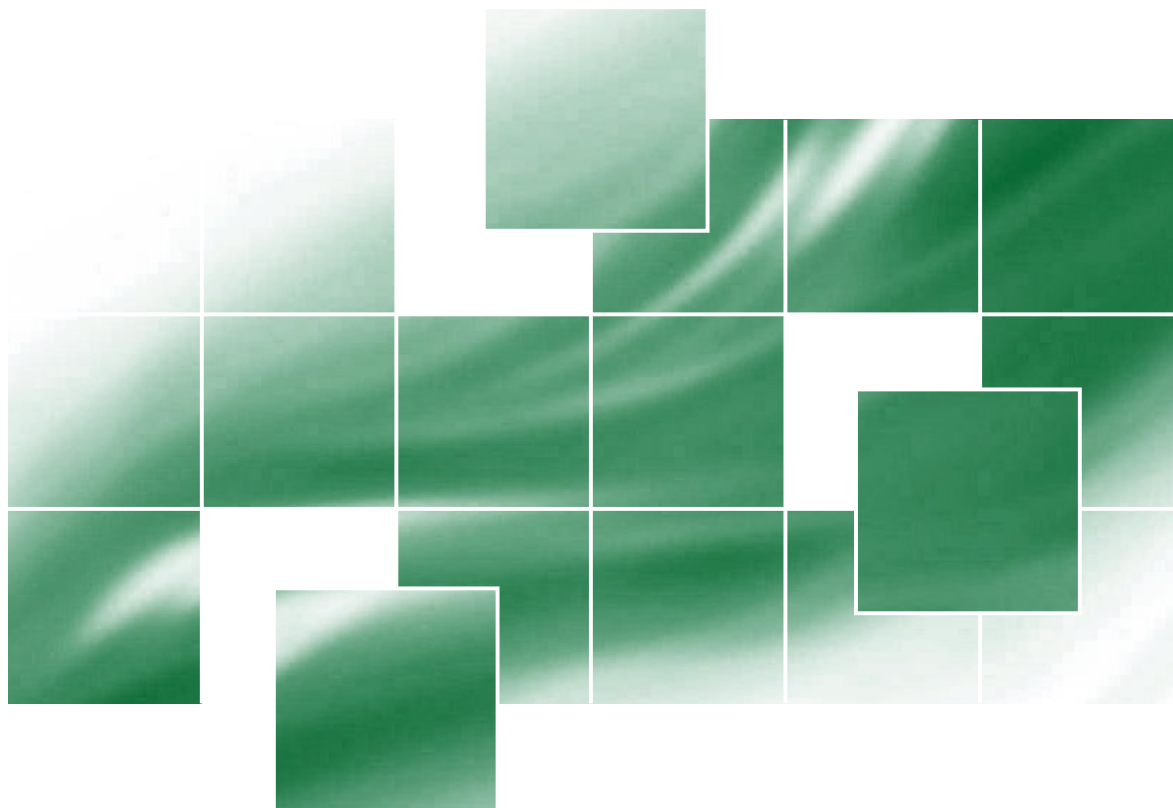


RIMIAC

Regional and Thematic Papers
on Research Management
2009–2013

A case study on the state of research management in the Caribbean

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RIMI4AC stands for the Improvement of Research and Innovation Management Capacity in Africa and the Caribbean for the Successful Stimulation and Dissemination of Research Results.

The RIMI4AC project ran from 2009 to 2013, and aimed to strengthen the two research and innovation management associations in southern and West Africa, SARIMA and WARIMA, while supporting the establishment of similar associations in Central Africa, East Africa, and the Caribbean, namely, CARIMA, EARIMA and CabRIMA.

In the process, the RIMI4AC project provided training to members of the regional associations, and established an information and communications network, including customised websites that provide resources and support for research managers and administrators.

This document is one of a series of five papers published on themes related to research management practice, provision and development in Africa and the Caribbean. For a list of the other papers in the series, see the back cover of this document.

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Contents

Introduction	2
An overview of the higher education sector in the Caribbean	5
Issues facing Caribbean research institutions	5
Research capacity in HEIs and other research agencies	6
The research environment: enhancing research and innovation	8
Institutional initiatives	8
State-led initiatives	9
Donor-led initiatives	9
Assessing initiatives aimed at enhancing research and innovation	10
Barriers to research development	10
Research funding	11
Research management structures	12
Key research management issues	13
Factors that hinder the development of research management	13
Research management training	14
Resources and support for research management	15
The Caribbean Research and Innovation Management Association	15
Third-stream financing	16
Building a new research culture and increasing research outputs	16
Conclusion	17
Appendix: A brief history of higher education in the Caribbean	18
Bibliography	20
About the authors	21

Introduction

Like the rest of the world, the research and innovation sector in the Caribbean is increasingly aware of the importance of research management as a function distinct from research and development processes.¹ A report on a survey conducted in 2010 on research-management practices in Africa and the Caribbean, as part of the RIMI4AC Project, states that 'all the respondents...indicated that their institution had a central office with responsibility for research management'. And despite concerns about the availability of training, and support for the research management function, 'research management staff in general were optimistic regarding career prospects' (Falk, 2011).

Our main aims in writing this paper are to outline and critically assess the state of research and innovation management in the Caribbean as of 2013, and to examine its future prospects.² It is important to note that much of the region's research and innovation capacity lies outside of HEIs, and resides in state-run research agencies that focus on narrow fields of study to support particular industries in the agricultural or industrial sectors. Data collected from these research agencies has been included in this paper.

As part of researching our topic, a survey was designed and distributed to over 40 organisations involved in research and innovation, including higher education institutions (HEIs) and other research agencies in the English-speaking Caribbean countries (see Table 1 for a list of the institutions surveyed).

The survey covered three broad categories: research capacity; the research environment; and research management structures – each of which are reported on in this paper. Although the response rate to the survey was low, we were able to identify some general trends from the responses received. Further information related to research and Innovation management was gathered from the websites of institutions that did not respond to the survey.

¹ By research management, we mean 'any activity instigated at the level of the institution which seeks to add value to the research activity of staff, without being part of the research process itself' (Kirkland, et al., 2006).

² The Caribbean is a loosely configured grouping of mostly island states located in the Atlantic Ocean between North America and South America, and to the east of Central America. The official language of each state is determined by its colonial history, and may be Spanish, English, French, or Dutch. Substantial divisions exist between the language groups for historic and linguistic reasons. The content of this paper covers only the English-speaking Caribbean states, consisting of 16 island states, as well as Belize on the Central American mainland, and Guyana on the north-east side of South America.

Table 1: Institutions surveyed

Institutions	Country	Population size
College of the Bahamas	Bahamas	342,000
Ministry of Agriculture National Council for Science and Technology	Barbados	284,589
University of Belize	Belize	333,200
University of the Cayman Islands	Cayman Islands	56,000
Grenada Science and Technology Council Ministry of Agriculture, Forestry and Fisheries St. Georges University	Grenada	110,000
University of Guyana	Guyana	772,298
Banana Board Caribbean Agricultural Research and Development Institute Caribbean Policy Research Institute Cocoa Industry Board Coconut Industry Board Coffee Industry Board College of Agriculture, Science and Education Consumer Affairs Commission Food Storage and Prevention of Infestation Division (Ministry of Industry, Investment & Commerce) Forestry Department Jamaica National Family Planning Board MICO University College Ministry of Agriculture and Fisheries (Montpelier and Orange River Research Stations) Ministry of Education National Irrigation Commission Northern Caribbean University Office of Disaster Preparedness and Emergency Management Planning Institute of Jamaica Scientific Research Council Shortwood Teachers College Statistical Institute of Jamaica Sugar Industry Research Institute University College of the Caribbean University of Technology Jamaica University of the West Indies, Mona Water Resources Authority	Jamaica	2,825,928
Ministry of Agriculture, Lands, Forestry and Fisheries	Saint Lucia	160,765
Ministry of Agriculture, Forestry and Fisheries	St Vincent and the Grenadines	120,000

Continued...

Institutions	Country	Population size
Cocoa Research Unit, University of the West Indies, St. Augustine Ministry of Agriculture National Institute of Higher Education, Research, Science and Technology The Caribbean Health Research Council The University of Trinidad and Tobago The University of the West Indies, St. Augustine University of the Southern Caribbean	Trinidad and Tobago	1,305,000
Other English-speaking states in the region		
	Anguilla	13,477
	British Virgin Islands	24,004
	Bermuda	67,837
	Dominica	71,540
	Montserrat	4,488
	St Kitts and Nevis	42,696
	Turks and Caicos Islands	36,600

Note: This is not a complete list of research institutions in the region; it includes only institutions that were surveyed.

An overview of the higher education sector in the Caribbean

In the Caribbean, HEIs are seen as strategically important in relation to developing the human resources needed to support economic growth. Indeed, tertiary education is highly valued as a vehicle for social mobility. HEIs are increasingly called upon to develop new products and services, and to improve existing ones, both for the public good, and to enable the region to compete in the global economy. However, data reveals that, in 2004, the region's investment in science, technology and innovation was just 0.13% of GDP (UNESCO, 2004).

The Appendix included at the end of this paper provides an overview of the history of the sector, but as of 2013, the higher education sector in the English-speaking Caribbean states consisted of over 150 institutions, more than two-thirds of which were supported by public funds. The remaining third are either entirely privately owned and funded, or privately owned with some state funding. Private institutions include the Northern Caribbean University, the University College of the Caribbean, the International University of the Caribbean in Jamaica, and the University of the Southern Caribbean in Trinidad and Tobago. In addition, an increasing number of 'off-shore' institutions, primarily from North America and the United Kingdom, use a mix of traditional and modern distance learning technologies to deliver undergraduate and graduate programmes to students in the Caribbean; for example, the University of London and Florida International University both operate in Jamaica.

Governance structures within HEIs also reflect the influence of the UK and USA – that is, university councils and/or boards of management tend to be the supreme policy-making bodies, to which either a president or principal reports. At an operational level, various administrative and academic sub-divisions exist. Many institutions have academic boards and executive management committees, and in relation to academic structures, sub-divisions include colleges, faculties, schools, and departments.

Issues facing Caribbean research institutions

While working on this paper, it became clear to us that following issues affect most HEIs in the Caribbean:

- The need to keep fees affordable in the face of decreasing financial support from government, often occasioned by high debt-to-GDP ratios, and competing demands from other sectors of the economy for limited state funds.
- Concerns about the extent to which the state, students, business and industry, or other sources, should meet the costs of higher education.
- The need to expand access in the face of increasing demands for higher education.
- Quality assurance versus quantity of student throughput.
- The challenge of recruiting and retaining high-quality staff and students in the face of migration to developed countries. In Jamaica 80% of tertiary-level graduates have migrated.
- Fall-out from the global economic crisis, which has reduced the ability of many students, parents and/or relatives to fund higher education.
- The need for a variety of delivery systems to support a diverse student population – full-time students, employed persons, and distance-mode students.

- The need to be generators and transmitters of knowledge through their research agendas; that is, for HEIs to take the lead in converting policy into action, and to demonstrate the importance of research and innovation in improving the lives of citizens.
- Comparatively low investment in science, technology, and innovation by regional governments, and the absence of effective mechanisms through which funding for research and development may be accessed by HEIs.
- Competition from offshore higher education providers.
- Globalisation, including the proposal by the World Trade Organization to make education subject to the regulations of the General Agreement on Trade in Services – this may compel regional governments to extend the legal principle of ‘national treatment’ to off-shore higher education providers.

Research capacity in HEIs and other research agencies

As noted, much of the research in the Caribbean is conducted via state agencies that work in specific areas related to national and regional economic development. In Jamaica, for example, such agencies include the Scientific Research Council, the Jamaica Bauxite Institute, the Petroleum Corporation of Jamaica, and commodity boards (such as the Banana Board, the Coffee Industry Board, the Cocoa Industry Board, and the Sugar Industry Research Institute). Much of the research conducted by these agencies is related to agricultural or industrial product development.

By contrast, research conducted by HEIs tends to focus primarily on the social sciences (criminology, Caribbean history and culture, economics), and the natural sciences (plant-based research and pharmacology). However, the region’s research output is not systematically documented, and this limits the extent to which its volume and impact can be measured.

Research in the Caribbean focuses primarily on: agriculture and forestry; economic development and theory; Caribbean history and culture; education; the environment; information communication technology and information systems; engineering technology; medicine and health (including natural and pharmaceutical products); biochemistry and marine biology.

Applied research in the region has increased as its importance to institutional, national and regional development has been recognised, and increased funding is being made available through local, regional and international donor agencies. In addition, national governments are identifying research priorities as part of their developmental goals, and several privately funded research institutions have emerged.

University research (particularly in the fields of science and technology) has also adopted a new approach. In the past, research was seen as the basis of scholarly achievement. However, contemporary models of university research are guided by national and institutional research goals, and predicated on the principles of entrepreneurship, enhancing competencies through collaborations with non-academic entities. The University of Technology Jamaica (UTech), the University of the West Indies (UWI) and

the University of Trinidad and Tobago (UTT) have all deliberately engaged with these newer models of research and innovation, taking on commissioned and applied research that seeks to solve and address specific societal needs.

However, research and innovation in the region is challenged by financial constraints. Few HEIs possess sufficient capital to be able to facilitate investment in intellectual property, and even fewer business institutions seem willing to invest in such ventures. To mitigate these constraints, HEIs are beginning to partner with government and industry to produce and commercialise IP, as well as other intellectual capital.

The research environment: enhancing research and innovation

In the survey, respondents were asked to list initiatives that aim to develop research and innovation in their institutions. Responses received revealed three kinds of initiatives: institutional, state-led, and donor-led or funded. Each of these is outlined in a little more detail below.

Institutional initiatives

Institutional efforts related to research development tend to focus on building a research profile and culture, building capacity, and contributing to national development. Internal research funding usually derives from institutions' own budgets. Institutions have embarked on a range of initiatives, including:

- **Providing internal funding for research** – for example, UTech Jamaica has allocated a portion of its annual budget to an internal funding mechanism known as the Research Development Fund, which is used to support staff research. Some institutions allocate a portion of income generated from consultancies and commissioned research to fund internal research.
- **Developing an institutional research agenda**, to prioritise areas for research.
- **Partnering with industry and government agencies to fund research and commercialise the results** (known as the tri-helix model). For example, in April 2011, UTech, the Scientific Research Council and the Ministry of Industry, Investment and Commerce in Jamaica partnered to develop and implement a mechanism to facilitate the commercialisation of the results of innovative research projects that are undertaken by the university and the research council. This mechanism takes Jamaica's National Development Plan (Vision 2030) into account.
- **Training researchers in effective grant, research and consultancy proposal writing, as well as research and project management**. Work Package Four of the RIMI4AC project focused on training and professional development. This involved training research and innovation managers in writing research and grant proposals, as well as in managing research funds. For example, The Instituto Tecnológico de Santo Domingo (INTEC) has an advanced training programme for researchers, which it rates as highly effective.
- **Creating entrepreneurship centres** for students and researchers aimed at commercialising research results. For example, UTech Jamaica has set up the Joan Duncan School of Entrepreneurship, Ethics and Leadership, (a business incubator for small and medium-sized businesses), and INTEC has created a centre for entrepreneurship and innovation for students and teachers.
- **Reducing teaching time to facilitate research** – this has been introduced at UWI and UTech.
- **Linking research agendas with national goals** – for example, UTech has aligned its research goals with Jamaica's National Development Plan, Vision 2030.
- **Including research output in promotion criteria** – the University of Guyana and UTech have introduced this.
- **Undertaking commissioned and applied research** that should lead to innovation – INTEC, UTech and UWI have all done this.

State-led initiatives

The various Caribbean nations have adopted different initiatives, of which just a few are mentioned here. They include:

- **Developing regional research policies and agendas**, for example the Caribbean Health Research Policy, and the Caribbean Health Research Agenda.
- **Using national policies and development goals** to inform research agendas – Jamaica’s National Development Plan, Vision 2030, is one example.
- **Establishing government agencies** to fund and conduct research – Jamaica’s Sugar Industry Research Institute and its Scientific Research Council are exploring commercialising the results of their research.
- **Funding institutional research** through partnerships and collaborations.
- **Increasing expenditure on research and development** – for example, in Jamaica, state expenditure on research increased from 0.1% to 0.3% of GDP between 2001 and 2004.
- **Introducing national awards and incentives** for innovation in science and technology.

Donor-led initiatives

Donors are playing a key role in shaping the direction of research initiatives and research management, as well as encouraging research partnerships across regional, international and even disciplinary boundaries. To list just a few examples, donors are:

- **Providing grant funding based on specific thematic areas** – for example, the RIMI4AC project was specifically aimed at improving research and innovation management, in the hope that this would lead to the increasingly successful dissemination and commercialisation of research results; and one of the main objectives of the European Union’s EDULINK-funded project was to create sustainable professional-development programmes in resource mobilisation within HEIs in Africa, the Caribbean and Pacific regions.
- **Encouraging research collaborations** – for example the European Union’s EDULINK programme only funds projects that involved co-operation between HEIs in the Africa, the Caribbean and Pacific states and the 15 European Union member states that are signatories to the Ninth European Development Fund (For more information, see <http://acp-edulink.eu/content/about-edulink-0>).

Assessing these initiatives

In addition to asking survey participants to list initiatives in their institutions that aim to develop research and innovation, we also asked them to rank the success of each initiative.

The initiatives listed most frequently were:

- Providing internal grants for researcher training and mentorship.
- Making incentives and awards available for research output.
- Establishing an institutional research agenda.

The initiatives that were rated as being the most successful (that is, ranked either 4 or 5 on a scale of 1 to 5, with 5 being 'most successful') were:

- The provision of internal grants.
- Establishing a formal research agenda.
- Providing incentives and awards for research output.

National efforts throughout the region have focused mainly on improving innovation (especially in science and technology), and on commissioned research. Such efforts include establishing incentives and awards for research innovation, and forging partnerships between research institutions and industries that facilitate innovation. When asked to what extent they agree with the statement, 'The research environment in my institution is moving in the right direction', all the survey respondents agreed. However, when asked the same question in relation to their country, only 43% of respondents agreed that research was moving in the right direction.

Barriers to research development

Survey participants were asked to choose from a list of options to indicate what they saw as the principal barriers to research development in the region. A significant majority (70%) of respondents cited the following:

- Limited access to adequate funding mechanisms.
- Time constraints facing academic/research staff.
- Lack of technical facilities for conducting research.
- Lack of formal research management structures.
- National goals that do not emphasise research and innovation.

Research funding

Survey participants were asked to state their main funding sources, and indicate the percentage of funding acquired from each source. Table 2 provides a summary of their responses.

Table 2: Sources of research funding in English-speaking Caribbean countries, 2013, by percentage

Institution	Government	Internal funds	Donor grants	Research foundations	International funding agencies	Other
University of Guyana	7	53	15		15	10
University College of the Caribbean (Jamaica)		75				25
Consumer Affairs Commission (Jamaica)	100					
Caribbean Health Research Council (Trinidad and Tobago)	49		37			14
National Institute of Higher Education, Research, Science and Technology (NIHERST)	95				5	
College of the Bahamas		70				30
University of Technology, Jamaica	15	10	35	5	35	

Using the information in Table 2 as a rough indication of regional trends, international funding agencies do not appear to be a major source of research funding. In addition, 'other sources' seem to play a greater role than international funding agencies.

Research management structures

Most of the region's HEIs have research management offices or offices with research management functions. For example, UWI's Mona and St. Augustine campuses have an Office of Sponsored Research, which is a part of the Principal's Office, and which sees its main responsibilities as:

- Developing and monitoring a research code of ethics.
- Compiling a record of research activity on the campus.
- Promoting research partnerships with other universities (and especially with other UWI campuses), as well as with the public and the private sectors.
- Facilitating cross-faculty research.
- Helping to formulate research proposals.
- Helping to find research sponsors.
- Supervising research contracts.

The School of Graduate Studies, Research and Entrepreneurship at UTech Jamaica guides and supports research activities, with a particular focus on interdisciplinary and applied research that is relevant to local economic and social needs. The School is headed by an academic who is expected to hold a PhD, and have significant research and research-management experience. The School facilitates research activities in the wider university by:

- Advising on research proposals and on the design and implementation of research projects.
- Assisting in the identification of external research-funding opportunities.
- Allocating internal seed grants for staff research.
- Co-ordinating workshops and seminars on research development.

The College of the Bahamas has a vice president with responsibility for research, and a Research Advisory Board, which makes recommendations to the College president about researcher awards.

Overall it seems that the research management landscape in the Caribbean is gradually becoming more structured. The survey results reveal that regional HEIs have engaged in several research management initiatives including:

- Appointing academic and/or administrative leadership for managing research and innovation.
- Establishing research and innovation management offices.
- Developing institutional research agendas.
- Providing internal funding for staff research.
- Providing training and mentorship for researchers.
- Engaging in competitive bids for grant financing.

These initiatives are beginning to offer support, training and other necessary resources to researchers. However, work still needs to be done to embed these structures and resources, and to recruit additional research management staff. The survey responses indicate that those who head research management units or functions still tend to be officially appointed as academic administrators / managers, researchers or academics.

Key research management issues

The emergence of formal research management structures in the Caribbean region reflects one response by universities to the fact that they are conducting commissioned and applied research, and/or establishing research consultancies, and need to improve the ways in which they are managing these efforts. As public funding declines, research institutions have developed innovative strategies to: diversify their funding sources; improve their capacities to attract funding in a competitive environment; and generate their own income in a variety of ways including establishing partnerships with industries, and selling expertise, patents, and intellectual property.

All these strategies require management that extends beyond what the existing structures can provide. Innovation processes often require capital investment and/or complex contractual arrangements. Researchers need support to source funding, as well as training, mentorship and supervision. Units that are capable of adding this kind of value to research processes have to be established (Kirkland, et al., 2006).

Another factor driving change is the region's recognition of research as a driver of its national and regional economies. National and regional development requires the production of new knowledge, knowledge transfer and economic performance. Similarly, national research strategies are a vital part of growing the global knowledge economy. Research institutions play an important role in advancing such development strategies, and effective research management is essential to enhancing collaborations, facilitating negotiations, developing policy, and to successfully co-ordinating joint research.

Changes to research management at institutional level are often initiated by senior management. For example, the Office of Sponsored Research at the University of the West Indies is a division of the Office of the Principal. The School of Graduate Studies, Research and Entrepreneurship (SGSRE) is an initiative of the president of the UTech Jamaica. SGSRE has a mandate to encourage innovation and entrepreneurship, as well as manage intellectual property. It has also established an Institutional Consultancy Unit in response to a senior management initiative. In some cases, such structures may emerge in response to demands made by researchers, but more often than not, senior management take the lead.

Factors that hinder the development of research management

The survey results highlighted factors that hinder the development of research management structures. The factors listed below were identified as very relevant by 60% of respondents.

1. Research management training

- Lack of appropriate expertise and knowledge required to manage research.
- Lack of a professional cadre of trained research and innovation managers.
- Lack of training opportunities for research management staff.

2. Resources and support
 - Inadequate resources and support for research management.
 - Lack of funding for formal research management units.
 - Research management is often tacked on to other functions.
3. Research culture and output
 - Research output is too low to warrant formal research management structures.
 - A culture of research is lacking.
 - Limited collaboration between researchers and policy makers.

Research management training

Research management is a newly emerging discipline. The skill set required to manage research includes, among other things: project management, proposal writing, training skills, as well as communication and negotiation skills. The Association of Professional Researchers for Advancement has suggested that research management skills can be summarised in the following eight categories (APRA, 2005):

- Vision and leadership – the ability to set a standard for ethical performance and to provide leadership in establishing organisational policy.
- Marketing/advocacy – proficiency in oral and written communication that: (i) promotes the performance, contributions, and needs of the Research Office to the organisation by tying them to the organisational mission through data-driven information (reports, written summaries) and by way of interactions with colleagues, senior level fundraising staff, administration, trustees, and constituents; (ii) promotes the contributions and industry trends of the research profession to other professionals within their organisation as well as to others through participation in professional organisations, contributions to industry publications, and presentations at local, regional, and national conferences.
- Planning – planning skills include knowledge of tools and approaches for internal and external benchmarking, and a proficiency in the ability to establish and implement appropriate organisational and research performance goals, measurements, and evaluations; planning skills also include proficiency in devising systems, procedures, and policies that track and report on attainment of organisational and research goals and their relationship to the organisational mission.
- Budget management – the ability to research and estimate special project budgets.
- Systems – knowledge of the organisation’s record-keeping systems and information retrieval capabilities and protocols, as well as an ability to work with relational databases and spreadsheet software.
- Institutional knowledge – knowledge of the role, effect, and integration of information within organisational operations.
- Professional development – staying abreast of trends in the research and fundraising fields through membership and participation in appropriate professional organisations.

- General prospect research – proficiency in conceptualising and identifying potential prospects and opportunities for the organisation, as well as using research/profiling and relationship management methodologies to support organisational goals.

This skills set is not complete, and it needs to be customised to meet the specific contexts that different institutions work in. To an extent, this set of skills reflects research management roles relevant to a large research organisation or donor agency. However, HEIs and other research agencies would benefit from training academic and/or administrative managers who are assigned research management roles, and given opportunities to develop these kinds of skills, and to join regional and international research management associations.

Resources and support for research management

Given that funding for research is limited, funding for research management is even more scarce. Grant funding typically does not support research administration; in fact, grant recipients are often expected to finance a percentage of the value of the research projects that they take on. Clearly, the funding of research management requires new initiatives, two of which are briefly described below.

The Caribbean Research and Innovation Management Association

Research management associations offer crucial forms of support to research institutions and research managers, including opportunities to network with the various other networks emerging internationally, particularly in Africa, the UK and the USA. Such associations are different from researcher associations. Their primary focus is to identify and establish best practices in research management and administration. Membership of such associations can also make access to research funding databases and other resources more affordable for research institutions.

The RIMI4AC project provided an opportunity for the Caribbean region to build its research management structures, and offered training for research managers. UTech Jamaica was the RIMI4AC project partner responsible for 'Caribbean activity'. In this capacity, the university organised and hosted a series of workshops, training and benchmarking events on the state of research management in the region. As a result, the Caribbean Research and Innovation Management Association (CabRIMA) was formally launched in 2010. CabRIMA comprises 30 institutional and individual members and affiliates. Unlike some similar associations, CabRIMA's membership was extended beyond HEIs, to include the research arms of government ministries and private research institutions because these agencies represent an important part of the region's research landscape.

UTech Jamaica continues to host CabRIMA's secretariat and website, and through effective networking, and the exchange of expertise and resources, CabRIMA seeks to support systematic improvements in the effectiveness of systems, structures, and processes of research management. The establishment of CabRIMA has increased awareness of the importance of research management as a function separate from that of research.

Third-stream financing

Regional research institutions (including HEIs) have seen a steady decline in state subventions over many years, and are therefore all too familiar with resource constraints. This is hindering the establishment and staffing of research management structures. However, a very important and successful form of funding support comes from what is known as 'third-stream' financing.

Third-stream financing (as distinct from the traditional streams of government subvention and student fees) includes grant funding and income generated from consultancies, as well as the sale of intellectual property rights and other forms of intellectual capital (Oliver, et al, 2008). Third-stream financing relies on income being generated by putting core competencies to work, and adding value to knowledge.

Several institutions have begun allocating a portion of this income to fund research management structures, and discovering that this greatly enhances the productivity of research management structures.

Building a new research culture and increasing research outputs

According to Lewis and Simmons (2010), building a research culture requires changes in both the external environments in which universities operate, and the internal environments within which an ethos of inquiry must become commonplace.

Building a research culture and increasing research outputs requires a sea change in the thinking and approaches taken by institutions and individuals involved in research in the Caribbean. A deeper demand for research knowledge has to be cultivated throughout the Caribbean. One way of achieving this is to align research efforts to real problems faced by Caribbean countries. To achieve this kind of alignment, collaborative approaches between university communities and the various publics they serve are necessary. This in turn creates the potential for researchers and local communities to work together identify solutions to problems that affect them directly, thus improving general well-being.

Universities should begin by identifying their strengths and weaknesses, and then building capacity appropriately. Limited access to the resources required for research can be overcome through collaborating with other research institutions and universities. Such collaborations have the potential to facilitate a merging of competencies that can improve research results and increase impact.

Conclusion

According to Heemskerk (2010), investment, innovation and internationalisation are the main factors driving growth in difficult economic times. With the erosion of preferential trade agreements, and the ripple effects of the global economic crises, the Caribbean region is being called upon to increase its competitiveness, and diversify its income sources. Similar strategies are expected of HEIs. Investing in key competencies and expertise will not only enable institutions to improve their research profiles, but also help them to develop new knowledge and attract new funding. Innovation is vital to success and sustainability, and international collaboration can allow for greater access to technology, specialist skills and multidisciplinary research programmes.

As efforts to innovate, invest and internationalise increase, partners and stakeholders have to be brought together in a structured manner. Research management is a vital part of this process. Increased funding requires additional accountability just as research partnerships require financial agreements and contracts – all functions that are separate from the conducting of research.

In the Caribbean, linear research and innovation models are rapidly shifting. Research is increasingly acknowledged as part of innovation processes. Knowledge transfer drives this model; that is, research results are being shared not only with researchers, but also with those that are capable of transferring the knowledge into tangible products or services that have real value. A memorandum of understanding signed by UTech Jamaica, the Scientific Research Council and the Ministry of Industry, Investment and Commerce, for example, is just one mechanism facilitating such transfers.³ And research management has been vital to the success of this initiative.

Prospects for research management in the Caribbean are now contingent upon obtaining the right support in the right measure. However, the significance and importance of research management will become increasingly evident as research and innovation efforts expand; that is, expertise in research management is being developed via a 'learning-by-doing' process – a process in which the Caribbean region is becoming increasingly involved.

As the region links into international research and innovation management systems, growing awareness of the structures and processes required for efficient research and innovation management should help us to overcome existing obstacles to growth. The establishment of CabRIMA under the RIMI4AC project was a significant step in this direction.

³ For more information, see 'SRC to commercialise UTech innovations' *Jamaica Information Service*, 8 April 2011. <http://www.jis.gov.jm/news/archive/27353-src-to-commercialise-utech-innovations>

Appendix: A brief history of higher education in the Caribbean

1740s

According to Cobley (2000), the first higher education institution established in the Caribbean was the Anglican Church affiliated Codrington College in Barbados, which was established in 1743 to train priests. It remained the only institution offering higher education in the English-speaking Caribbean up to 1921.

1920s

In 1921 the Imperial College of Tropical Agriculture (ICTA) was established in Trinidad. ICTA offered postgraduate education in tropical agriculture to persons from disparate parts of the British Empire, with the aim of improving the profitability of the sector. The college also offered diploma courses in agriculture to 'locals'.

1930s

Increasing consensus among colonial officials on the need to establish universities in the colonies was buttressed by two reports in the early 1930s. In 1932, the Mayhew-Marriott Report on aspects of West Indian (as the Caribbean was then called) education was published, and in 1933, the Sir James Currie Report examined the case for parallel higher education in the colonies of tropical Africa. Then, in 1938, the Lord Moyne Report (which investigated persistent, violent unrest and anti-colonial protests) persuaded the British government to urgently attend to the matter of establishing colonial universities.

1940s

In 1943 it was finally agreed that colonial university colleges could be sponsored using the syllabuses and awarding degrees of the University of London. This ultimately led to a recommendation by the Commission on Higher Education in the Colonies, chaired by Justice Cyril Asquith, for the 'establishment of a single University of the West Indies'. The university was established in 1948 initially in Jamaica, on the Mona Campus, Kingston, as a University College in special relationship with the University of London, and it achieved the status of an independent university (via a Royal Charter) in 1962 (Cobley, 2000). Today, the University of the West Indies (UWI) is an autonomous regional institution supported by, and serving 15 countries in the English-speaking Caribbean, namely, Anguilla, Antigua & Barbuda, the Bahamas, Barbados, Belize, British Virgin Islands, Cayman Islands, Dominica, Grenada, Jamaica, Montserrat, St Christopher & Nevis, St Lucia, St Vincent & the Grenadines and the Republic of Trinidad & Tobago.

1960s

In the 1960s the UWI established campuses in other countries other than Jamaica; the St Augustine Campus in Trinidad, formerly the Imperial College of Tropical Agriculture, was set up in 1960, and the Cave Hill Campus in Barbados was founded in 1963. In addition, University Centres, now part of the Open Campus, and headed by directors, are located in each of the other 12 countries. Since its establishment in 1948, UWI has evolved into the largest regional provider of higher education in the English-speaking Caribbean Community and Common Market community. However, over the years, nationalist fervour – which is often traced to the 'achievement of independence' by former colonies – led other territories to develop 'national universities' and other academic institutions. For example, Guyana was initially a contributing territory to the UWI but withdrew from this in 1963, and established its own national university, the University of Guyana, instead. In the same year, the University of the Virgin Islands was set up in 1963 by the United States.

1990s–2010s

Jamaica's College of Arts, Science and Technology was formally accorded university status on 1 September 1995 as the University of Technology, Jamaica (UTech). The University of Technology, Jamaica Act (No. 27 of 1999) made provision for the establishment of the university, and was approved by the Jamaican parliament in June 1999 and signed into law by the Governor General in the same month. Today, UTech boasts two colleges, five faculties and a student population of approximately 12,000.

In 2000, the University of Belize was formed as 'a national, autonomous and multi-location institution committed to excellence in higher education, research and service for national development' (http://www.ub.edu.bz/about_ub/index.php).

In 2004, the government of the Republic of Trinidad and Tobago established the University of Trinidad and Tobago; The university had its genesis in the Trinidad and Tobago Institute of Technology, and its current mandate and primary role is to meet the needs of Trinidad and Tobago for highly trained and technologically qualified workforce.

After more than 35 years The College of the Bahamas is in the process of transforming itself into the University of the Bahamas.

Among the privately funded universities in the region are:

- The Northern Caribbean University, founded in 1907 by Seventh Day Adventists, is the oldest private tertiary institution in Jamaica, and was first known as West Indian Training School, then as West Indies College. In 1999, the college was granted university status by the Jamaican government, and was renamed Northern Caribbean University. The university offers graduate and post-graduate programs in the sciences, religion, business and education.
- The University of the Southern Caribbean (USC) is a private, co-educational institution also operated by the Seventh-day Adventists. USC was founded in 1927 as the East Caribbean Training School to educate the youth of the Caribbean Union Conference of the Seventh Day Adventists. After undergoing several name changes, the university has offered Bachelor of Arts, Bachelor of Science, Bachelor of Business Administration, and associated degrees in a wide range of disciplines in affiliation with Andrews University, in Michigan, since 1985.
- St George's University, founded in 1977, is a private school of medicine located on the island of Grenada.

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In 2007, The University of Technology in Jamaica established the School of Graduate Studies, Research and Entrepreneurship (SGSRE), to replace the Office of Research and Graduate Studies. SGSRE leads and manages the development and delivery of graduate programmes in line with international standards and best practices, and forms a hub for research management activity in the university.

Directed by the research mandate of the University, SGSRE guides and supports research activities, with a particular focus on inter-disciplinary and applied research relevant to economic and social problems/needs. As an income-generating centre within the university, SGSRE guides and supports entrepreneurial activity, primarily through the delivery of consultancy services, and the creation of research and development innovations.

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