

INNOVATION, PRODUCTIVITY & COMPETITIVENESS



HealthCare sectors in the Caribbean, are often overwhelmed by the immediate challenges of service delivery – specifically, the provision of an acceptable quality of health care service at a reasonable cost. The predominant focus on these operational issues, while important, may cause policymakers and practitioners in the public and private sectors of the Caribbean Health Sector to lose sight of significant innovation and entrepreneurial opportunities being created in Healthcare as a result of the Digital Revolution.

Perry van Rijsingen & Maurice McNaughton

Healthcare, globally, is facing unprecedented changes. This is driven primarily by the need to control the ever rising cost, estimated to exceed \$9 trillion a year globally in 2017, which is consuming an escalating share of income in developed and developing nations alike. With the increasing number of people 65 years and older, the chronic disease burden, now already accounting for 80% of the above mentioned global health care costs, there is a strong upward pressure to these costs. Coupled with this trend, the informed, engaged and increasingly empowered consumer is demanding improved quality of and access to care, providing another source of strong upward pressure to healthcare costs.

This double-dilemma of increasing cost pressures and service quality demand can only really be addressed by technology and business model innovations that enable radical changes to the way healthcare is delivered. Aside from needing to be evidence based and outcome driven, the radically novel healthcare approaches are increasingly preventative, predictive, personalized, ubiquitous, robot assisted and minimally invasive as they enable shorter hospital stays, home recovery and assisted but independent living for the elderly. Many of these healthcare innovations build on technologies originally developed for use in areas beyond healthcare, such as digitization, access to information anytime and anywhere, mobile technology, scalable cloud computing, artificial intelligence, sensors, photonics, miniaturisation and nano-technologies. Furthermore, many of the most compelling innovations, in spite of limited resource availability, appear no longer to come from developed countries, but from emerging markets.

INNOVATION DRIVERS IN EMERGING MARKETS

Several factors help explain why. *First*, the digital age has democratized innovation in the sense that, often, innovations no longer require very significant capital investments. For example, the availability of scalable cloud computing infrastructures, open source software, cheap computing resources, and platforms as a service (PaaS) allows for low capital intensity and lean start-ups that are working on new business models that create value from data. With digital innovation becoming increasingly important

in healthcare, more health care innovation can come from traditionally less well-resourced nations. The internet and mobile technologies have also dramatically democratized access to information. A Maasai warrior on the remote Serengeti plains in Eastern Africa, with a smart phone, has ready access to more data than the president of the USA had two decades ago.

Secondly, necessity breeds innovation. As specific healthcare needs in emerging economies often are different from those in developed nations, existing providers and entrepreneurs must improvise and innovate. This drives local innovation that, in some cases— over time – could scale to become local for global innovation. Furthermore, highly educated graduates with top-tier technical skills but limited mainstream job opportunities, increasingly turn towards entrepreneurial endeavours.

Thirdly, entrepreneurs in emerging economies often face fewer legal and regulatory constraints in their initial home markets, allowing both start-ups and existing public and private enterprises to experiment with radically new technology and business model innovations that, fuelled by the local demand and cash generated in their home markets, may spark new innovative global solutions.

The hazardous minefield that solving the healthcare challenge represents for governments in developed economies, plays out daily in the theatre of current US politics. However, the healthcare sectors of the Caribbean are not immune to these global trends, challenges and opportunities. Population growth, shrinking budgets, and increases in disease burdens place these sectors in Jamaica and the rest of the Caribbean under severe strain (See, for instance, Jamaica Gleaner, Fixing Health: Restructuring Jamaica's Health Sector For 2016, 3 September 2016). The political directorate, policy makers and public sector administrators in the region are often overwhelmed by the immediate challenges of service delivery – specifically, the provision of an acceptable quality of healthcare service at a reasonable cost. For instance, within the last 24 months, the Jamaican health sector has had to contend

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variously with the social and economic ravages of the Chikungunya virus, global paranoia about Ebola, the political scandal arising from the outbreak of bacterial infection at two of the country's premier public hospitals, and the threat of the Zika virus.

GUIDING PRINCIPLES FOR HEALTHCARE ENTREPRENEURS

Focusing primarily on these operational issues, while important, may cause decision-makers in the Caribbean Health Sector to lose sight of the significant innovation and entrepreneurial opportunities being created in healthcare as a result of the Digital Revolution. We refer to these innovation opportunities that leverage any combination of big data, internet or mobile technologies as 'Digital Health' business models.

Within the context of a developing market, Digital Health entrepreneurs should be guided by the following key assertions: ►►

- Business model should seek to exploit one or more of the global Healthcare trends – customer-centric, ubiquity, data-driven, preventive
- Business model should be truly asset light, with core capabilities enabled by strategic partnerships
- Initially target and validate with local ‘beach-head’ customers in a ‘lean start-up’ fashion
- Anchor value-proposition and revenue streams in the core principles of transaction efficiency, novelty, service complementarities & positive network externalities

stimulating and encouraging these emerging opportunities. In the most recent edition of the “Developing the Caribbean” hackathon, themed #HackZika, held at the University of the West Indies in July 2016, an expert team from the Ministry of Health led

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by Dr. Karen Webster-Kerr, National Epidemiologist and Dr. Michele Roofe, Senior Medical Officer-Health Informatics briefed several teams of tech enthusiasts on the challenges of the Zika virus and encouraged them to work with data provided by the Ministry to find creative and meaningful solutions that could help protect communities against the Zika Virus and other prevailing vector-borne diseases.

GLOBAL TRENDS RESHAPING HEALTHCARE IN THE COMING DECADE

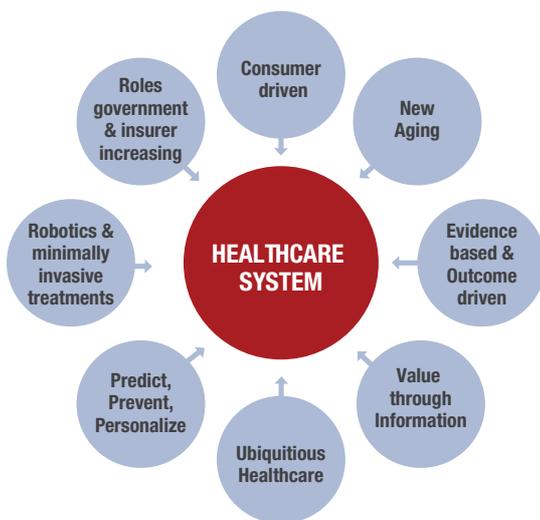


Figure 1.

In a study of twenty-four of the most promising health care start-ups in China, India, and Africa, we find many of these principles to be increasingly prevalent and demonstrate that ‘Digital Health’ is democratising healthcare innovation across the globe, and it is no longer a prerogative for the ‘large’ and the ‘rich’. Caribbean entrepreneurs are therefore encouraged to find and pursue niche opportunities in this Digital Health arena.

Governments, local authorities and education institutions have an important role to play in recognising,

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The solution ideas generated after the 24-hour hackathon, included an interactive voice and text enabled screening and diagnostic solution; a web and mobile data collection application to record incidences of Zika island-wide with a real time dashboard accessed by the Ministry of Health; and a “community mapping” app to motivate citizen action to identify and eliminate waste and other mosquito breeding sites in their own communities.

These kinds of collaborative ventures between Government, Academia, and Civic tech entrepreneurs in exploring innovative approaches to Public Healthcare data collection, analytics, surveillance and response, provide one promising avenue for creating ‘Digital Health’ entrepreneurial opportunities. This is only the starting point. Truly ground-breaking work being done by academic colleagues in Sri Lanka and Paraguay, using Mobile Network Big Data to build predictive models that forecast the outbreak and spread of vector-borne diseases such as Dengue and Zika, provide a glimpse of the exciting future for active research collaborations and innovation in this domain. ■

Perry van Rijsingen, from The Netherlands, is currently CEO at Preceyes B.V., a medical robotics and big data company and CEO and Founder of “21st Century Business Growth Advisors B.V.” to help companies create and scale new businesses

Maurice McNaughton is director of the Centre of Excellence for IT Innovation, Mona School of Business and Management, UWI Mona.

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