

STRATEGY & SOLUTIONS



Creating Systemic Innovation -
Lessons from
OPEN SOURCE SOFTWARE
can be applied to Vision 2030



Open Source, because of its ability to be agile and nimble and its capacity to harness global knowledge agents may be an alternative, parallel model for Jamaica to accelerate its progress towards Vision 2030.

Maurice McNaughton

Innovation refers to the “creation of better or more effective products, processes, technologies, or ideas that affect markets, governments, and society and generally signifies a substantial positive rather than incremental change.” This definition is from Wikipedia, generally accepted to be as good an encyclopedic reference source as any, and itself the remarkable product of a type of innovation process increasingly being referred to as “Open”. But I get ahead of myself, more on the notion of “Open Innovation” later.

Three things are noteworthy from Wikipedia’s definition of Innovation:

- i) *Innovation is not necessarily about technology. We often tend to casually associate innovation with technology itself, or arising from the effects of technology because information technology has had such a dramatic and visible transformational effect on individuals, business and society in the past two decades. However an innovation can be completely devoid of technology. Case in point, the Jamaica Debt Exchange (JDX) Programme might be considered a financial innovation that was able to yield interest savings to the Government of Jamaica estimated at upwards of \$40.0 billion*
- ii) *The impact of an innovation goes well beyond incremental improvement and involves radical change or transformation.*
- iii) *Innovations more often than not, have their genesis in ideas, but an idea only becomes an innovation in its application or execution resulting in tangible benefits to society.*

THE STATE OF INNOVATION IN JAMAICA

This third notion leads me to consider the state of innovation in Jamaica. We are a remarkably creative people by nature, as manifest in the tremendous influence that creative output of Jamaican origin, such as Reggae music and Rastafarianism have had on global popular culture. The

most recent 2009 Global Entrepreneurship Monitor (GEM) report ranked Jamaica highly in total entrepreneurial activity (TEA); in fact, it classified Jamaica as the fourth most entrepreneurial country worldwide. This high TEA rate suggests that “despite adverse economic conditions, Jamaicans continue to use their creativity and innovation to develop entrepreneurial ventures that are used as means of job creation and self sustainability.”

Before we take too much comfort, however in another “high” global ranking, further reading of the report indicates that highly developed countries such as Japan, Belgium and Denmark have the lowest TEA among GEM countries. It seems that a significant proportion of the early-stage entrepreneurial activity in Jamaica (33%) is necessity-driven because there are no alternatives for work or the jobs that are available are not satisfactory, as distinct from situations where entrepreneurship is pursued to exploit a perceived business opportunity. There is a continuum and sometimes a thin line between “hustling” or necessity entrepreneurship, and opportunity-driven entrepreneurship; intuition suggests that there is a quality of desperation to much of the entrepreneurial activity in Jamaica.

“despite adverse economic conditions, Jamaicans continue to use their creativity and innovation to develop entrepreneurial ventures that are used as means of job creation and self sustainability.”

While there is undoubted evidence of a strong propensity towards innovation in Jamaica, too much of it has been driven by an intrinsic natural creativity and individual entrepreneurial initiative, rather than the deliberate creation of institutional conditions conducive to the level of value-adding entrepreneurship and innovation that can be a sustainable driver of long-term socio-economic development. Jamaica, and perhaps the wider Caribbean, has failed to yield sustainable and consistent innovation.

In his much pilloried 2011 Sir Frank Worrel lecture, ‘*The Rise and Fall of West Indies Cricket*’, Professor Hilary Beckles offered much intellectual insight about innovation in the region. Regrettably, a lot of it was masked by his unfortunate turn of phrase about “Dons and Donmanship” among some West Indian cricketers. Nevertheless, there is value in his comparison between the kinds of creative genius and spontaneous innovation in West Indies cricket that produced a world class cricket dynasty lasting just under two decades, versus the systemic innovation in the clock-making industries of Switzerland that are able to preserve and sustain excellence over a period of centuries. Switzerland, incidentally, is ranked number one in innovation in the World Economic Forum (WEF) Global Competitiveness Report 2011-2012.

In this regard, we might consider an alternate perspective of innovation as ‘*the capacity to bring new ideas into the market*’. This represents innovation as a capability unlike our earlier definition which positioned it both as a process as well as an outcome. All three perspectives are legitimate in different contexts, but the capability view facilitates a brief examination of innovation in the context of Jamaica’s Vision 2030 ▶▶

JAMAICA'S VISION 2030 AND INNOVATION

Jamaica's Vision 2030 is sprinkled liberally with references to the importance of innovation, usually in combination with Science and Technology (STI), as fundamental in the creation of wealth, economic growth and global competitiveness. In fact, the essence of Vision 2030 is about accelerating Jamaica's transition from a predominantly factor-driven economy, (i.e. one that competes on the basis of factor endowments, unskilled labour, natural resources) towards an innovation-driven stage of development characterized by higher levels of knowledge-intensive activities, a bias toward high value-added industries and a greater reliance on superior forms of capital (i.e. cultural, human, knowledge and institutional capital).

The plan anticipates the creation of the requisite governing framework and capacity for STI through two broad strategic initiatives:

I. *Integrate Science and Technology into All Areas of Development.*

II. *Establish a Dynamic and Responsive National Innovation System.*

Within these two broad pillars, targeted initiatives include:

- *Building capacity for effective science and technology education in primary and secondary schools*
- *Creating funding mechanisms for R&D and innovation such as venture capital, foreign direct investment, revolving loan scheme for MSMEs, tax concessions on R&D equipment, and a national R&D fund*
- *Creating an effective policy and legislative framework to support and advance STI including strengthening the Intellectual Property Rights (IPR) System*
- *Creating knowledge parks and centres of excellence to facilitate R&D and innovation, with emphasis on indigenous technology*
- *Creating a national research and development agenda and establish appropriate mechanisms to encourage the private sector to become a dominant player in STI and R&D activities*

These initiatives in the Vision2030 document (<http://www.vision2030.gov.jm>) clearly suggest the imperative of creating the institutional framework to engender what one might refer to as a Systemic Innovation capacity.

This approach is consistent with the traditional model of a national innovation strategy that requires a centrally planned, well-coordinated ecosystem of institutional enablers conducive to sustainable innovation. Success models for this strategy are well documented in cases such as Israel, Singapore, Malaysia, Republic of Korea, respectively ranked 6th, 8th, 14th and 24th in the Innovation pillar in the latest WEF Report. Jamaica was ranked 94th and the factors shown in Figure 1, are clear indicators to some of our primary barriers to innovation:

- *Propensity to acquire rather than create technological solutions;*
- *Low levels of commitment to, and investment in R&D by both public and private sectors in collaboration with academia;*
- *Production, retention and availability of a critical mass of science and technology resources;*

JAMAICA'S INNOVATION RANKING FACTORS (94TH)

12TH PILLAR: INNOVATION

INDICATOR	VALUE	RANK/142
Capacity for innovation	2.7	97
Quality of science research Institution	3.7	63
Company Spending on R&D	2.7	101
University-industry collaboration	3.5	76
Gov't procurement of advanced tech products	3.3	102
Available of scientists and engineers	3.3	121
Utility patents granted/million pop*	1.5	51

- *Inadequate government leadership in its own adoption, procurement and use of ICT that stimulates technological development and indigenous innovation capability in the local ICT sector.*

Notwithstanding the admirable statements of aspiration and intent in Vision 2030, some question whether our cultural and political disposition will be able to overcome the ebbs and flows of our 5-year electoral cycle, to give us a reasonable chance of creating the kind of strong, state-centred and coordinated programme of institutional innovation capability that will enable and empower individuals, businesses and the industrial ecosystems of the country.

Perhaps we may need to look beyond the traditional models for Jamaica and the Caribbean's appropriate innovation strategy. Let's consider some of our visible innovation successes, as measured by their transformational impact:

- *The West Indies cricket dynasty of the 80s and 90s*
- *The rise of Bob Marley and emergence of reggae music as a global popular cultural influence in the 70s and 80s*

- *The ascendancy of Jamaica's track & field to global sprint dominance over the last decade*

These share some common characteristics worth noting:

- *They emerged out of localized ecosystems that were able to harness and unleash natural, higher order, cultural and human capital in spite of considerable dysfunction in the formal, centralized institutional support framework*
- *They all featured influential, iconic or dominant leadership figures in the context of the local community*
- *They were each born out of a specific, problematic situation (metaphorically speaking "an itch that needed scratching")*

There is a model of innovation that has emerged within the past decade that exhibits these very attributes, the Open Source phenomenon of software development that has disrupted the foundations of the conventional, commercial software industry. Management Guru, Gary Hamel describes the open source software movement as "the single most dramatic example of how an opt-in engagement model can mobilize human effort on a grand scale..." Eric Raymond (in the 1999 classic, *The Cathedral and the Bazaar*) highlights the dramatic philosophical differences between the free and voluntary Bazaar model associated with Open Source versus the rigidly structured and closed Cathedral model associated with the proprietary software development paradigm. Perhaps within this domain, we might find some clues to a hybrid model of innovation that suits Jamaica's current urgent development agenda.

OPEN SOURCE AND OPEN INNOVATION

The Open Source software production model has demonstrated a remarkable capacity to harness individual autonomous innovation (there is no more egotistic, individualistic innovator than the software developer) into a seemingly systemic innovation capability, based on loosely coupled communities of knowledge agents, without the formal structures attendant with the traditional commercial software development firm. The early debate as to whether this seemingly

anarchic model based on hundreds (or thousands) of volunteers could organize and collaborate on a complex software production project, and outperform large and well-financed enterprises in producing high quality software in a sustainable way, has been categorically laid to rest. The phenomenal successes of Open Source standards such as the Linux operating system, the Apache web server that runs the Internet, and the Android mobile platform among many others attest to this reality.

Studies of the phenomenon of the Open Source software community as an innovation model have unearthed some observable dynamics (and rules):

The Open Source software production model has demonstrated a remarkable capacity to harness individual autonomous innovation

- ***To solve an interesting problem, start by finding a problem that is interesting to you ("scratching a developer's personal itch"):*** *The personal relevance fuels the engagement and passion of open source contributors, often without monetary compensation.*
- ***Given enough eyeballs, all bugs are shallow" (Linus' Law):*** *Having different people with different experience and/or creative approaches tackle the same problem, especially one in which they have a personal vested interest in the outcome, will likely lead to an evolutionary model of innovation, that generates alternative high quality solutions rather than being pre-committed to a single solution or approach.*
- ***Release early. Release often. And listen to your customers:*** *Such a system benefits from "collective intelligence" and a process of experimentation and rapid-trial and- error learning that drives an extra-ordinary pace of incremental innovation.*
- ***Leadership by participation and achievement:*** *Contrary to the conventional organizational hierarchy, leaders emerge in open source communities based on their accomplishments as measured by peers rather than superiors.*
- ***Openness and Freedom are core principles:*** *The absence of artificial or contrived boundaries, transparency of information and access are sacrosanct in the open source community. The freedom of the individual to participate at any desired level including choice of task, amount of time invested, preferred solution approach in a peer-reviewed environment cultivates a level of self-determinism that fuels the self-organization and sustainability of the community.*

Although Open Source software production is the most visible manifestation, these core principles of open innovation are being adopted in several other domains. To name a few:

- ***Brewtopia:*** *An Australian Open Source beer company consisting of a global community of around thirty thousand beer lovers and connoisseurs that played a prominent role in financing the company, developing the product and marketing the brand. ▶▶*

- **Wikipedia:** *The Open Source encyclopaedia with one of the largest volunteer networks in the world, of more than 350,000 registered "Wikipedians who have registered in order to contribute information.*
- **CrowdFunding:** *has become a novel Open Source process for venture financing, where anyone with a business venture or cause can post their campaign on an online funding platform to raise capital for just about any goal. One of the more successful sites: <http://www.kickstarter.com/> has funded more than 10,000 projects with over \$75 million dollars and the Crowdfunding model has captured the attention of President Barack Obama's recent "Startup America" initiative as a legitimate means of fuelling innovation and entrepreneurship.*

POLICY IMPLICATIONS

The kind of innovation manifested by the Open Source phenomenon is characterized by a level of distributed innovation approach that does not have the degree of interdependencies and reliance on centrally planned and coordinated institutional mechanisms that the traditional systemic innovation systems do. This approach is being increasingly adopted in other product domains because of its ability to be agile, nimble and harness globally accessible knowledge agents. Perhaps therein lies a model of innovation for Jamaica to accelerate our progression towards Vision 2030. This is not for a moment to suggest that we eschew the ambitious plans articulated in Vision 2030 that seek to build the Cathedral-like equivalent of the institutional framework that can establish a dynamic and responsive national innovation system. But it would be foolhardy to leave all our eggs in a basket that is so dependent on a strong, consistent and sustained political will and leadership that transcends successive administrations.

The National Innovation Strategy being developed must recognize and deliberately incorporate Open Innovation principles as an alternative, parallel model of innovation based on a more distributed engagement of the global economic and intellectual resources resident in Jamaica and its diaspora. One thing that doesn't change with this new emerging model of innovation is the need for inspired and thoughtful leadership, one that recognizes Government's increasingly facilitatory role of encouraging broad-based engagement, providing incentives, and removing many

of its own institutional barriers and burdens to innovation. ■

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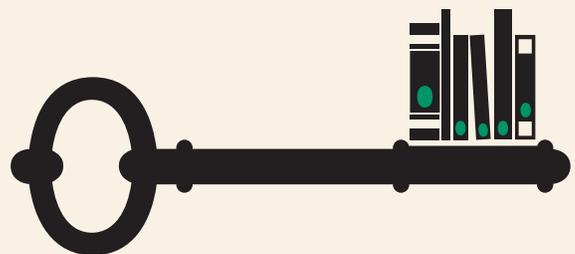
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