also have policy implications for other regional groupings attempting to adopt e-commerce as a growth strategy.

3. The promise of e-commerce as the new growth strategy

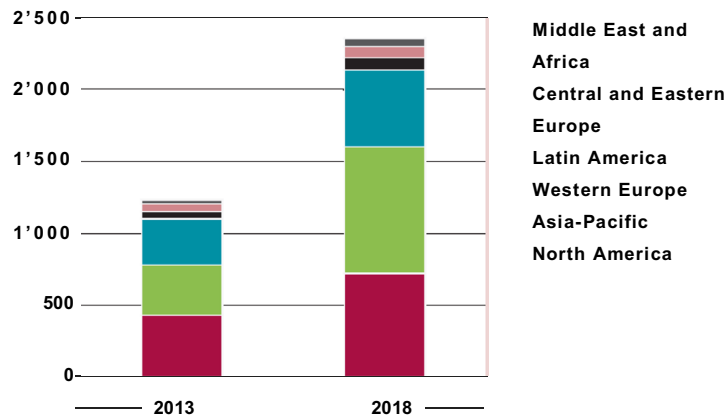
Electronic commerce is broadly defined as the production, marketing, sale, and/or delivery of goods and services via electronic means (Organization of Economic Cooperation and Development [OECD], 1997a; Laudon & Traver, 2012; Turban, King, Lee, Liang, & Turban, 2015; World Trade Organization, 2008) and it has affected the global economy in many ways. Despite the downturn in the global economy, several forecasts continue to predict huge potential in global e-commerce over the next several years led by corporate giants such as Alibaba.com. It is estimated by UNCTAD that the value of global business-to-business (B2B) e-commerce in 2013 exceeded \$15 trillion, with more than three quarters of the total accounted for by, in order of magnitude, the United States, the United Kingdom, Japan, and China. Available data for the top 10 countries provided by e-commerce associations registered revenues in these countries amounting to just over \$1 trillion in 2013 (Figure 2). China had the largest market for both the number of online buyers and revenue, whereas the United Kingdom of Great Britain and Northern Ireland had the highest average expenditure per online buyer, at almost \$5,000 in 2013 (UNCTAD, 2015, p. 12).

The report further states that the importance of e-commerce increased substantially in the past decade with global business-to-consumer (B2C) e-commerce growing faster and accounting for an estimated \$1.2 trillion in 2013. Of note in developing countries, particularly in Asia and Africa, B2C e-commerce is rapidly expanding, while China has already emerged as the largest global market for B2C e-commerce—measured both by number of online buyers and by revenue. Likewise the share of the Asia and Oceania region in global B2C e-commerce is expected to surge from 28 to 37% between 2013 and 2018, and that of the Middle East and Africa to increase slightly from 2.2 to 2.5%. Conversely, the combined share of Western Europe and North America is expected to fall from 61 to 53% (see UNCTAD, 2015, p. XI).

E-commerce has brought considerable changes in the economics of marketing channels, and changes in economic sectors and patterns of physical distribution, erasing in the process many of the physical constraints that impeded business expansion in the past. On paper, the development of e-commerce for the Caribbean makes sense. This is because Caribbean businesses that were once

Figure 2. B2C ecommerce sales worldwide by region; 2013 and 2018 (\$billions).

Source: eMarketer.com, July 2014, adopted from, UNCTAD (2015), p. 14. Note: Estimates are based on the analysis of data from other research firms and government agencies, historical trends, reported and estimated revenues from major online retailers, consumer online buying trends, and macro-level economic conditions. Data include products and services ordered and leisure and unmanaged business travel sales booked using the Internet via any device, regardless of the method of payment or fulfillment.



distanced from the main business centers of the world by the prohibitive advertising costs that constrained the development of serious business entities now have the global profile to enhance their ability to deliver products in the required volume. In addition, over the past decade, e-commerce has emerged among other distribution channels as the commercial solution of the future in European countries as well as globally (ECLAC, 2013; Lorenzini, 2012) with new evidence indicating significant productivity gains from selling over the Internet with the greatest effects accruing to smaller enterprises and in services industries (UNCTAD, 2015, p. xi). So, for example, the Economic Partnership Agreement (EPA)² that was signed by 14 CARIFORUM³ member States and the 27 European Union (EU) member states in October 2008 strategically concurs with such notions. Under the new EPA, both CARIFORUM and the EU have made significant binding commitments on the liberalization of trade in cross-border services, which cover the provision of services through electronic means (Caribbean Caribbean Export, 2010). Given the small size of most Caribbean firms and their very limited capital base, the potential of e-commerce and the use of the electronic marketplace provide them with opportunities for reaching customers in distant markets without the costs of establishment or the use of intermediaries (Caribbean Caribbean Export, 2010).

In addition, e-commerce is relevant for increasing trade opportunities with traditional trading partners of the Caribbean such as the USA and Canada where it is estimated that some two million migrants of Caribbean origin live and work. These migrants want to purchase items from home for themselves, and for their relatives who still live in the Caribbean. As a consequence, “local” demand actually has two meanings for the Caribbean—the nationals who still live on the islands, and the nationals who have emigrated. The presence of this double-target market therefore provides special opportunities for companies, artisans, musicians, and other artists in the Caribbean, since they could sell products with special cultural or dietary characteristics, or provide goods and services to a large niche market (Wresch & Fraser, 2005, p. 42; see also Singh, 1999, 2001; Fraser & Vuylsteke, 2011). Besides access to new and bigger markets and the ability to choose from the lowest cost supplier, the Internet has made it easier for governments, businesses, and consumers to find information to support transparent purchasing decisions. Thus, in principle, without the need for a traditional store front with employees, insurance, or the sundry demands of maintaining a physical presence, a merchant can very quickly begin selling compelling products (Kuwayama, 2001; Singh, 1999; Voloper

Table 1. Online buying intentions in the next six months, 2014, by region (% of respondents) in the next six months, 2014, by region (% of respondents)

| Item | Asia and Oceania | Europe | Middle-East and Africa | Latin America | North America |
|----------------------------------|------------------|--------|------------------------|---------------|---------------|
| Clothing, accessories and shoes | 57 | 34 | 26 | 28 | 42 |
| Electronic equipment | 41 | 25 | 26 | 29 | 30 |
| Tours and hotel reservations | 53 | 33 | 35 | 32 | 43 |
| Airline tickets and reservations | 59 | 34 | 39 | 36 | 43 |
| Mobile phone | 44 | 22 | 28 | 27 | 22 |
| Event tickets | 50 | 33 | 28 | 31 | 35 |
| Computer hardware | 36 | 23 | 25 | 20 | 29 |
| Hardcopy books | 50 | 30 | 22 | 24 | 31 |
| Computer software | 33 | 19 | 27 | 18 | 27 |
| E-books | 43 | 22 | 29 | 23 | 35 |
| Sporting goods | 42 | 19 | 20 | 19 | 21 |
| Music (not downloaded) | 33 | 19 | 21 | 19 | 30 |
| Videos, DVDs and games | 32 | 21 | 23 | 21 | 33 |
| Cosmetics | 43 | 21 | 19 | 20 | 21 |
| Personal care | 43 | 17 | 18 | 14 | 16 |
| Groceries | 41 | 14 | 15 | 11 | 14 |
| Toys and dolls | 40 | 16 | 18 | 17 | 24 |
| Car, motorcycle and accessories | 20 | 13 | 16 | 11 | 15 |
| Pet-related products | 26 | 15 | 14 | 11 | 19 |
| Baby supplies | 29 | 12 | 16 | 11 | 12 |
| Flowers | 21 | 11 | 16 | 10 | 21 |
| Alcoholic drinks | 25 | 9 | 11 | 8 | 10 |

Source: Nielsen (2014a), Adopted from UNCTAD (2015, p. 22).

Note: The survey was conducted between 17 February and 7 March 2014 and polled more than 30,000 consumers with online access in 60 countries. Asia and Oceania covers 14 economies, Europe 32 economies, Latin America 7 economies, the Middle East and Africa 5 economies, and North America 2 economies.

Creations, 2008; World Trade Organization, 2008; UNCTAD, 2010; Lorenzini, 2012; CARICOM Secretariat, 2015).

Additionally, as the CARICOM region attempts to integrate more closely through the CARICOM Single Market and Economy⁴, the region hopes to recapture its position as a global offshore financial hub by incorporating ICT tools to complement its tourism and financial services sector, both primary drivers of communications and network technology. Moreover, another significant benefit to be derived by the region from the growth in e-commerce would be the necessary adoption of a single unit of currency. As it currently stands, shifting money around these various states is difficult because of constant and costly currency exchanges. For example, Barbados, like several other islands in the CARICOM grouping, has its own, separately printed currency and, within the wider CARIFORUM grouping, the former Spanish, Dutch, and French colonies all have their own pesos, guilders, and

gourdes, each fluctuating in value against the others and against the US dollar. This mix of monetary systems and financial regulations has bred investment frustration. Although the governments of the region have long talked about creating a single monetary union (the CSME) to deepen the region's free-trade arrangement, progress towards building a single monetary authority and the other institutions needed for a common currency has been fitful. The achievement of a Caribbean dollar remains enigmatic (Vigna & Casey, 2015). The adoption and implementation of a regional e-commerce policy could pave the way for the realization of one of the most intractable policy decisions the region has been grappling with from the time it signaled its intention to create a CSME.

Furthermore, in a region with little digital content, e-commerce is seen as able to open the door for entrepreneurs and SMEs to capitalize on national competitive advantages including well-educated work forces with many individuals au fait with the use of information technology, adequate (if slow and expensive) telephone systems and close proximity to North America with English as the *lingua franca* of international business. Both Suriname and Belize have a further distinctive advantage of being bilingual in Dutch and Spanish respectively and can therefore offer services to the Netherlands, Europe, and Latin America (Wresch, 2003; Wresch & Fraser, 2005; see also Chaitoo, 2000; Broome, 2003; ICT Pulse, 2011c, 2015). The region therefore has the ability to build businesses as:

- Producers of information, including computer software, books, movies, music, etc.
- Electronic retailers, differentiated into specialty retailers to include the travel and financial industries and specialty niches (e.g. shirts, personal computer software, or cricket memorabilia) or in several of the major electronic goods and services as seen in Table 1.

Because of these global transformative changes wrought by ICTs it has often been said that the Internet has leveled the playing field (Voloper Creations, 2008) for anyone who wants to form a business to deliver information at reasonable prices to customers globally (Broome, 2003; ECLAC, 2013; ICT Pulse, 2011c, 2015). In this regard, policy-makers have begun to integrate ICT planning into total planning recognizing its value as a foreign exchange earner and job creator as well as its potential to add value to other sectors, such as education, health, finance, tourism, manufacturing, and even the public service (ECLAC, 2013) as they seek to respond with sound and reasoned policy to overcoming their persistent development under-performance (Inniss, 2015).

To capitalize on the opportunities, governments in the region have introduced national e-commerce legislative frameworks that provide the same legal recognition of business transactions conducted electronically as is the case with paper-based transactions by way of signature. They have implemented with varying degrees Electronic Transactions Acts that establish the legal environment for the conduct of electronic commerce. These acts have been patterned along the lines of the United Nations Commission on International Trade Law's (UNCITRAL) Model Law with input from best-practice legislation from other jurisdictions to provide for, among other things:

- The procedures for accreditation, certification, and recognition of certification authorities. In this regard, it deals with the liability that an authorized certification service provider may incur and sets out the situations in which the provider is liable to any person who reasonably relied on the certificate.
- Empowering the authorities to make specific regulations in relation to encryption.
- Provision for the liability of intermediaries and service providers, including clear outlines of the procedures where the intermediary deals with information that gives rise to civil or criminal liability.

- Safeguarding individual privacy and commercially confidential information except where disclosure is justified, by making improper disclosure an offense.
- Empowering the authorities to make specific regulations prescribing standards for the processing of personal data whether or not the personal data originates in the country of concern.
- Featuring the use and adoption of electronic transactions as a new method of transacting business but not in any way replacing or altering the traditional rules on paper-based communications.
- Providing legal coverage for situations where information is electronically generated, stored, or sent.
- Reflecting the acceptance of electronically recorded documents in matters where formerly, writing was required (Inniss, 2015)

Further, in some countries such as Barbados, the Central Bank has implemented measures to encourage e-commerce use by allowing local banks to offer automated teller machine (ATMs) services, telephone banking, debit cards, point of sale (POS) services, and electronic funds transfer (Nation Newspaper Barbados, 2014). Governments further assisted in the process by creating, though sporadically, programs, and policies conducive to the spread of e-commerce, such as the computerization of their Customs Department, their Inland Revenue Services (Income Tax) and Land Tax, creating informational websites, implementing wide area networks and capacity building through computerization of schools and development of modular certification courses in information technology skills. Jamaica has telecenters that create employment for local residents and revenue for government. The Governments of Dominica, Grenada, St. Lucia, and St. Vincent and the Grenadines have benefited from institutional strengthening from participation in the World Bank funded projects Electronic Government for Regional Integration Project (EGRIP), the Caribbean Knowledge and Learning Network (CKLN), and the Caribbean Regional Communications Infrastructure Program (CARCIP) (Navas-Sabater, 2011; World Bank, 2012). In Trinidad and Tobago, there has been the establishment of an e-commerce committee that makes recommendations to government (CARICOM Secretariat, 2015, p. 4). Antigua and Barbuda's entrée into the sector, like Belize, has been via the development of the online gaming industry which is dependent on ease of electronic payments (CARICOM Secretariat, 2015, p. 5). All these countries have deregulated their telecommunications monopolies and in principle have made e-commerce a national priority. Altogether these public sector initiatives can be interpreted as a move by governments in developing an e-commerce (IT) framework to aid their national and regional development in fulfillment of their promise to be model e-commerce users.

In much the same way that government is making use of the technologies, some segments of the regional private sector in the travel and tourism sectors have already incorporated e-commerce (Allen Consulting Group, 2003, p. 8). Travel agents and hotels allow customers to book online and make electronic reservations, and offer a combination of other travel services facilitated through collaboration with other tourism marketing/information agencies (inter/informediaries) (Allen Consulting Group, 2003; CARICOM Secretariat, 2015; Kuwayama, 2001, p. 49). Major global chains have their own proprietary booking systems or make use of existing systems.

4. E-commerce is an evolution not a revolution

Notwithstanding these initiatives electronic commerce as a development strategy has not flourished with immediate growth opportunities, as the rhetoric had promised. For all the promise that technology holds—this idea that developing nations are going to “leapfrog” decades of development thanks to cheap, distributed, decentralized technology—the reality on the ground resists easy solutions (Vigna & Casey, 2015). There is now a slow realization from policy planners that e-commerce involves a lot more than simply the state creating the “right” legislative framework for online

payment, intellectual property protection, digital security, privacy, content control, and standards development required to regulate and ensure the security of e-business transactions as simply peddled by several studies (De Almeida, Avila, & Boncanoska, 2007; Kshetri, 2013; Straub, 2003; World Trade Organization, 2008). Rather, as with every new sector, states like firms must see e-commerce as developmental with its constituent socio-technical institutional arrangements and not as an ad hoc plug n' play arrangement (Straub, 2003). Likewise for firms, it encompasses the total [re]organization of business processes from improving information sharing and communication within and between organizations to improving supply chain management, adapting to enhanced price transparency and competition by providing new online sales channels, investing in new equipment and services, and building complementary skills (Awad, 2006; Barnes & Hunt 2001; Jamaica Observer, 2013c; Singh, 2001; Turban, Aronson, Sharda & King, 2006; Turban et al., 2015) for enabling effective operation in a networked electronic environment. Depending on the abilities of firms these changes may create new opportunities or may pose a number of major new challenges such as a shift from being a producer relying on wholesalers to provide access to markets, to dealing directly with the end-user and suppliers, and everyone else along the value chain. For sure, both sets of changes demand a revolution in how firms and states are organized both internally and externally (Andersen, Elliot, Swatman, Trauth, & Andersen, 2003; Da Silva, 2013; Fraser & Vuylsteke, 2011; Qin, Li, Chang, & Li, 2014; Turban et al., 2015). The e-commerce growth-stage model of McKay and Marshall (2004) as shown in Figure 1 illustrates the evolutionary stages of e-commerce growth involving capability building that can be applicable to both states and firms.

This model is consistent with several others, discussed by various authors, basically comprising five stages from level 1 static/emerging to level 5 with sophisticated interaction (see for example OECD, 2013). With minor differences of conceptualizations between them the approaches can be summarized as seen in this author's customization. At stage 1, many organizations start with a static online presence with unidirectional communication for information dissemination to the other party offering, for example, contact details or advertising products and services such as job opportunities. Stage two allows for an interactive online presence with bidirectional communication over the Internet. At this stage, in addition to accessing corporate information, customers can also offer feedback and in some cases place orders online. The interactive site may also offer personalized information to the customers and capture customers' profiles but typically, transactions still cannot be completed online. By stage 3, customers can complete business transactions online and the organization needs to be capable of managing the business around-the-clock and handling the logistics efficiently to facilitate Business-to-Consumer (B2C) e-commerce development. Stage 4 involves the internal integration process where organizations have integrated their online system with the internal IT system to manage their related business activities. Stage 5 is the last stage of the model and involves external integration by which time organizations have established and efficiently streamlined both internal and external collaboration to integrate various business processes such as supply chain management to facilitate Business-to-Business e-commerce (Kurnia, 2007; McKay & Marshall, 2004; see also Awad, 2006; Wigand & Benjamin, 2006; Turban et al., 2015). The model is applicable not only to firms but also to the transformational stages with which countries must comply in order to gauge and develop their e-readiness capabilities. The higher the stage achieved, the higher the investment required. To achieve the desired results of seamless integration seen at stage five also requires the implementation of standardized and harmonized institutional and administrative arrangements. Fundamentally, the general observation suggests that, whether or not the region embraces it, e-commerce will increasingly be relied upon by overseas customers and businesses, to the exclusion of countries and businesses that do not have e-commerce capabilities (Allen Consulting Group, 2003; Barbados Advocate, 2014c).

Presented with the prospects these changes may imply, there has been a renewed emphasis mandated by the Conference of Heads of Government and/or State of the Caribbean Community⁵ to shift towards developing the institutional arrangements for a CSME e-commerce Regime. This is further premised on the context of an increasingly competitive global trade environment, towards arresting their concerns about forecasts of continued sluggish growth in their economies and those of their

major trading and development partners in order to operationalize and accelerate the regional integration process (Caribbean Export, 2010; CARICOM Secretariat, 2015). This determination by the Conference of Heads of Government, for the most part, is that e-commerce “can be utilized for addressing the basic issues of poverty reduction, while promoting health care, universal education and good governance for all” (CARICOM Secretariat, 2015; see also, UNCTAD, 2010). The article raises for further consideration the type of governance necessary to drive such a strategy at the national and regional levels if these five stages are to be met. It therefore leads off by questioning whether an industrial policy approach is still valid and what considerations must be given prominence in crafting one.

5. e-commerce and industrial policy: States, markets, or both?

The rapid growth of e-commerce driven in part by the speed of technical developments and the growth of the Internet poses a challenge of governance for states. As the region further integrates into the global economy, problematic issue areas arise that impact *inter alia* on concerns over the regulation of taxes and duties, consumer trust and protection, network systemic risks, the fragmented use of e-commerce and the high cost of accessing such infrastructure, restrictions on the type of information created and transmitted and the rate regulation of service providers. These concerns raise questions of whether it is feasible for the state or state-centric organizations such as the CARICOM Secretariat⁶ to be involved in the framing of e-commerce policies, tantamount to the state choosing sectors for regional development, or whether they should merely provide the environment through which e-commerce is conducted. Essentially there is a qualitative difference. The former option exemplifies the idea that while the Internet is borderless and global, national conditions matter to the success of e-commerce and are therefore a critical component that will demonstrate a viable reason why national governments should be the principal transformative agents of change in the implementation of the development process. The latter option involves a multinational organization, the CARICOM Secretariat, which although oftentimes in a power struggle with governments that are favorable to it, is being urged to play a pivotal role in raising awareness, as signaled to the market by the mobilizing of senior government officials into a series of actions through initiating the design of strategic interventions.

Although such policy engineering by the state is welcome to some, there is still the underlying question inherent in this debate of whether the market or the state should determine the outcome of any e-commerce development. This is so because, controversially, the application and implementation of industrial policies acquired a bad reputation as a result of misguided and clumsy interventionism in the 1970s through “picking winners” (often, losers) to whom to offer state subsidies, which in a number of cases eventually led to bad “economic planning” (Broome, 2003; Drezner, 2004; Humphrey, Mansell, Pare, & Schmitz, 2003). State selection for industrial development has also questioned the collective ideological orientation of the region by inviting suspicious glances from its major trading partners in North America because of previously failed forays in socialist experiments. This however does not take away from the fact that most economic successes in these countries have occurred because of top-down planning as the more received method of institutional planning through the creation of industrial policies (Broome, 2003).

However, the success stories as exemplified by e-commerce giants such as Amazon.com and Walmart have thrived because of bottom-up market institutions and entrepreneurial initiatives that have exploited the opportunities emerging in the new ICT landscape (Accenture, 2015; Banker, 2013; Department of Industrial Policy & Promotion, 2014). In these cases, private sector leadership accounts for the explosive growth of the Internet and the success of e-commerce even in parts of India and socialist China where low entry barriers have attracted many young and enterprising technologically savvy individuals credited with having started a significant 63% of e-commerce ventures (Department of Industrial Policy & Promotion, 2014; see also OECD, 2013; Nielsen, 2014a; Shah, 2015). It has been argued that as businesses take advantage of these technological opportunities and expand their marketing reach they stand to gain from economies of scale by becoming more profitable and contributing to economic development (Chaitoo, 2000; Economic Commission for

Latin America & the Caribbean [ECLAC], 2002; OECD, 1997b; UNCTAD, 2010, 2015). In this instance, the case for a state-led policy is not seen as the first best option.

Another challenge facing a *dirigiste* policy for e-commerce is that the CARICOM secretariat acting as an administrative arm to national governments has often been accused of contributing to the slow pace of regional integration. This is so because of the lack of coordination, its limited management skills and experience in the adopted sector, and the general weakness in its application and transferability of policies designed by some developed countries, making the use of top-down industrial policy that more difficult to implement. Additionally, their efforts are often frustrated by the difference of business cultures and business philosophies, inadequate knowledge of what can be gained from the sector, lack of stakeholder buy-in, and the unpreparedness of businesses to participate (Allen Consulting Group, 2003; Wresch & Fraser, 2005) which have been identified across these countries as limiting the development stages of e-commerce as shown in Figure 1. While an alert and profit motive-driven private sector should be able to address some of these challenges, rather contradictorily—because of the large presence of SMEs within the region—had it not been for a statist approach to development through creating a business environment replete with subsidies to defray the cost of setting up economic enterprises, industrialization would have been near impossible (Broome, 2003; CARICOM Secretariat, 2015). While there may be a propensity on one side or the other for the use of an industrial policy, both supply and demand forces are constantly interacting or shifting in significance (Molla, Taylor, & Licker, 2006, p. 5; see also, OECD, 1997a; Broome, 2003; Farrell, 2003; UNCTAD, 2015) and in a regional e-commerce policy these key areas need to be discussed and understood.

Although it is pragmatic to state that having an industrial policy to tackle these challenges requires a concerted effort from various institutions, merely having one is not enough and in this regard the issue of the qualitative type of governance necessary to drive such a strategy at the national and regional levels must be addressed. As use of the Internet expands, many companies and Internet users are concerned that some governments will impose extensive regulations on the Internet and e-commerce will become mired in the anomalies, contradictions, and confusions that can arise with the deployment of information technologies and the forging of requisite policies for each of them (Department of Industrial Policy & Promotion, 2014; Qin et al., 2014). This occurs when different governmental agencies too vigorously assert individual authority and operate without coordination or knowledge of the technical challenges that the technologies create. For example, how can governments through regulatory bodies regulate telecommunication rates to collect revenue with the increasing presence of integrated online telephony with new social media such as Whatsapp, blackberry, and other over the top (OTT) services. Moreover, entrepreneurs with the freedom, flexibility and energy will be using newer ICTs in innovative ways to drive business. Thus there is concern as to whether the state has the nimbleness and dynamism, as well as knowledge capability, to know when to act and importantly, when not to act, towards developing appropriate and adequate legislation for e-commerce (Accenture, 2015; Department of Industrial Policy & Promotion, 2014; UNCTAD, 2015).

Furthermore, the issue of governance matters because the governments in the Caribbean are being challenged to maintain their traditional socialism derived welfare state model, particularly concerning the rightful place of the state in the provision of subsidies in targeted areas in the society. Besides, calls to narrow the digital divide through promoting easy access to inexpensive information networks is another concern of governance confronting these states. Since these governments see e-commerce as “addressing basic areas of poverty reduction,” then an e-commerce policy must also address frontally whether the internet, the backbone for e-commerce, should be treated as a public good (Kuwayama, 2001 p. 65), that is, a government sponsored good from which societies benefit through its intervention in the market place, or whether it should be left entirely to the provision of private interests. Looking askance at the government of the USA, plans are being defined to allow broadband internet access as a government sponsored good for all rural residents (Qin et al., 2014; Van Hoose, 2011). This particular initiative has merit for policy transfer within the region for several

reasons. It enhances the ability of the state, already facing severe budgetary restraints, to reap many of the intended benefits the internet can offer in its proposed expansion of subsidized education, the provision of universal primary health care and other public services, as well as the facilitation of entrepreneurial business applications. Secondly, without access to public funding the rural sector and the most challenged communities in several Caribbean countries will become further marginalized. In both instances, inability for refusal of state intervention not only weakens the socio-political contract of governments *vis a vis* their citizens, but in light of the future possibilities inherent in e-commerce, circumscribes the role these states can play in promoting an all-inclusive approach to national competitiveness that in turn impacts the quality of governance. Of course, the counter argument wrestles with who will pay for such a good since the provision of various public goods and services creates the free rider conundrum (Van Hoose, 2011). This is so because if a country's society fails to reach consensus on which goods to classify as public goods or government-sponsored services, invariably it also becomes difficult to determine levels of taxable contributions, or if to fund such services at all (Van Hoose, 2011).

Another related policy concern, though technical, regards the quantity and quality of public investment in national and regional development of infrastructure. For example, what is considered as the right amount of bandwidth for the consumer, plus what incentives can be provided to enhance the ability of vendors to differentiate their offerings and the ability of customers to compare them? Solving the last problem, known as the "last mile problem" or "fiber to the home" outside urban centers by using the existing technology is prohibitively expensive. Marketplace solutions, in some cases stimulated by government intervention, are in view in the developed and rapidly developing countries. A number of US corporations are acquiring the requisite bandwidth on parallel for-profit networks with premium high-bandwidth links, as well as accessing commercial duplicate websites. The determination of whether it should be driven by government or the private sector or both becomes a delicate balancing act (OECD, 2014b; Sharma, 2006; Van Hoose, 2011; Zwass, 1996).

5.1. Policy instability and governance

The governance of the sector will also face uncertainty about its administrative arrangements. In a number of these countries, the existing regulatory schemes were designed for discrete ICT frameworks that covered telecommunications, radio, and television often in decentralized administrative silos. For example, the ICT sector in Jamaica is regulated by five different agencies, the (i) Office of Utilities Regulation (OUR), (ii) the Spectrum Management Authority (SMA), (iii) the Consumer Affairs Commission (CAC), (iv) the Jamaica Broadcasting Commission, and (v) the Fair Trading Commission (Allen Consulting Group, 2003; CARICOM Secretariat, 2015). Therefore, if there is to be investment in the sector, there is need for a systemic review of existing laws and regulations and the concomitant administrative structures that must also be properly coordinated with a view to reflecting the needs of the new electronic age to avoid policy instability. In this regard, governments must show more leadership in supporting a better-resourced operation, explicitly bringing together the Government's technology priorities, and making the right links with other levers across government. Pre-empting these concerns will not augur well for the successful implementation nor the potential goals of an e-commerce policy.

6. PART 2 e-Commerce: Open networks or closed regimes?

Aside from determining the role for the state and its interventions and the governance of an industrial policy, other public policy concerns of a socio-political, economic, and cognitive nature need to be examined when conceptualizing an e-commerce policy (Da Silva, 2013). Often ignored in the analysis are the distinctive development challenges these countries face. They are plagued by small size and a narrow natural resource base that results in constraints on economic diversification. Their status as primary agricultural producers leaves them vulnerable to externally driven commodity price fluctuations. The openness of their economies and the heavy reliance on export earnings generally preclude them from making the best use of the information and communications technology revolution (Broome, 2003; ECLAC, 2013; Lagarde, 2014). Then there are the asymmetries of global taxation and their impact on their revenue generation; as well as the preponderance of

small and medium-sized enterprises (SMEs) that account for the majority of the total entrepreneurial system but face many bottlenecks that, in the absence of necessary resources to set up e-commerce systems, influence their reluctance to move away from traditional ways of doing business (Allen Consulting Group, 2003). Relatedly, the public's attitude to e-commerce in their everyday life is a significant factor in the success or failure of e-commerce because the sector can easily be weakened by unscrupulous online merchants, compounded by an imperfect and at times inadequately suited legal system (Bingi, Mir, & Khamalah, 2000; Chen & Ning, 2002; Lake, 2000; UNCTAD, 2015). Other composite concerns are the inability of sector stakeholders to secure sufficient financial resources or, in several instances, the very unavailability of resources (Kamath, 2014; Vigna & Casey, 2015). Inadequate provision of Caribbean online content in key sectors, including education, business, and trade in services, and the lack of specialized, and at times poor, distribution logistics, which in turn impact on the receipt and return of products. In light of these constraints, the question arises as to what extent does e-commerce contribute to the genuine emancipatory benefits expected to be derived from an open regime? Or whether such a strategy will be undermined by path-dependent structures of development, contributing to a closed regime (Sahnthi & Boas, 2003; Straub, 2003)?

7. Where's the reciprocity when asymmetries of trade exist?

From the outset, the trading practices of the wealthiest nations in subsidizing their agricultural products make it harder for the agricultural commodity trading countries like those of the Caribbean to penetrate Western markets (OECD, 1997a; UNCTAD, 1999, 2010; ECLAC, 2013). Thus, the internet is less attractive for traditional economic sectors such as agriculture that account for a significant proportion of these countries' economies. This is further compounded by the lack of interest in online goods from regional consumers, with those having the interest and the means preferring to buy from firms in developed countries, to the detriment of local businesses (Molla et al., 2006, p. 11). Moreover, most of the factor inputs required for the production of regional goods and services are sourced from developed country markets accounting for higher production costs of the final products (Allen Consulting Group, 2003; Da Silva, 2013; Wresch & Fraser, 2005). And, while ICTs may allow local businesses to reach the world, their product selection tends to be import substitutes and non-tradables produced with relatively capital intensive technology (Kuwayama, 2001, p. 10) that immediately reduces the real value and consequently the number of regional and international customers they reach. In an interesting paradox, many of the goods and services to support the e-commerce sector, such as the hardware and even the service support (e.g. use of overseas web designers or hosting of websites offshore) are effectively imported. Thus while the IT sector is export capable, it is also import intensive. In addition to the lack of a domestic demand, the demand for IT/e-commerce development services may be insufficient to build the sector to a competitive scale (Allen Consulting Group, 2003, pp. 51–52; Broome, 2003; Da Silva, 2013; UNCTAD, 2012).

Added to these is the frequency of price changes. Global firms through the achievement of economies of scale have significant advantage in influencing online pricing for consumer products. The online presence has dramatically influenced price sensitivity to products more frequently than the rate of price changes in-store (Nielsen, 2014b) creating a demand for goods and services for those who are most able to supply. Caribbean suppliers are hard-pressed to respond with such alacrity because, as explained later, they are bound by products that have incurred high import taxes and duties and as such will suffer considerable financial loss as a result of trying to match such competitors (Allen Consulting Group, 2003). These instances have resulted in sluggish demand for local e-commerce. Furthermore, global firms in developed countries, be it Amazon.Com, or AliBaba.com, can leverage their resources, reputation, and network scale to easily emasculate the local markets of developing countries. Without competitive offerings, even the near geographical proximity of North America will continue to work against firms in the region. Thus the imagery envisaged of burgeoning global commodity supply chains of e-commerce for these states seems illusory because of their firms' high start-up costs, the factor conditions, product selection, and the institutional norms of behavior of firms that significantly reduce their ability to compete at a global scale and expand their market reach (Allen Consulting Group, 2003; ECLAC, 2013; Fraser & Vuylsteke, 2011; Molla et al., 2006, p. 3; see also, Wresch & Fraser, 2005) while further increasing the dominance by firms of

developed countries. Regardless of appropriately written regulations and well-designed infrastructure, this harsh reality reinforces a healthy skepticism about the relevance of e-commerce and its benefits to developing countries (Straub, 2003).

8. Global taxation disintermediation and its impact on e-commerce

As if the asymmetries of trade with their own set of complex challenges were not enough cause for concern, both firms and states within the region must also contend with finding innovative ways of curbing tax erosion from declining financial flows caused by the loss of near monopoly control through rapid changes in business structures and practices from porous global communications networks. This is because the apparatus of economic regulations and taxation through which nation states and firms operate was developed to support and facilitate an industrial economy. Such an economy was built on producing tangible and location bound goods and services sold and distributed within and between fixed borders. As such, countries derived a variety of instruments such as levying tariffs on imports, raising taxes, and providing guarantees of monetary payment to achieve economic ends (Gawady, 2005, p. 6). In the Caribbean with its high degree of openness, tax revenues in general are the major source of government revenues (Bristol, 2001). Through the creation by “digitization” of a new network-linked world without borders, currencies, services, and even goods can be conveyed immediately, transacted invisibly across the globe beyond the reach of national jurisdictions, laws, taxation systems, and all forms of intermediation (Gawady, 2005, p. 6; see also, Cockfield, Hellerstein, Millar, & Waerzeggers, 2013; OECD, 2014a, 2014b). As a consequence, institutions such as central banks are presented with governance challenges, particularly because of inability to collect tax and monitor financial transactions. As such, the commercial benefits once derived from brick and mortar edifices have evolved to that of “digital migration” presenting legal challenges for national governments. This is evident in respect of the distinction made by most consumption tax regimes, including that of Jamaica and the United Kingdom, between digital and physical versions of essentially the same information product. By way of example, the electronic supply of a digitised product such as an e-book is considered a supply of “services” whereas the sale of a paper copy of the same book is considered a supply of goods. One effect of this situation is that the consumption tax exemption that is applied to books as exempt “goods” does not extend to e-books as there is no correspondingly defined service exemption rule, an awkward result offending the principle of neutrality and distorting competition. Another effect of the distinction is that as consumption tax is applied on the basis of specific place of supply rules which are in some cases different for goods and services, two transactions involving the provision of the same product (albeit in different forms), by the same supplier to the same consumer in the same market may have different “places of supply” capturing the supplier as a “taxable person” in one case and not the other (Jamaica Observer, 2013a). Equally important for consideration, as the collapse of bitcoin has shown, is widespread concern about potential impact on national currencies, criminal misuse, and ability to impose taxation (Hill, 2014). The simple fact is that, the computerized hand can move faster than the regulatory eye (Roszack, 1994, p. xxxi).

Small island developing states remain powerless within this new electronic economy to effect and influence change. Because of the ubiquitous nature of the Internet and its ability to swiftly and effortlessly transcend national boundaries and sovereign territories, authorities are now being forced to address the fact that many of the actions and effects within a lawmaker’s territory will not actually have physically taken place there (Jamaica Observer, 2013b). Consider for example a company incorporated in Jamaica which conducts e-commerce in various international markets via its website. Suppose further that the company’s two directors are resident in St Lucia and Barbados respectively and have their board meetings via online teleconferencing. In these circumstances, which country is entitled to tax the company’s worldwide income on the basis of residence? St Lucia and/or Barbados may seek to assert such a right on the basis of the management and control being based in their jurisdictions. Jamaica may claim the right on the basis of residence by incorporation. In these circumstances the CARICOM double taxation treaty’s residence tiebreaker provision would apply granting residence-based taxation rights to the country where the “place of effective management” is situated. But how is this tiebreaker to be applied in our example where each of the directors

are based in different countries and make all or most management decisions online via teleconference? The long and short of it is that the e-commerce revolution brings sharply into question the sustainability of the currently defined OECD “place of effective management” residence tiebreaker test. With national governments scrambling to maximize their tax revenues in the context of a contracting, increasingly digitized global economy, the incidence of double taxation disputes will only increase. The OECD’s corporate residence tiebreaker test will need to adapt if it is to remain capable of achieving the purpose for which it was originally intended (Jamaica Observer, 2013b).

In the short term, this porous taxation system further presents a conundrum for the nation state which forces a knee-jerk reaction from them. As they become marginal to the creation of economic value, in return they treat e-commerce traded products as luxury items and impose the full portfolio of fiscal policy tools at their discretion (Bristol, 2001). This territorial way of thinking forms a general philosophy to which many executive decision-makers subscribe, but at the same time it creates a catch 22, for whereas governments may derive some financial benefit from such short term solutions, it does not create an environment that is conducive to the development of e-commerce. In fact it dampens supply and demand. If e-commerce is being considered, because it grows, many of the fiscal instruments and processes of the nation state—both direct and indirect taxes based on income at national and local level; international tax, including foreign and foreign controlled company taxation and withholding taxes; capital gains on intellectual property rights or goodwill and more; VAT and sales and use taxes; property taxes; customs and excise duties; and stamp and transfer taxes (Bristol, 2001, p. 11)—will need to be [re]examined in the light of these new challenges.

9. Cognitive barriers

Exploring the relevance of e-commerce and the opportunity for its growth cannot be delinked from an understanding of cognitive factors, related to the mental maps of individuals and to awareness and knowledge related to e-commerce among organizational decision makers. Some analysts argue that in developing countries, cognitive barriers are more serious than other categories of barriers (Kshetri, 2007 see also Efendioglu & Yip, 2005) because a dimension of shopping and transactions is driven by the prevailing norms, culture, and traditions of the local community and which are variable and “particularistic” (Travica, 2002, p. 20). However, they are often glossed over in policy reports as “the importance of culture” without a deconstruction of its meaning (De Almeida et al., 2007). Even though a developing country government may make the necessary investments in infrastructure, unless industry participants understand and address unique cultural issues that relate to off-site transactional processes, the large-scale diffusion and success of such endeavors will be greatly impeded (Efendioglu & Yip, 2005). For instance, consumers’ inadequate awareness, knowledge, skills, and confidence, the belief that “debt is not good”, the constant threat of disclosure of personal data, all serve as cognitive feedback against e-commerce diffusion. Likewise, lack of confidence among consumers in the ability of local internet service providers to supply a consistent and stable service that enables smooth and secure closure of transactions has led to risk aversion and inertia furthering a negative cognitive assessment of e-commerce (Kshetri, 2007 see also Efendioglu & Yip, 2002, 2005; Awad, 2006; Van Hoose, 2011).

Similarly for some customers, shopping is a social act that includes relationship building and maintenance through relating orally or by face-to-face, whilst deriving satisfaction from winning business negotiations to get the best deal, unlike the depersonalization associated with online transactions. There is a fear that merchants might sell products with defects; could be disguised thieves; and that online payments cannot be recovered even if the product is not delivered. Counterfeiting due sometimes to bait and switch practices and distribution of below par products are other major problems that further aggravate the lack of transactional trust between parties who do not know each other personally and, worse, are separated by distance and technology. For these, a strong individual relationship and long term association between the parties provide a sense of community and enhance social bonding (Efendioglu & Yip, 2002, 2005; Healey, 2011; Nielsen, 2014b; Sharma, 2006; Voloper Creations, 2008). Connected to this concern is the surety of standardized goods and services that relieve customers of the need to inspect these in person, thus fostering a

culture of trust in products and merchants (Kshetri, 2013; Lawrence & Tar, 2010; OECD, 2014a). Additionally, a low rate of credit card usage can be attributed to the “lack of trust in, rather than lack of access to,” the credit card system. As well, the degree of trust in the postal network concerning postal thefts forms one of the debilitating cultural layers that impedes the large scale diffusion and success of e-commerce. Compositely, these cognitive features pose roadblocks to shopping on the web. As Cronin (2000) put it, “if information is the engine of the Internet, then trust provides the essential oil for its friction-free operation” (p. 99 in Travica, 2002).

10. Logistics and transport: Delivery support systems

The countries of the region will face further developmental challenges within the sector due to their location relative to each other because the lack of supporting infrastructure makes it even more difficult to access regional markets (Commonwealth Secretariat/World Bank Task Force, 2000; Gomes, 2014, cited in Broome, 2015). Very few goods are delivered over the information infrastructure rather than by the conventional way (i.e. physical delivery), and international postal delivery of small packets and parcels has seen rapid growth in the past few years, mainly as a result of cross-border e-commerce. The volume of such trade rose by 48% between 2011 and 2014. During this period, the share of developed countries as senders dropped from more than 70% to less than 60%. Developed countries and the Asia and Oceania region show significant trade surpluses in related deliveries, while the opposite is true for other regions (UNCTAD, 2015, p. xi). As such, the capability of the delivery infrastructure is crucial to support significant variations in geographical delivery patterns. In addition, the presence of competitively priced delivery services that are reliable, efficient and supportive of the demands that e-commerce imposes on transportation systems, is equally indispensable in order fulfilment processes (Travica, 2002; UPU, 2012; UNCTAD, 2015). This reality is implied in the e-commerce variant of stage four of Figure 1, which calls for firms integrating their online systems with the internal IT system to manage their related business activities, such as transport and logistics (Banker, 2013; OECD, 2002). Often the postal service is a taken-for-granted means of delivery and it is difficult for small developing countries with small markets to develop major global transport and logistics chains similar to those of the size of FedEx and UPS to provide delivery services (Kshetri, 2007, p. 6; see also OECD, 2002). And, whereas shipping products direct from these countries to North America and Europe can be quicker, cheaper and more reliable, the same cannot be said of intra-regional shipping to neighbors (Wresch & Fraser, 2005). This is so because of the inadequately serviced shipping and air transport routes between them, further exacerbated by the prohibitively high economic and administrative costs of transport. Both are anathema to the fulfilment aspect of an e-commerce business (Allen Consulting Group, 2003; Jamaica Observer, 2014; Wresch & Fraser, 2005). Hence inefficient and unreliable transport systems, coupled with the high cost of international parcel services are major obstacles in the uptake of e-commerce in developing countries.

Linked to transport and logistics is an indeterminate delivery structure compounded by missing absolute and doubtful relative addresses. For example, slow to non-existent mail delivery often occurs in the absence of building numbers that can be referenced, arising from the lack of, or poor, enumeration of locations. In systems terminology, this is called absolute addressing (Travica, 2002, p. 12). Whereas the lack of absolute addresses may not be a significant problem in the capitals of these countries, in the suburbs or rural areas without gridded avenues and streets it could be problematic. Unlike the absolute addressing of major world capitals, a relative addressing system is still used in several Caribbean countries where the location of a sought building is described in relation to a certain landmark. These descriptors often appear in and on official documents and the landmarks can be almost anything—supermarkets, bus stations, monuments, traffic infrastructure objects, and natural objects (Travica, 2002, p. 13; see also UPU, 2012). So an address of the author could be P.A. Broome, Near St. Lucy Post Office, St. Lucy. Particularly affected can be both customer records management based on relational database systems and systems for delivery logistics (e.g. the planning of delivery routes between suppliers, buyers, warehouses, transportation stations, and customer premises). These doubtful addresses may pose challenges for e-commerce between

foreign web retailers and local customers (Travica, 2002, p. 13; UPU, 2012). Government should therefore create a policy environment that will:

- encourage investments in the national physical and transport infrastructure to create products to meet the needs of e-commerce; and
- consider subsidizing of shipping and airline routes that will contribute to the reduction of distribution and logistics costs.

Consequently, the transportation infrastructure in the country adopting e-commerce also needs to be supportive of these changes or failure to do so will lead to e-commerce being severely restricted to those who have the right supportive institutional environment and arrangements in place (OECD, 1997a, 1997b, 2002; UPU, 2012; UNCTAD, 2015).

11. The burdens and threats of terrorism 9/11

The growth of e-commerce in a country is also influenced by external factors. For example, the reputation for credit card fraud in some countries caused blockages of several IP addresses and a number of commercial sites in different countries by a suspicious banking sector (Barbados Today, 2014; Daily Observer, 2013; Nation Newspaper Barbados, 2015). Wresch and Fraser (2005) also refer to the burdens the threat of terrorism in the United States has imposed on exporting nations. Most of the businesses in the Caribbean have experienced the changing customs processes in the U.S. that often leads to much more burdensome record-keeping requirements accompanied by higher administrative costs, much longer delays in customs, and frequent destruction of products in the process of being examined (Wresch & Fraser, 2005, p. 47). A solution to this was to establish fulfillment centers in the exporting markets, but this in the end has led to another challenge of job diversion from the country of origin (Jamaica Observer, 2007).

12. Online challenges of SMEs

Other contributing factors denying open access to e-commerce markets are the multiple challenges that SMEs face in these countries. SMEs are known to face much greater market failure than large enterprises in adequately obtaining and processing the information necessary to define their objectives and strategies (Kuwayama, 2001, p. 9; ECLAC, 2002; Mutula, 2010). Although some of them have modernized and automated the way they do business by exploiting internet technology to expand their reach and communication with their partners, suppliers, and customers, many of the micro-scale enterprises are still using ICT tools mainly for administrative matters. Indeed, a major survey conducted on SMEs readiness for e-commerce opined that these businesses generally do not understand the strategic role of IT and all too often its implementation is seen as a cost and not as an investment in the long-term survival of the business (Molla et al., 2006, p. 6; see also Allen Consulting Group, 2003; Da Silva, 2013; Humphrey et al., 2003; Mutula, 2010; Singh, 1999). This attitude by SMEs is also due to lack of awareness of e-commerce and the role they could play in this new marketplace; due also to high adjustment costs, as well as their inability to understand the demands entailed in establishing sophisticated support systems and business infrastructures (Wresch & Fraser, 2005, p. 49; see also Allen Consulting Group, 2003; Caribbean Caribbean Export, 2010). This has not been helped by their inability to forge joint ventures to access external actors to acquire relevant resources, such as knowledge, finance, and distribution channels as a means of strengthening their competitiveness (Allen Consulting Group, 2003; Caribbean Caribbean Export, 2010; ECLAC, 2013; ICT Pulse, 2014).

Although there is a degree of nonchalance exhibited by some SMEs, in other instances their inhibitions against the development of e-commerce are equally due to local national characteristics. For example, they often lack a critical mass among customers, suppliers, and business partners given the size of island populations which in turn contribute to many of them operating in isolation (Wresch & Fraser, 2005, p. 46). Isolation has consequences for the growth and development of these firms. Whereas a cluster of competitors within the tourism sector can drive innovation and act in concert

to provide business advocacy and promote the interests of the sector in improving efficiencies and achieving economies of scale and scope, this is often not the case with SMEs pursuing e-commerce who approach the local telecom provider for additional bandwidth (Silicon Caribe, 2007; Da Silva, 2013; Wresch & Fraser, 2005). Additionally, isolation within, or being the first entrant in a small market constrains managers from seeing a variety of strategies being attempted by similar businesses in order to learn quickly what works and what does not. This is important for them to note because the ICT revolution changes management concepts and systems, such as management strategies, human resource development and improved technology, quality control, automation, accounting, inventory handling, and inter-firm association that are already undergoing rapid changes (Kuwayama, 2001, p. 10). Being the first entrant to the sector can also stymie a firm's development because it lacks access to a variety of trained personnel. In addition, the presence of an e-commerce sector is better supported by a complementary software industry capable of providing standard e-commerce applications to improve, *inter alia*, the internal processes of firms to be internationally competitive. Given the small size and sometimes lack of industrial capacity, the absolute numbers of science, math, and engineering graduates are small by comparison to developed country standards and as such these firms (Wresch & Fraser, 2005, p. 33) lack the depth and capacity to undertake large software and programming assignments (Broome, 2003; ECLAC, 2013; ICT Pulse, 2014; UNCTAD, 2012; World Trade Organization, 2008). Such firms must therefore invest individually in training human resources to meet the needs of the sector, which can serve as a disincentive. Apart from limited technical resources, another important challenge these firms face is the lack of call-centers to support the sector. Call-centers perform dual functions as business exchanges by limiting the risk to the trading parties and by facilitating product search, after sales service, evaluation, and distribution in the form of virtual malls (Broome, 2003; UNCTAD, 2012; Travica, 2002; Zwass, 1996). Thus, until sufficient numbers of their main local customers or suppliers participate in online commerce activities, there is little incentive for individual SMEs to become engaged in e-commerce.

13. Limitations and asymmetries of infrastructure

Just as asymmetries of access exist for those firms attempting to enter e-commerce, another acknowledged problem has been the inability to acquire sufficient bandwidth at reasonable costs for expanding the use of multimedia transmissions for consumers. Although, several of these countries have deregulated their telecommunications market, the cost of access remains prohibitive. In the Caribbean, large sections of the populations have access only to pay-as-you-go packages⁸ which allow the subscriber to buy a service for a set fee. PAYG services are hindrances to the extensive use of e-commerce, because the intensive use necessary for online shopping with calls and texts, sending e-mails, downloading data and accessing the internet can be costly per minute and may cost more than with a fixed contract. In addition, resorting to a full contractual package comes with its own credit burdens, as some ISPs lock users into purchasing expensive handsets and other services such as accessing the internet may be more expensive (Broome & Adugu, 2015). Another barrier to mobile e-commerce adoption is the unnecessary and inefficient duplication of handsets caused by unfair pricing practices. While pricing choice is a key feature of many competitive markets, in several countries this has resulted in wasteful duplication, with many people having two handsets for receiving calls from and making calls to different carriers. In countries with near universal take-up on mobile telephony, take-up has been driven by pricing structures based on the calling party pays (CPP) principle. Pricing is then simplified (making consumer choice easier) and inefficient handset duplication reduced by making mandatory the (CPP) pricing principle.

Another prohibitive factor has been the interconnecting fees (i.e. the charges operators pay for using another operator's wire network to complete calls (Allen Consulting Group, 2003, p. 31; UNCTAD, 2015). While e-commerce diffusion is not totally dependent on the cost of telecommunications, local businesses, and consumers lament the exorbitant fees charged for broadband connections, which make it unfeasible to establish a viable e-commerce presence (McClean, 2004 in Molla et al., 2006 p. 6; see also Barbados Advocate, 2012, 2014b). A reasonable discussion on e-commerce must therefore [re]image some of its analysis of how technological connectivity is constantly changing and how ICTs are being used by individuals from different backgrounds.

13.1. Marketing challenges

Additionally, SMEs face the problem of visibility, which imposes—sometimes prohibitive—promotional efforts. Given the small size of most Caribbean firms, and the very limited capital base, the lack of international coverage is also integrally linked to the challenge of remoteness. Although an online store has the potential to vend to the world, in this highly competitive sector the primary barrier to being found is not having an effective search engine optimization technique (SEO) to increase a firm's online relevance and popularity (Voloper Creations, 2008). Despite the hype surrounding social media, the website is still one of the most effective methods through which the world can know of a firm's existence. The website therefore must be seen as a new pathway for national development because of its technological capacity to leapfrog development barriers such as geographical remoteness, to enable firms and states to achieve and sustain competitiveness through enhancing, combining, reconfiguring and projecting the enterprise's intangible and tangible assets. In the eyes of many policy planners and private sector specialists in the region, the website is a storefront with the name of the store and representative product displays and the customers are cyber-customers. Indeed, most web administrators or their agency directors view the innocuous website as a goal to be accomplished, that is, many agencies appear to have decided “we want a website” and set out to create one. They give little thought beyond the goal of getting a presence on the web (Christensen and Hughes, 2000, p. 572 in Broome, 2015) and as such several websites are compromised in their ability to reach target audiences because of an inadequate professional design with little to no information, using only English for the most part, having underdeveloped transactional capabilities (ordering and e-payment stage 2 in Figure 1), lacking mission statements and date stamps, and exhibiting design inertia over a two-year period of time (Broome, 2003). Although in principle the playing field relating to the physical costs of establishing a brick and mortar presence, and traditional advertising costs have been leveled, as explained here, firms, nations, and entrepreneurs seeking to do business on the Internet still encounter new playing fields with new barriers. As explained, barriers in e-commerce are likely to be affected by asymmetries of trade and other global institutional arrangements, and by sociological and cognitive factors defined by the unlimited nature of the Internet. Equally, solutions presented to merchants by Web developers, consultants, and hosting services are likewise numerous and, at times, contradictory enough that if not mitigated could result in e-commerce being a closed regime for the Caribbean.

14. PART 3: Will e-commerce include the excluded?

The specter of a closed regime becomes a more realistic possibility for these countries if the main intention of policy planners is to facilitate the development of an e-commerce sector that places undue visionary emphasis on a narrow quantitative concern for economic growth rather than a paradigmatic shift that is inclusive of all citizens in considering new development opportunities. The prospect of exclusion is all the more compelling when considering the international banking crisis that has degraded the socioeconomic climate of these states resulting in stringently imposed structural adjustment programs (SAPs) by international creditor agencies. These programs accord a disproportionate preoccupation to macroeconomics that has marginalized large sections of the population and, thus, a major question policy planners must concern themselves with is how to get the unbanked⁹ and underbanked into the e-commerce process to promote an open network of inclusiveness (Montgomery, 2014; Gordon, 2015). A parallel concern is that the pace of change in the uptake of e-commerce is inadequate because the unduly cautious nature of the financial services sector is to the detriment of the sector. In other words, with large segments of the population unbanked and underbanked (ICT Pulse, 2012) and therefore economically challenged, will an e-commerce strategy be democratically developmental in such a way as to empower the poor, placing money in their pockets, or will it be another strategy to be used by the wealthy to facilitate their own personal development (Montgomery, 2014)? Currently two and a half billion adults do not have access to financial services (Kamath, 2014; Gordon, 2015). Figure 3 shows the percentage of persons who access financial services in the Caribbean and suggests that, on average, approximately 60% of a country's population might not be using banks and similar institutions. Without access to transaction accounts, persons are excluded from using the broad range of online and electronic services (ICT Pulse, 2012).

Figure 3. Percentage of the population in select Caribbean countries that use financial/banking services.

Source: Mobile Money Live/GSMA (reproduced from ICT Pulse, 2012).

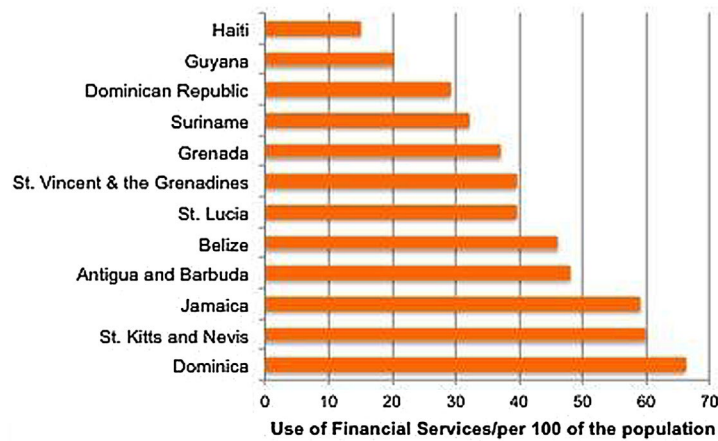
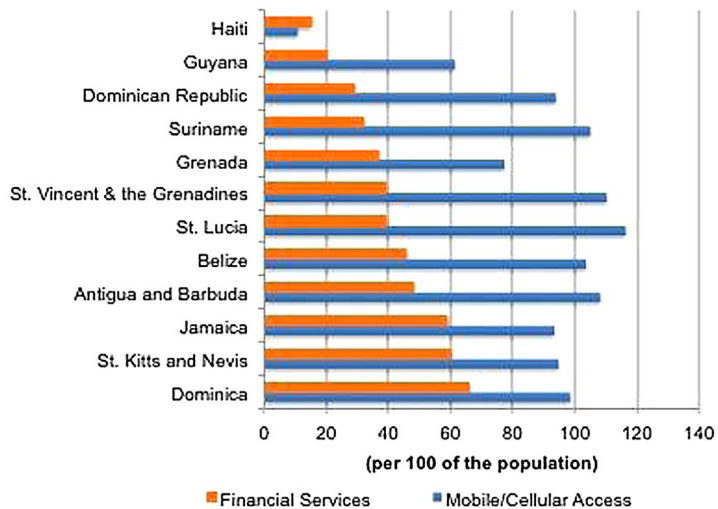


Figure 4. Percentage of the population in select Caribbean countries that use financial/banking services and own mobile/cellular phones.

Source: Mobile Money Live/GSMA (reproduced from ICT Pulse (2012).



Although most, if not all Caribbean countries have indigenous banks and financial institutions, a number of large foreign banks are also well established and have longstanding relationships in individual countries and with the region, with comprehensive e-commerce facilities to serve clients in their overseas markets. Frequently, however, Caribbean business customers are not readily invited to use the platform. Additionally, due to the relatively high processing fees charged by the banks for credit card transactions, many small businesses do not, and have been unable to accept this form of payment. Hence customers can be greatly inconvenienced if they must have the cash with which to complete a purchase. In addition, should a Caribbean business be eager to process online payments, there are other challenges to overcome. First, the application process tends to be especially rigorous, intensive, and invasive, which serves as a deterrent to many businesses applying for the facility. A second major concern is the fees and charges to secure and maintain access to online payment facilities so that vendors must not only budget for the set-up charges, which might be expensive, but also for the processing fees payable per transaction, plus any other mandatory service and maintenance charges. While the set-up charge might be a one-off expense, the processing fees that tend to be a percentage of the sale that is shared by all local and international institutions party to the transaction process can also be quite high. This processing fee must be deducted from the vendor's sales margin (per transaction), ultimately affecting the profitability of the business (ICT Pulse, 2013).

Finally, approval of applications for access to e-commerce services might not reside at the local branch or main country office and need to be forwarded to the global corporate headquarters for approval. When the global headquarters must be involved, it signals that the bank in question considers applications for e-commerce support the exception, rather than the norm. Furthermore, this might be a chicken-and-egg situation. Banks in the Caribbean cannot yet justify placing the necessary resources at the national level to process such applications, but the e-commerce framework can be so onerous—the process, charges, etc.—that few merchants are prepared to try (ICT Pulse, 2013).

The use of mobile/cellular phones for financial transactions could, to an appreciable degree, provide a viable option for connecting the unbanked in the region because of the dense mobile/cellular phone subscriber penetration that frequently far exceeds that for persons with transaction accounts and access to financial/banking services (see Figure 4).

However, there appears to be little effort to address the needs of the unbanked and provide options for electronic transactions. With the exception of Haiti and the Dominican Republic, no other country in Figure 4 has introduced mobile money facilities that cater to the unbanked. Possible reasons for this could be a general underestimation of the number of unbanked persons in a particular country, along with the relatively sophisticated banking systems that typically exist in the region, which might cause the needs and circumstances of the unbanked to be largely overlooked (ICT Pulse, 2012).

Additionally, there are still governments within the region that are not comfortable with electronic payments systems, and except for payroll, rarely pay suppliers and contractors electronically. However, in any country, Government is the largest procurer of goods and services, and the recipient of revenue from a number of sources such as taxes, fees and charges, so the local business community is frequently guided by the systems it adopts. Hence if governments are themselves reluctant to accept credit cards, debit cards, and other e-payment methods, there might be little impetus or political will to broaden the options available to the unbanked (ICT Pulse, 2012).

Finally, policy and legislative constraints still govern financial transactions and services that directly affect the ease with which mobile money systems can be implemented. Many of the systems that govern financial services in the Caribbean have stringent rules to protect consumers, manage risk, and deter money laundering. As a result, the types of institutions that are permitted to offer financial services, along with the safeguards that must be implemented and maintained, tend to be rigorously regulated (ICT Pulse, 2012; see also OECD, 2013; Dangelmaier, 2014).

15. Towards a policy framework

The governments of the Caribbean are actively encouraging the diffusion of e-commerce as a way of improving their competitiveness and access to new markets. Some initiatives have been tried, such as raising awareness and the implementation of some legislative framework but policy planners also tend to ignore the synergies and complementarities between social and economic development without a clear mantra for poverty reduction. This research has shown that there is also a need to focus on fostering cooperative relationships to [re]shape the prevailing organizational and individualistic culture towards a more collaborative one. From a review of the multiplicity of factor endowments and the institutional arrangements that must be involved for a favorable development of a viable and sustainable e-commerce regime, there will be need for a policy that facilitates an ownership structure with governance that engenders trust and builds critical mass through leveraging community ties and existing business relationships (Lorenzini, 2012, p. 7). The preceding discussion would suggest that a first step toward effective action is for policy planners to recognize the complexity of the sector before setting out to draft a strategy. But what guidelines should orient this effort? By way of example, this section outlines an e-commerce strategy that follows from the research conducted for this paper that the region could contemplate in promoting the development of the sector.

16. Virtualizing the business sector

Unlike in the past where any potential benefits to be derived by such a sector were initiated by the state carrying much of the weight of the development exercise, there is now room for government and private sector partnerships in the early stages of any strategy. To make the system work, it is often argued that inter-firm cooperation through networking¹⁰ can placate many of the resource gaps both SMEs and states face (Kuwayama, 2001, p. 57; Gengatharen & Standing, 2004). As such a positive initiative at this stage could include the creation of an active regional electronic marketplace (REM) or digital marketplace. These are web-based systems similar to those of national and regional structures of innovation in their organizational arrangements and environment, that link multiple businesses and actors together to a central marketplace for the purpose of trading or collaboration and facilitating exchanges of different types of resources such as information, goods and services (Ndou, Del Vecchio & Schina, 2011 in Lorenzini, 2012, p. 7). The strength of such an innovative milieu lies in its capacity to aggregate firms online to exploit shared interests and experiences of relevant activities (e.g. R&D, advanced training, qualified technical assistance), and infrastructures and institutions (e.g. R&D centers, laboratories, educational institutions) that are too expensive to be financed by firms and/or by the state alone (Lorenzini, 2012, p. 22). Such an approach could become the institutional foundation because of its various innovative applications in serving as a strategic solution allowing entrepreneurs, firms, and governments to take advantage of the socio-political, economic, and cognitive capabilities that enhance and complement technological spillover benefits to increase competitiveness.

An REM initiative also deserves support as an instrument of regional development aimed at fostering a comprehensive framework to identify the most significant mitigating factors to the numerous existing entry barriers faced by firms and governments (Kuwayama, 2001; Allen Consulting Group, 2003). Several advantages can emerge from strengthening the links between the various actors, be they producers, service providers, or governments, to enable the realization of the various e-commerce stages of growth and development as outlined in Figure 1, such as

- the sharing of fixed costs of establishment and maintenance of the e-commerce system;
- creating economies of scale and scope with respect to the access to logistics and banking services and personnel training;
- an increase in the opportunities for cross-selling;
- the achievement of a critical mass and a strengthened reputation both for the individual product or service and for the territory as a whole, owing to the virtual circle generated by the reciprocal link;
- strengthening of relationships between participants to encourage knowledge spillovers and firms' innovative output (Giuliani, 2007, in Lorenzini, 2012, p. 6);
- saving the seller the costs and expertise required to build up traffic; and
- by way of creating such a network, enabling first mover or standalone SMEs to overcome a major weakness of isolation and powerlessness—referred to earlier—and to raise their competitive potential through the emergence of linkages between other firms (Kuwayama, 2001, p. 58).

SMEs are often characterized as the most disadvantaged and poorest entrepreneurial groups/sectors of developing countries (Kuwayama, 2001, p. 9; Mutula, 2010) and many have identified government's lack of incentives as one of the main barriers to developing e-commerce. An integral part of the REM should be in developing knowledge-intensive business networks to build e-commerce capability among SMEs in order to reduce the "digital divide" among enterprises. Because of its seamless virtual proximity such an initiative can encourage the transfer of technology among firms by the

dissemination of information to SMEs about e-commerce policies, best practices, and success stories to enhance innovativeness and competitiveness. Within such an online “enterprise” system, distress market signals can be sent to government to be more responsive in the provision of incentives and in which various related sectors can provide technical assistance to SMEs to promote e-commerce uptake that harnesses opportunities while minimizing obstacles (Kuwayama, 2001; Gengatharen & Standing, 2004; Lorenzini, 2012; Wikibooks, 2014).

Besides technological innovation, the absorption and diffusion of marketing, strategic or other types of knowledge have also been recognized as equally relevant while, from the consumers’ side, a major advantage of an REM lies in transaction cost reduction. This is especially true for typical products whose market is mainly regional and thus was hard to source from suppliers outside the area of production; while at the same time searching for products and comparing prices on the internet are less costly than visiting retail stores (Santarelli & D’Altri, 2003 in Lorenzini, 2012, p. 7). Generally among e-commerce users in developing countries, there is very low willingness to provide sensitive financial information over the Internet, so too information on where and how payment takes place (whether real or virtual); when settlement takes place (before, during or after the transaction); who settles; whether the transaction is B2B or B2C; or whether settlement can be traced. Similarly, before considering whether to engage in e-commerce consumers have reservations about transacting with SMEs through the Internet due to the lack of a clear policy on returns and use of data. Thus to address these concerns of transactional trust (Wikibooks, 2014; see also Efendioglu & Yip, 2005; Sharma, 2006; Lawrence & Tar, 2010; OECD, 2014a) an REM can mitigate these fears through incorporating a broad legislative framework that focuses *inter alia* on:

- Data Protection and Transaction Security;
- Transaction Privacy, which means that transactions must be held private and intact, with unauthorized users being unable to understand the message content;
- Transaction Confidentiality, implying that traces of transactions must be dislodged from the public network and that absolutely no intermediary is permitted to hold copies of the transaction unless authorized to do so;
- Transaction Integrity, pertaining to the importance of protecting transactions from unlawful interference—i.e. transactions must be kept unaltered and unmodified;
- The provision of minimum standards for consumer-related service quality;
- Protection from unfair and anti-competitive business practices; and
- Effective and efficient complaint recognition, handling, and resolution.

From these could also stem government and private sector partnerships to facilitate a campaign for the provision of information that creates an awareness of relevant consumer obligations to encourage widespread e-commerce use by SMEs (Wikibooks, 2014; see also Kuwayama, 2001; Efendioglu & Yip, 2005; Sharma, 2006; Lawrence & Tar, 2010; OECD, 2014a).

17. Integrating the virtual with the real

The presence of an REM should also facilitate SMEs in export promotion by being forward-looking and strategy-oriented in dynamizing what can be at times static commercial environments. The virtual facet of the REM can therefore serve as an [inter]national trade point portal that can complement local distribution centers by assisting in overcoming the cognitive barriers of “touch-and-feel” concerns and the lack of “transactional trust”, referenced earlier, between the two parties (buyer and the virtual seller) to the transaction. This combination could also foster the development of new or even deeper relationships between the various parties involved by offering, for example,

country-specific information on laws. Utilizing the local distribution center enables the economic enterprises to enhance the delivery process between the various parties, whereby there could be alternatives for enhancing parcel delivery of physical goods (Efendioglu & Yip, 2005; Healey, 2011).

Governments can reap further benefits through this agglomerative approach to Internet use by reducing costs, for example, as export aggregators, such as B2B or B2C portals/exchanges with SMEs, which would facilitate trading with SMEs and with other companies in the international market (Carpio, Isengildina-Massa, Lamie, & Zapata, 2013; Wikibooks, 2014). This will be of particular importance in assisting in the development of the agricultural sector, which is a major income earner in the region. Creative and innovative ways are yet to be used to harness the technology. Recognizing that farmers, fishermen, and even higglers in these countries have access to mobile telephony the emphasis should be to appropriate its use to increase their commercial potential through access to market opportunities. In this way much of the emphasis on commercializing this sector electronically could be conducted through the provision of information and digital content as seen at stage two in Figure 1. In this regard, the initial creation of a virtual storefront with the presence (World Trade Organization, 2008) of physical distribution centers such as fish-markets and vegetable markets would serve as community-shared access and connectivity platforms providing agricultural information on stock piles, availability and prices. Besides these, other integrative services could be offered that reduce transaction costs through e-market intermediation, such as classified ads and directory services, match-makers, market-place providers, and promotion of businesses through online searches (Mueller, 2000; Frain, 2005; Carpio et al., 2013), or such as venues for capacity building, skills enhancement, training, communications, and content development and for generating new ideas (Wikibooks, 2014). Thus, the establishment of [inter]national trade point portals within the context of an REM as a conduit for boosting a country's exports to foreign markets through which entrepreneurs, businesses, and governments and other stakeholders will have the opportunity to venture and establish small, medium, or even micro-size enterprise with global market access, will redound to the region's benefit (Rizk, 2001).

Through the establishment of an REM government in partnership with SMEs can also undertake to ensure enhanced security in e-commerce transactions through the establishment of a certification authority. This combination provides greater assurances for the verification of seller and buyer identities, examines transactions and security procedures (Wikibooks, 2014; OECD, 2014a), and ensures product standards of goods and services that ferment a culture of trust in products and merchants (Healey, 2011). In this regard, digital certificates are issued to those who are able to meet the set security standards. This suggestion does not discount the importance of private-driven security solutions.

18. Integrating the REM with International E-commerce platforms

As the REM is established and evolves it can be linked into third-party online marketplaces that are available for the marketing and sale of products online. Some provide the full range of services—payment processing, customer service, shipping, return processing and delivery. Tangible evidence already exists in the online pilot initiative being demonstrated in the Caribbean with the recent launch of Global Trade Services Limited in Jamaica with the central objective of promotion of a business-to-business (b2b) trading platform for the Caribbean. The e-commerce site, called Ab2bmarket, began as a concept in 2012, with its headquarters in Paris, and operations in Guadeloupe and Trinidad and Tobago. This new platform will give Caribbean companies access to new business opportunities within their region and internationally as it seeks to make business transactions more efficient by charging less than the over 15% fee on final sale prices charged by similar United States-based services, such as Amazon.com and eBay, when linking with (non-US) Paypal accounts. Ab2bmarket.com is the first virtual and secure business-to-business platform serving the Caribbean market and will connect businesses from various industries allowing them to find new resources, clients and partners providing the ability to buy and sell directly online. By participating in the pilot project, interested companies will have free access to different functionalities of the platform, and be able to provide their feedback on the different services available and what could be done to

enhance the effectiveness of such a tool on their business and trade initiatives (Jamaica Observer, 2014).

19. REM and the establishment of N/RIXPs

As discussed earlier, a constraint faced by Caribbean countries is limited access to international bandwidth because of the costs of the high-capacity connections needed to transmit the large quantities of digitized information required for full Internet services. An initiative for consideration therefore is the role of national and regional internet exchange point N/RIXPs for the development of e-commerce. This is a policy initiative that until now has not been discussed within the region. In pith, an Internet exchange point (IX or IXP) is a physical infrastructure through which Internet service providers (ISPs) and Content Delivery Networks (CDNs) exchange Internet traffic between their networks (Internet Society, 2014; Laudon & Traver, 2012). According to Laudon and Traver (2012), the primary purpose of an IXP is to allow networks to interconnect directly, via the exchange, rather than through one or more third-party networks. The other advantages of the direct interconnection are several but the primary ones are:

- Substantial cost-savings are made by eliminating the need to put all traffic through the more expensive long-distance links to the rest of the world.
- More bandwidth becomes available for local users because of the lower costs of local capacity.
- Local links are often up to 10 times faster because of the reduced latency in traffic, which makes fewer hops to get to its destination.
- New local content providers and services, that rely on high-speed low-cost connections become available, further benefiting from the broader user-base available via the IXP.
- More choices for Internet providers become available on which to send upstream traffic to the rest of the Internet—contributing to a smoother and more competitive wholesale transit market (Internet Society, 2014; see also International Telecommunications Union (ITU), 2005; Kende & Hurpy, 2012).

Currently, because of the limited amount of local national online content and services, most of the Internet traffic generated by users is international, resulting in large capital outflows paid to foreign Internet providers that incur higher operating costs. The region must also consider as part of an e-commerce policy the growth of local content development if it is still collectively interested in the growth of a complementary regional cultural industry. Moreover, as the internet continues to be adopted by more and more people, and not just for entertainment but for large-scale business services, it is crucial for ISPs to have servers that keep data as close as possible to Web visitors. This cache, among other things, holds static content derived from social media interactions and enables users to obtain Google content locally instead of ‘tromboning’ overseas, which is the routing of traffic through other regions like Europe with higher traffic zones at expensive costs to return to the Caribbean. In this regard, the digital delivery process is further enhanced (International Telecommunications Union (ITU), 2005; Kende & Hurpy, 2012; Jensen, 2012; International Telecommunications Union (ITU), 2013). Internet exchange points (IXPs) are a vital part of the e-commerce system.

From a public policy perspective, the incorporation of a regional IXP (RIXP) within an REM will therefore be increasingly important because the regionalization of high bandwidth could ensure online services are equally accessible to all local users, while improving the quality and affordability of Internet services through reducing latency, enabling web applications used by e-commerce sites to load faster (Kende & Hurpy, 2012; Internet Society, 2014). For example, the establishment of an RIXP has indirect benefits on the pricing of telecom capacity by facilitating a group of networks at the same location, thus negotiating a better deal with the upstream provider and by making it easier

to sell services to potential customers located at the exchange, as all parties are reachable at low cost. In this respect, an RIXP helps to encourage the development of telecom infrastructure (such as national and international fiber cables). Likewise it can be argued that incorporating an RIXP would interconnect national IXPs, providing its members with a single shared connection to the Internet cloud, and serving as a possible way of cutting costs and keeping traffic in the same region (International Telecommunications Union (ITU), 2005; Internet Society, 2014; Kende & Hurpy, 2012; Jensen, 2012; International Telecommunications Union (ITU), 2013). An interesting example to follow is that of Nigeria where the dominant e-payment platform, Interswitch, routes its traffic through IXP via an ISP. Thus, many online financial transactions are now exchanged locally and many of the financial platforms previously hosted abroad have started migrating back to Nigeria. It is believed that if this trend would continue it would facilitate the growth of entrepreneurial e-commerce businesses in Nigeria (Kende & Hurpy, 2012; International Telecommunications Union (ITU), 2005) thus making it easier and providing a justification for a digital certification authority to function.

In general, the intention of this article is not to develop an extensive case for the challenges and opportunities of RIXPs because initiating them and ensuring their efficient operation is not as simple as it would appear. However, the key take away point is that creating an enabling environment for the growth of IXPs is critical, and policy-makers, regulators, and incumbent operators ought to appreciate that reducing the cost of Internet connectivity for domestic consumers will generate much greater investment and more users. In this regard, an RIXP can complement and improve the functioning of other parts of the Internet ecosystem by providing a more competitive environment for purchasing capacity and offloading traffic from congested international links to help accelerate the development and the growth and enhancement of e-commerce (Kende & Hurpy, 2012; International Telecommunications Union (ITU), 2005, 2013; Internet Society, 2014; Internetsociety.org, 2008; Jensen, 2012).

20. Banking the unbanked

A concern raised earlier to be addressed is how to eliminate excessive restrictions and limitations associated with credit, finance, and capitalization. Particularly important will be to encourage the region's financial sector towards focusing on the opportunities that can be created by e-commerce as an integral part of their financial services agenda. By way of having an REM involving all stakeholders it would better able promote initiatives to encourage the state's banks and financial institutions to lend to business especially SMEs, by examining how the funds allocated to credit easing could channel venture capital and credit through entities that have trusted relationships with businesses, or service providers to the business community. It could also encourage financial institutions to conduct studies, and based on their efficacy, pilot schemes through launching innovative policy initiatives to find effective alternatives to banking as a source of credit, such as mobile money adoption (Kuwayama, 2001, p. 8; see also Gordon, 2015; UNCTAD, 2015). Mobile payments, for example, are already in use by countries characterized by limited Internet use but well-functioning mobile money systems. In several African countries such as Ghana, mobile solutions represent the most viable infrastructure for e-services due to high degrees of financial exclusion, limited availability of fixed lines, cost of fixed lines and cost of the card infrastructure. In Kenya, online purchase payments from mobile phones accounted for 19% of total e-commerce transaction value in 2012, a smaller share than for cash-on-delivery but larger than for credit card payments (UNCTAD, 2015, p. xii). Already Pagoflash and Mobicash exist as examples in Latin and Central America to incorporate the unbanked (Montgomery, 2014; Gordon, 2015). Banks, financial lending and training institutions and corporations should be encouraged to develop "SME desks" that will address the specific funding needs of SMEs and consumers. In particular, steps should be taken to:

- support regulation and encouragement of mobile money movement and interaction across banking and alternative systems
- provide incentives to individuals to become entrepreneurs by lowering borrowing rates;

- provide incentives to SMEs that intend to use e-commerce in their business operations;
- broaden credit extension facilities to SMEs so they can use ICT and e-commerce; and
- offer discounts on business solution software packages and software licenses (Wikibooks, 2014).

Without structural environments such as an REM the process of innovation would lack the “institutional thickness” that is necessary to make the system work efficiently and competitively (Lorenzini, 2012, p. 22). The key to success will be good coordination and coherence, defined and implemented with consensus from all interest groups involved with recipients being in charge of the need assessment and design process, and not just involved in the program as end-users (Kuwayama, 2001, p. 24; Kamath, 2014).

21. Conclusion: Mind the gap please...

This analysis has implications for an e-commerce development strategy in the Caribbean and, by extension other developing countries planning to develop one. These countries face a challenge in seeking to develop a sustainable e-commerce sector. As the IT industry is presently organized in the Caribbean, its contribution to long-term technological and industrial development is limited. In some respects, this is expected as the reality is that countries that are less developed intrinsically follow at a distance and at variable paces and in this regard important advances must be continuously made toward bridging the gap. The analysis indicates however that unless the e-commerce industry participants understand and address the economic, political and cultural/cognitive issues that enables the large-scale diffusion and success of such endeavors a regional industry will be greatly impeded. The article is therefore warning and advising policy planners, that arguably, the success of any e-commerce strategy lies not only in the identification of and the establishment of supply-side institutions, but also in managing the environment. Given the past institutional and policy experience of the Caribbean, this must take into account the complexity and interdependencies of technological, organizational, and social change (Dutton, 1995 in Broome, 2003), and not be merely seen in technological and legislative terms. Moreover policy makers must address whether their vision is genuinely emancipatory for all citizens. In this regard, these developing countries embarking on such strategies must observe and avoid the pitfalls into which other players have been lured with little-to-no benefits. Such an oversight just serves to further lock them into path-dependent global structures of development. Furthermore in the Caribbean, too many instances of development strategies are marred because of the lack of an integrated approach which leads to policy instability and inevitably a lack of commitment by policy planners to implement them. Thus it is with this sober approach to an e-commerce development strategy that policy planners in the Caribbean will have to move forward. The fact is that copying ‘best practices’ may not be an ideal option, but these states must still do so in order to gauge their competitiveness and e-readiness globally through (re)examining their institutions and policies in different elements of the e-commerce process whilst being mindful of the opportunities but equally wary of the pitfalls. The article is conceptual in this regard because it sought to pay particular attention to harnessing these ideas with a view towards analyzing how strategic policy interventions can be made, drawing from a comprehensive analysis of case studies. Introspectively, the development approach currently being adopted by policy-makers needs careful (re)consideration. Until this is done, the prospects of a viable e-commerce industry in the Caribbean will not be the open network to their development, but rather a closed regime.

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Cover image

Source: Author.

Notes

1. The Caribbean Community (CARICOM) including the Caribbean Common Market was established in 1973 for the purpose of promoting foreign policy coordination, functional cooperation, economic integration, and collective security. Its 15 member states are Antigua and Barbuda, The Commonwealth of the Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, St. Kitts and Nevis, Saint. Lucia, St. Vincent and the Grenadines, Suriname, Trinidad, and Tobago.
2. The EPA replaces the trade provisions of the Cotonou Agreement, signed in 2000, in which the European Community (EC) unilaterally granted African, Caribbean and Pacific (ACP) countries non-reciprocal trade access to Europe in preference to goods from other countries.
3. The **Caribbean Forum (CARIFORUM)** is a subgroup of the African, Caribbean, and Pacific Group of States (ACP) and was established in 1992 for the purpose of promoting and coordinating policy dialog, cooperation and regional integration, mainly within the framework of the Cotonou Agreement between the ACP and the European Union and also the CARIFORUM-European Community Economic Partnership Agreement (EPA). Its membership comprises the 15 Caribbean Community states, along with the Dominican Republic.
4. The main objective of the Caricom Single Market and Economy (CSME) is the economic integration of all participating countries of the Caribbean Community through the free movement of goods and services; the right of Establishment—permitting the establishment of CARICOM-owned businesses in any Member State without restrictions; a Common External Tariff for free movement of goods; the free movement of Capital—through measures such as eliminating foreign exchange controls; a Common trade policy; the Free movement of labor—through measures such as removing all obstacles to intra-regional movement of skills, labor, and travel, harmonizing social services (education, health, etc.); providing for the transfer of social security benefits and establishing common standards and measures for accreditation and equivalency (Source: www.CARICOM.org).
5. The Conference of Heads of Government consists of the Heads of Government of the Member States of CARICOM. It is the supreme decision-making body of the Community, and determines and provides policy direction for the Community. It is the final authority for the conclusion of treaties on behalf of the Community and for entering into relationships between the Community and international organizations and States and on questions arising in relation to the financial affairs of the Community. It may establish such Organs or Bodies and may decide to admit at its deliberations as observers, non-Member States of the Community and other entities, as it considers necessary for the achievement of the objectives of the CARICOM. The Conference may consult with entities within the Caribbean Region or with other organizations and for this purpose may establish such machinery as it considers necessary. The Conference may consider and resolve disputes between Member States (www.caricom.org).
6. The **Secretariat of the Caribbean Community** is the principal administrative organ for the Caribbean Community (CARICOM) with responsibility for *inter alia* assisting Member States in the development and implementation of proposals and programmes; mobilizing resources from donor agencies to assist in the implementation of Community Programmes and providing on request, technical assistance to national authorities to facilitate implementation of Community decisions toward the attainment of a viable, internationally competitive and sustainable community (www.caricom.org).
7. The concept of the open network is not being used in its truest technical meaning. Used here it implies that e-commerce must mean a more democratic, collaborative, flexible, co-productive development, and delivery of services in an efficient, responsive, sustainable, and equitable way. At the heart of this lies deep community involvement with the returns from investing in such a strategy being reduced costs and greater representation in community engagement and, more importantly, strengthening communities' ability to help themselves. Contrarily a closed network is restrictive, allowing access by permission. Those allowed must conform generally to path-dependent processes with any changes restricted to just "commoditizing the complement" or those that will help drive demand for core products or services whilst maintaining a hierarchical status quo.
8. Pay-as-you-go (PAYG) allows the subscriber to pay for mobile phone calls, texts and services such as emails and internet access, in advance. The subscriber is not tied into paying for a certain amount of calls and texts each month and can terminate the service at will.
9. According to the GSM Association (GSMA), the "unbanked" refers to persons who do not have bank accounts, or transaction accounts, at formal financial institutions. The unbanked are usually the very poor, or those at the bottom of the socio-economic pyramid. Typically, they operate primarily in cash; have little or no savings; and may not satisfy all of the banking requirements to open an account.
10. Networking, term most often used to describe *arms-length* interactions between firms, may take many forms such as linking firms through knowledge exchange, commercial relationships and competition relationships. The main characteristic of a network is that it does not necessarily require geographical proximity to be efficient: it can link firms whose activities are around the world. The term describes both international and national production as well as distribution networks; it includes interaction across a value chain without the necessity of having either formal links or equity participation. Both networks of small firms and international production networks organized through subcontracting and/or foreign direct investment by transnational corporations fall in this category.

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