THE UNIVERSITY
OF THE
WEST INDIES

HIGHER EDUCATION AND STATISTICAL REVIEW:
ISSUES AND TRENDS IN HIGHER EDUCATION, 2013

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ABOUT THE UNIVERSITY OFFICE OF PLANNING AND DEVELOPMENT

The University Office of Planning and Development (UOPD) falls under the Vice-Chancellery or the Regional Headquarters of The University of the West Indies (UWI) and is one of many administrative units which assist the Vice Chancellor in administering the affairs of the University. It is headed by a Pro Vice Chancellor (PVC), Planning and Development who reports directly to the Vice Chancellor.

The UOPD has four (4) components, namely: strategic planning, institutional research, development and project management. It has overall primary responsibility for coordinating the preparation, implementation, monitoring and assessment of the University's Strategic Plan. It also coordinates efficiency studies and prepares productivity reports to inform operational and strategic planning efforts. In relation to its institutional research function, the UOPD:

- Develops, maintains and disseminate strategic information on current undergraduate and postgraduate students, graduates, peer institutions and employers
- Provides timely and accurate information for planning, internal decision-making and external accountability
- Supports the strategic development, analysis and evaluation of policies and plans for the University.

As part of the University's development agenda, the Office functions in designing, monitoring and evaluating the University's major development plans and programmes - whether academic, infrastructural or financial. The PVC, Planning and Development works closely with the Vice Chancellor and other members of the Executive Management Team (EMT) in monitoring Strategic Plan related project development with multi-sectoral, regional and international agencies and also seeks to preserve a positive relationship with these agencies.

The resourcing of the University's vision is crucial to its realisation. In relation to this, the Office of the PVC, Planning and Development plays a major role in identifying funding needs for regional University programmes. It also drives UWI's partnership-building thrust with key international donor agencies, universities and the diaspora communities. The UOPD is an integral part of the Vice Chancellery located on the St. Augustine Campus, Trinidad and Tobago, and linked to other campus offices at the Mona Campus, Jamaica, and Cave Hill Campus, Barbados.

At the start of the academic year, 2012/2013, the University Project Management Office (UPMO) rejoined the UOPD. The UPMO is mandated with the responsibility of researching, preparing, developing and managing projects for the portfolios of the Vice-Chancellery in accordance with the strategic priorities. The UPMO provides project management support in the areas relative to institutional development, academic programme development and infrastructural development. It also provides guidance and support in the areas of technical support and secures external grants that are in alignment with the University's strategic aims. The Office is engaged to establish and administer mechanisms and associated procedures as follows:

- Develop proposals for funding
- Review and produce as applicable, modified version(s) of project proposals developed by other units
- Perform project monitoring and evaluation activities that can lead to accountability and project/programme improvement
- Facilitate skills development workshops.

For more details about the UOPD see http://www.uwi.edu/uopd/home.aspx.

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The Office is also grateful for the level of cooperation and assistance it received from the Office of the University Bursar in provision of financial data.

Ms. Gillian Siu formerly of the UOPD contributed significantly to the research and compilation of the first draft of this *Review.* The Office is also grateful to Greer McKenzie and Akilah Griffith for their reviews of this *Higher Education and Statistical Review, 2013.* Ms. Greer McKenzie assisted immensely with the formatting and presentation of this document and we are appreciative of the work under tight time constraints.

To all, we are appreciative of the time and efforts in making this publication a reality.

FOREWORD

(Pro-Vice Chancellor, Planning and Development)

LIST OF ACRONYMS

AADLU	Academic Advising/Disabilities Liaison Unit
ATS	Administrative, Technical, Services staff
AUCC	Association of Universities and Colleges of Canada
BRICS	Brazil, Russian Federation, India, China, South Africa
BUS	Board for Undergraduate Studies
BGS&R	Board For Graduate Studies and Research
CARICOM	Caribbean Community
CARIMAC	Caribbean Institute of Media and Communication
CCHE	Caribbean Conference on Higher Education Conference
CCMF	Caribbean Centre for Money and Finance
COL	Commonwealth of Learning
CIO	Chief Information Officer
CITS	Campus Information Services
CKLN	Caribbean Knowledge Learning Network
CLARA	Cooperación Latino Americana de Redes Avanzadas (Association of Latin American NRENs)
CSME	CARICOM Single Market and Economy
CQF	CARICOM Qualifications Framework
DSA	Disability Student Allowance
ECCU	Eastern Caribbean Currency Union
ECLAC	Economic Commission for Latin America and the Caribbean
EMT	Executive Management Team
EPA	Economic Partnership Agreement
ERP	Enterprise Resource Planning projects
EU	European Union
FDI	Foreign Direct Investment
GATS	General Agreement on Trade in Services
GATE	Government Assistance for Tuition Expenses
GDI	Gender-related Development Index
GDP	Gross Domestic Product
GEM	Gender Empowerment Index
GER	Gross Enrolment Ratio
HDI	Human Development Index/Indices
HEIs	Higher Education Institutions
HEPI	Higher Education Price Index
HESR	Higher Education and Statistical Review
HESA	(United Kingdom) Higher Education Statistics Agency
IADB	Inter-American Development Bank
IADGs	Internationally Agreed Development Goals
ICT	Information and Communication Technologies
ICTA	Imperial College of Tropical Agriculture
IT	Information Technology
IESALC	International Institute for Higher Education in Latin America and the Caribbean
IMF	International Monetary Fund
LAC	Latin America and the Caribbean

LMS	Learning Management System
LMIS	Labour Market Information System
MDGs	Millennium Development Goals
MENA	Middle East and North Africa
MOOC	Massive Open Online Courses
NCDs	Non-Communicable Diseases
NCES	(United States) National Centre for Education Statistics
NER	Net Enrollment Ratios
NRENs	National Research and Education Networks
OAS	Organization of American States
OCCS	Open Campus Country Sites
OECD	Organisation for Economic Co-operation and Development
OECS	Organisation of Eastern Caribbean States
PLA	Prior Learning Assessment
SAPs	Structural Adjustment Programmes
SCS	School of Continuing Studies
STEM	Science, Technology, Engineering, and Mathematics
STEAM	Science, Technology, Engineering, Art and Mathematics
STI	Science Technology and Innovation
SWDs	Students with Disabilities
SYM	Speak Your Mind (Undergraduate Student Experience Survey)
TEIs	Tertiary Education Institutions
THE	Times Higher Education
TLI	Tertiary Level Institute
TLIU	Tertiary Level Institutions Unit
TNE	Trans-National Education
TTRENT	Trinidad and Tobago Research and Education Network
UCLA	University of California, Los Angeles
UCWI	University College of the West Indies
UIS	UNESCO Institute of Statistics
UNDP	United Nations Development Programme
UNESCO	United Nations Education Culture Scientific Organisation
UOPD	University Office of Planning and Development
UWI	The University of the West Indies
UWI*linC*	UWI Libraries' Information Connexion
UWIDEC	UWI Distance Education Centre
VAT	Value Added Tax

DEFINITIONS

In order to facilitate a greater understanding and interpretation of the statistical tables, explanations of the key terms and concepts have been provided in the report. These terms are listed below.

Admissions ratio	Percentage of applicants who are offered a place at the university.
Contributing Countries	Member countries of the English speaking Caribbean that contributes to the finances of The University.
Enrolment	Registered students who are in attendance at The University in any given academic year.
Entry rates	Entry rates are expressed as net entry rates, which represent the proportion of people of a synthetic age-cohort who enter the tertiary level of education.
Exam Only Students	Students who register for the purpose of writing examinations only. They are not included in the Official University statistics.
Exchange Students	Students who are regarded as a special category of external students by which there is reciprocity between The University and the Institution with which such an arrangement is made.
Full-Time Students	Registered students who carry the full load of courses associated with their University programme for the academic year.
General Agreement on Trade in Services (GATS)	The General Agreement on Trade in Services (GATS) increases trade liberalisation internationally, and includes 'education' as a service sector. Trade in higher education services include recruitment of international students, establishment of University campuses abroad, franchised provision and online learning.
Graduation rates	Percentage of persons within a specific cohort who obtain a tertiary qualification.
Gross Domestic Product (GDP)	GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources (World Bank 2015).
Gross Enrolment Ratio (GER)	A nation's total enrolment in a specific level of education, regardless of age, expressed as a percentage of the population in the official age group corresponding to this level of education.
Internationalisation	Internationalisation is generally understood to mean the integration of an international or intercultural dimension into the tripartite mission of teaching, research and service functions of Higher Education.
Net Enrollment Ration (NER)	Enrollment of the official age-group for a given level of education expressed as a percentage of the corresponding population.

New Admissions	This refers to registered students who are new entrants to The University. It should be noted that Mona treats students who have transferred from the Faculty of Pure and Applied Sciences to the Faculty of Medical Sciences, as newly admitted students. Students who have transferred to the Faculty of Law from the Faculties of Humanities and Education and Social Sciences, are also treated as new admissions.
Non-Contributing Students	Non-member countries that do not contribute to The University's finances. It should be noted that Guyana is considered to be a part of this category.
Occasional Students	Students who attend classes at varying periods of time for the purpose of auditing the respective course(s). These students do not sit examination and are not included in the Official University statistics.
Off-Campus Students	Students who pursue all their University courses through distance education/online or through educational institutions which are not formally a part of The University of the West Indies, such as tertiary level institutions and affiliated institutions. Most of the students in this category are now enrolled with the recently established Open Campus.
On-Campus Students	Students who directly access classes on a campus in pursuit of degree, certificate and diploma programmes
Part-Time Students	Registered students who carry less than the full load of courses associated with their University programme for the academic year.
Persistence Rate	A measure of how many students return from the Semester 1 to Semester 2 for all levels of the undergraduate programme.
Programme	Refers to the course of study for which the student has been admitted into The University. This pertains to a set of courses offered for First Degrees; Certificates; Diplomas; Higher Diplomas; and Higher Degrees.
Registration	Refers to the process by which students, upon acceptance into the University, give written notification of the courses they wish to pursue during the semester of enrollment, pay the requisite fees, and obtain academic approval from the Faculty. The summation of each individual student registration constitutes the input data for deriving statistics on Campus and University Student Registrations. The registration data are represented by country of origin of student, by faculty and by programme level, as detailed in the tables. Registration totals represent all students enrolled during the academic year, inclusive of Semesters 1 and 2.
Specially Admitted Students	Students who are admitted into The University under special circumstances, such as an exchange agreement with another institution or to attend selected courses in which they are examined.
Throughput Rates	Percentage of persons within a specific cohort who obtain a tertiary qualification.
Visiting Students	Students accepted to study, research or undertake practical activities or clerkship at the University under the terms of a formal agreement for student exchange or who study abroad. Students from other institutions not covered by formal agreements may also pursue courses in other study- related, research or practical activities at The University.

EXECUTIVE SUMMARY

CHAPTER ONE: INTRODUCTION

The education system and in particular, the higher education system in the West Indies can trace its roots to the historical relationship it had with Britain. Higher education in the Caribbean moved from historically serving the needs of a small elite to serving the needs of the total community. The University College of the West Indies (UCWI) established in 1948 in Jamaica was the first campus of the UWI. Campuses were subsequently established at St. Augustine, Trinidad (1960) and Cave Hill, Barbados (1962) and soon thereafter, UCWI became the University of the West Indies with the right to grant to grant its own degrees.

Headed by a University Centre, the UWI presently operates from its residential campuses in Barbados, Jamaica and Trinidad and Tobago, as well as twelve (12) sites in the English-speaking territories commonly referred to as the UWI-12 (served by the Open Campus) and is funded by seventeen (17) governments. The UWI is one of two regional cross-country universities in the world.

This *Higher Educational and Statistical Review 2013* has drawn upon a wide range of data sources and builds on previous reviews in order to provide an analysis of key regional and international trends in higher education impacting the UWI for decision making. It also analyses statistical information relating to student admissions, enrolment and graduation numbers; a profile of student distribution across the University system; and provides a profile of academic, senior administrative and professional staff over a general five-year period.

CHAPTER TWO: TRENDS IN GLOBAL HIGHER EDUCATION

International and regional developments have created challenges and opportunities in higher education. Among some of the trends discussed in the chapter are:

(a) Increasing demand for higher education: Globalisation has increased the demand for better higher education. The payoff for a higher educated labour force also increases the demand for university education, pushing governments to expand their higher education systems, and correspondingly, to increase the number of secondary school graduates ready to attend post-secondary schooling.

(b) Removing barriers to access to higher education and reducing inequalities: Governments and universities have been addressing equity issues by enhancing access for under-represented groups such as economically disadvantaged students, mature students, or persons with disabilities and rural/urban disparities. Increase in access has not generally led to a proportionate decrease in inequality since access and completion remain dependent on other socioeconomic factors which favours the middle class and those aspiring to it. Nevertheless, improved assess can be facilitated by the State through affirmative action programmes or by scholarships, grants and/or loan programmes; and open and distance education. To address the needs of a more diverse student population universities would need to introduce or scale-up the efficiency and effectiveness of their products and services.

(c) Increasing participation and enrolment: Demand for higher education has exceeded supply in many parts of the world, particularly in developing countries. However, tertiary-level enrolment in low-income countries has improved only marginally. It is forecasted that tertiary level enrolment is likely to decline to 1.4 per annum in 2010 to 2020, but demand for graduates in Science, Technology, Engineering and Mathematics (STEM) will continue to grow.

(d) Graduation outputs: Tertiary attainment levels have increased considerably over the last three decades with graduation rates among young people varying from 25 per cent to more than 50 per cent

in OECD and partner countries. Several countries have adopted targets for tertiary degree attainment (e.g. United States, Europe, India, etc.) hoping to have between 30 to 50 per cent of the population tertiary educated by 2020.

(e) Increasing the diversity and heterogeneity in student body: Demographic changes will create demand in different sub-population groups: full-time young undergraduate, part-time undergraduate, postgraduate (part-time and full-time) and lifelong learning (adult population). These groups will invariably impact on pedagogy, curriculum and resources.

(f) Postgraduate participation in higher education: Advanced economies are focussing on the organisation, structure, and form of postgraduate education to improve their positioning in global knowledge economy and to stimulate economic growth and competitiveness by way of innovation through cutting-edge research. Businesses seemed to favour Masters graduates for their analytical thinking and problem-solving skills, while PhD graduates were favoured for their subject-specific skills, research and technical skills and for their new ideas and innovation. In the United Kingdom the total number of postgraduates has grown faster (36 per cent) than the number of undergraduates.

(g) The changing nature of the academic profession: Some universities face an ageing staff population. This has implications for the replacement of faculty stock. Universities are already seeing the influx of Generation X who have a different outlook regarding workload, how research should be conducted, engagement and inclusion, and work-life balance from their predecessors. Females now comprise nearly half of new full-time university appointments and about 20 per cent of senior appointments although disparities still exist. The tenure-track stream is less favoured over temporary hiring which provide institutions with some level of flexibility.

(h) The cost of financing higher education: In spite of expanding access, tertiary education is now being conceived as a private good. Cost-sharing measures between the government and student are being debated but implementation may further increase inequalities.

(i) The increasing use of technology – revolutionising the university's mission and processes: From tablets and e-books to mobile devices and learning apps, new technologies are transforming pedagogy, learning and marketing on campuses. Growing numbers of American colleges and universities are turning to learning management systems (LMS) such as Moodle which support blended learning. The internet is also being used for cross-institutional collaboration among faculty and graduate students. As more and more academics upload research informally online, new vistas to measure Web-driven scholarly interactions (altmetrics) are emerging to gauge scholarly influence and reach of their virtual product.

(j) Growing internationalisation: Internationalisation is high on the agenda of universities and this demands that their programmes are carefully assessed and have undergone the rigours of a quality assurance or accreditation exercise by an external body. Greater policy attention is being paid to cross border student mobility. World ranking league tables have become important in the higher education market as a result of massifcation and competition.

CHAPTER THREE: THE HIGHER EDUCATION ENVIRONMENT IN THE CARIBBEAN

This chapter looked at the evolution of higher education in the Caribbean and some of the challenges the sector faces. In particular:

(a) Educational development: The needs, challenges and responses for universities not only to be more competitive but also closely linked to the needs of the global economy and employability.

(b) The social environment: The Caribbean is seeking transformation in an environment where it also has to tackle internal social issues (rising crime and violence in several of its societies; react to the demographic changes; address HIV and AIDS epidemic etc.) and external factors (global economy and the shifting geopolitical environment etc.). As birth rates decline in the Caribbean, targets must

move from school leavers to target the entire population of qualified persons who desire education and training at this level.

(c) Higher education and situation imperatives: In a proposal for the expansion, rationalisation and integration of the higher education sector in the Caribbean region a minimum participation rate of 35 per cent has been suggested. Trinidad and Tobago set a target of 60% by 2015 and Barbados defined a target of one higher education graduate per household. Attrition rates, student mobility, competition with foreign universities, regionalisation, sustaining government support are factors which will influence attainment of these goals.

(d) Scope of the Tertiary Education System: Tertiary education in the Caribbean is now characterised by a plurality of public, private and offshore institutions providing a wide array of tertiary education programmes through different modalities of learning and catering to diverse student and workforce needs. The construction of a Regional Tertiary Education System, matched to some degree by similar national systems in countries with large and diverse tertiary sectors could enable a more structured enunciation of the expectations of the Tertiary Education Sector, provide policy guidance; ensure adherence to basic standards; enhance quality assurance; and facilitate greater coordination, harmonisation and rationalisation of structures and processes.

CHAPTER FOUR: REGIONAL SOCIOECONOMIC HIGHLIGHTS

The impact of the economic crisis of 2007/2008 was severe on the Caribbean. While the natural resource rich countries of Guyana and Suriname saw economic improvement, most other countries whose economies are tied to North America, United Kingdom and Europe through a heavy concentration of trade, remittance flows and Foreign Direct Investment (FDI), and tourism declined. Balance of payment deficits and public debt made any sustained fiscal stimuli impracticable and recovery is linked to global growth. Global growth slowed from 5.1 per cent in 2010 to 3.0 per cent in 2013 as did growth in emerging and developing economies which averaged 6.2 per cent in 2011 but fell in 2013 to 4.7 per cent (CCMF December 2012, 10; and CCMF June 2014, 8). Overall, gross domestic product (GDP) growth for the Caribbean moved from 0.2 per cent in 2010 to 2.0 per cent in 2013. Gross public debt remains high for several Caribbean countries. Inflation rates for many of the Caribbean economies decreased in 2013 as the region was impacted by the fluctuations in food and fuel prices. Unemployment rates for most countries are above 10 per cent. Fiscal balances was mixed with some countries recording an improvement in the overall fiscal balances while in others the deficit worsened. The economic prospects for 2014 was likely to be one of slow growth and as such, the Caribbean region would be constrained in their ability to finance higher education.

CHAPTER FIVE: TRENDS IN DEMAND FOR PLACES, ENROLLMENT, OUTPUT AND ACHIEVEMENT

For the period 2007/2008 to 2011/2012, total demand for places continued to increase, evidenced by an increase in undergraduate applications to the Mona and St. Augustine campuses and an increase in post-graduate applications to all the UWI campuses. University undergraduate and postgraduate admissions increased for the University as a whole over the five year period but demand (applications) outstripped supply (admissions). Total UWI student enrolment reached a significant landmark of 51,208 in 2012/2013; an overall increase of 25.2 per cent over the period 2007/2008. The average annual percentage growth for the next five years is projected to be 3.8 per cent. Enrolment grew annually at an average of 10.3 per cent at Open Campus, 4 per cent at Cave Hill, 5.4 per cent at St. Augustine and by 2.5 per cent at Mona. Most students were enrolled at the Faculty of Social Sciences.

Postgraduate enrolment during the period, 2007/2008-2012/2013, was about 20 per cent of the University's total enrolment. There was a 3 per cent decline in research programmes during the period, however, enrolment in taught programmes increased by 3 per cent. Postgraduate enrolment at the Mona

and St. Augustine campuses was significantly higher than at Cave Hill. Full-time undergraduate on-campus students represented 79.2 per cent in 2012/2013, while 27 per cent of postgraduate students attended the University full-time for the same period. Overall, within the UWI about one-third of its student population was enrolled in STEM programmes in 2011/2012. On a campus basis, St. Augustine enrolled the largest share of STEM students with 48.2 per cent while the Open Campus did not have any students enrolled in STEM programmes.

The total number of UWI graduates increased from 8,008 in 2008 to 10,158 in 2013, a cumulative increase of 26.8 per cent. While the overall graduate output by first degrees increased by 21.2 per cent, the graduate output for higher degrees increased by 42 per cent over the six years. Of the four campuses, the St. Augustine Campus had the largest proportion of higher degree graduates while the Open Campus had the lowest in 2011. Social Sciences had the largest proportion of both undergraduate and postgraduate graduate output followed by Humanities and Education, Pure and Applied Sciences, Science and Agriculture, Medical Sciences, Engineering, Law, and Gender and Development Studies. 'Good Honours' degrees awarded by the University has been on a steady decline since 2006 from 38.2 per cent in 2006/2007 to 32.7 per cent in 2010/2011 with Mona and Open Campus demonstrated a higher proportion of good honours awarded compared to Cave Hill and St. Augustine.

CHAPTER SIX: INCREASING THE DIVERSITY AND HETEROGENEITY IN STUDENT BODY

In keeping with international trends, the UWI data show that females are a majority of the campus population (2:1). The largest female population for 2012/2013 was enrolled at the Open Campus with 84 per cent while the largest male population was at St. Augustine with 36 per cent. Females were a majority in all Faculties except Engineering. The percentage of female postgraduates increased to 65.4 per cent in 2011/2012. The proportion of female graduates has remained fairly constant at about 72 per cent over the period 2007 to 2012, the Open campus had the largest proportion of female first degree graduates (83 per cent) while the St. Augustine Campus had the lowest (68 per cent). Except for Engineering, females represented the greater numbers of graduands, in addition, due to higher enrolment numbers, females were in receipt of 'good honours' more so than males (3:1).

Overall, within the University for the period 2007/2008 to 2011/2012, the 25 and under population hovered between 49 per cent and 53 per cent of total enrolment and the 25-34 population remaining fairly stable for the period at around 27 to 28 per cent. Student segments in the age ranges 35-44 (13-14 per cent) and 45 and over (8-9 per cent) remained stable during the period. For 2011/2012 the age group 24 and under is driving growth on the residential campuses whereas with the Open Campus the 25-34 age group dominated. The 25 to 34 age group dominated postgraduate enrollment (48.0 per cent). The overwhelming majority of the total student population were nationals of the UWI contributing countries. The UWI provides facilities for students with special disabilities (SWD) however, enrollment of SWDs is low.

CHAPTER SEVEN: TECHNOLOGICAL DEVELOPMENTS

Internet penetration and mobile phone penetration in the Caribbean exceed the world averages and there is high usage of social media. Information and communication technologies (ICTs) have also altered the way in which students learn and individuals access higher education. The underlying foundation for these ICT services is access to the Internet which increasingly demands reliable and adequate bandwidth. At the UWI, the current bandwidth exceeds the optimum bandwidth which is particularly important for the Open Campus which has the highest level. The University also provides educational solutions which enables students to access all the online resources they need from one single space these include University specific emails (live@edu) and Facebook, Twitter, LinkedIn pages.

CHAPTER EIGHT: A PROFILE OF UWI STAFF

Based upon available data for Open Campus, Mona and St Augustine for two academic years, 2010/2011 and 2011/2012, St. Augustine employs the most Administrative Technical Services (ATS) staff while Open Campus employs the least which is reflection of the construct of Open Campus. There are more females employed at St. Augustine campus followed by Mona and Open Campus. Generally, academic staff outnumbered administrative staff (2.5:1) except at the Open Campus where the reverse is true. The total academic population (primarily involved in teaching and research) grew by 3.5 percentage points between 2007/2008 and 2011/2012. The levels of appointment for all levels of academic staff remained fairly constant. For the period, 2007/2008 to 2011/2012, there was a 22.1 per cent increase in the number of staff holding PhDs while there was a 37.1 per cent decline in the number of staff holding Bachelors' degrees. Cave Hill Campus registered the highest percentage of staff with PhDs. The high level of PhDs at the UWI is in contrast to global trends. Female staff continued to increase on the campuses. Females also hold more Senior Lecturer and Professor posts than the global average (30 per cent). The ratio of Caribbean to non-Caribbean staff is increasing and in 2011/2012 it was 4.2:1.

CHAPTER NINE: FINANCING THE UWI

Some Caribbean governments have supported the UWI but have simultaneously developed national universities, community and state colleges to help to meet their local demand for tertiary education graduates. The UWI is financed from several sources – seventeen (17) governments of the Anglophone CARICOM countries, tuition fees, investment of assets, fundraising and philanthropy. The expenditure of the University of the West Indies has increased gradually from 2006/2007 to 2012/2013 and stood at BDS$992 million. Income to the UWI increased since 2006/2007 and stands at $974 million in 2012/2013. More than half of the UWI's income is derived from government contributions and this proportion stayed relatively stable from 2006/2007 to 2012/2013. Income derived from student tuition and fees remained stable at approximately 15 per cent of total income during the five-year period. The percentage of income derived from special projects is stable at 6 to 7 per cent from 2009/2010 onwards. In contrast, income from other projects increased from 13 per cent in 2008/2009 to 20 per cent in 2010/2011 and thereafter. The UWI *2007-2012 Strategic Plan* identified strategies to broaden the funding base of UWI. In 2008/2009 the institution spent US$423 million to educate 43,000 students.

CHAPTER TEN: CONCLUSION

The UWI completed its 2007-2012 planning cycle and has embarked on a new planning cycle, 2012-2017. The UWI is operating in an external environment still dominated by the dynamics of the knowledge-based economy and society; multiple impacts of globalisation including the implications of the General Agreement on Trade in Services (GATS); continuing revolution in ICT, the public policy commitment of contributing countries to the expansion of participation in tertiary education; and the three-pronged challenge of matching the transformations in higher education globally, keeping pace with the knowledge revolution especially in Science and Technology and responding effectively to regional challenges including providing solutions to pressing problems and democratising higher education. The environmental factors identified above were further complicated by the economic crisis of 2007/2008, globalisation and countries' development desires. Universities need to be agile so as to respond to a constantly changing environment. The big future challenges for the UWI remain how to enhance its culture of excellence in teaching, research and service and improve access while maintaining quality and identifying and sourcing alternative sources of funding. Recommendation for improvements in financial aspects, Teaching, Learning and Student Development and outreach are provided.

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CHAPTER ONE: INTRODUCTION

This chapter presents an overview of the evolution of the University of the West Indies (UWI) in the context of higher education in the Caribbean. To this end, it will draw upon existing secondary sources which discussed the development of the higher education in the Anglophone Caribbean and identify the factors that led to the creation of the regional University. The UWI, like many institutions, are dynamic and responsive to the changing environment. Over the years, the structure of the UWI changed and it is for this purpose the current structure of the UWI is set out in this chapter. Further, the chapter also provides an overview of the UWI *Higher Education and Statistical Review 2013*.

1.1. DEVELOPMENT OF HIGHER EDUCATION IN THE WEST INDIES

The higher education system which was developed in the West Indies can trace its roots to the historical relationship it had to Britain. Major events such as emancipation, post-war politics, regional integration, self-government and independence, and economic development demanded the implementation of higher education to serve the needs of the total community. The early development of a formal structure of higher education in the Caribbean was premised on providing training for teachers and ministers of religion, teachers for primary level of education and a liberal non-utilitarian education for the small elite (Evans and Burke 2006, 6-7). By the mid-twentieth century, this changed when the "nation-state wrested control from the imperial state and it used education for its own political ends" (Miller 1999, n.p.). The dearth of higher education institutions (HEIs) in the early Caribbean was related to the small number of university graduates among the settlers who came to the West Indies, the reluctance of many planters and settlers to create an extensive educational system on the grounds of cost and fear, and the settler community who had the resources and interest to sponsor higher education preferred to pursue education outside the region (Cobley 2000,3).

While HEIs were developed in the Spanish colonies in the early sixteenth century, colleges in the American colonies were established almost two centuries later.[1] In the West Indies, the earliest manifestations of HEIs were the Codrington College in Barbados established in 1743 to train Anglican priests and the Calabar College in 1843 in Jamaica to train ministers, the Mico College in Jamaica in 1835 to train teachers and the Jamaica College in 1888 for the purpose of providing higher education.

Several reports were produced by Royal Commissions established to assess the state of education in the colonies and recommended improvements. The Keenan Report (1869), an inquiry into the state of public secular and religious education in Trinidad, recommended the establishment of a 'University of the West Indies' as "merely an examining body without a teaching function" (Ali 1975, 60) but would provide a coordinated approach to higher education across the West Indian colonies. However, the Report did not find favour with the colonial authorities at the time and as the nineteenth century closed the idea of a regional University remained unrealised. Following the end of World War I (1914-1918), shifts in the thinking of a coordinated approach to higher education began manifesting itself. This was first seen with the establish-

ment of the Imperial College of Tropical Agriculture (ICTA) in 1921 in Trinidad and Tobago aimed at providing postgraduate training in agriculture to individuals across the British Empire. Not long thereafter, the Standing Conference on Education in the West Indian Colonies called for the reconsideration of the idea of a university (Cobley 2000, 7). The idea for colonial universities continued to gain currency as seen in the proposal of the Mayhew-Marriott Report (1933) for a West Indian University which "would be the most appropriate object of private benefaction" (Cobley 2000, 9) and the recommendation of the Moyne Commission (1939) for a university to be established in the region to allow more persons to receive a University education making the education more culturally relevant.

As the spectre of the Great Depression of the 1930s receded, the Commission on Higher Education in the Colonies (the Asquith Commission) was appointed in 1943 to examine the higher education needs of the entire British Empire, to identify the "principles which should guide the development of universities, and how the process might be assisted by universities and institutions in the United Kingdom" (Nwauwa 1997, 134). While the Elliott Committee of the Asquith Commission was formed to look into the provision of higher education in British West Africa, the Irvine Committee was mandated to:

> *... review existing facilities for higher education in the British Colonies in the Caribbean and to make recommendations regarding future University development in the colonies. The Irvine Committee recommended that the University College of the West Indies (UCWI) be established to provide higher education for West Indian scholars (Hewitt 2002, 22).*

The Irvine Committee made several recommendations for university education in the West Indies. These included that "the University College should be a unitary institution and not a federal or decentralized one", residential and "should enter into a special relationship with an established university in the mother country" (Braithwaite 1958, 48). In explaining the advantages of a unitary institution, Braithwaite (1958, 48) noted that "a unitary institution operating in a series of discrete geographical and political entities immediately placed the unit in which it was placed in a specially favoured position." However, the "West Indies could not really afford a duplication of facilities" but instead a "series of facilities located in different islands" could be considered (Braithwaite 1958, 49). Further, Braithwaite (1958, 49) noted that the motives underlying the recommendation for the establishment of the UCWI was the "means of binding the West Indies to the United Kingdom culturally" given that the Irvine Committee "envisaged a speedy political advance for the West Indies" and "the West Indies as a self-governing community could no longer maintain its dependence upon others for higher education." Cobley (2000, 12-13) similarly noted that the Committee was of the view that the establishment of the university was essential to the development of the Caribbean as it "pass [es] through the process of democratization and progress towards self-government."

The UCWI would be open to men and women, without any restrictions on the grounds of race or creed. In the first instance, the university would be related to the University of London by a special relationship under which the students would be candidates for degrees of the University

of London. The Committee also made recommendations for the governance of the university including the establishment of a senate which would have full responsibility for academic affairs. Given the limitation of funds, only three faculties were to be established at the outset – Arts, Science and Medicine. No provision was made for graduate studies as the Commission was of the view that upon graduation, students would go abroad to study. Further, the Committee mindful of the needs of the smaller territories recommended the early appointment of resident tutors in each of the territories. Cobley (2000, 13) noted that the Committee concluded that a single unitary and residential University could become the intellectual hub of the region and an agency to promote research pertinent to the needs of the West Indian people.

The Report was subsequently presented to a meeting of the Acquith Commission "during which a siren warned of a rocket bomb attack" (Sherlock and Nettleford 1990, 28) and later approved within the mission of the establishment of colonial universities across the British Empire in particular, Africa. The overriding mission was "to guide the colonies to self-rule through the promotion of higher education without sacrificing British interest and influence" (Cobley 2000, 13). The university was "financed almost entirely by the Caribbean Governments, on the basis of contributions to capital costs made by the British Government" (Williams 1972, 8). The "control over the syllabus and the awarding of degrees by the University of London (overseen by a new body, the Inter-University Council [IUC] for Higher Education in the Colonies) would ensure their programmes would not stray too far from the models and standards laid down in Britain" (Cobley 2000, 13). Thus, the birth of the regional university, University College of the West Indies (UCWI), was subsumed under a great British initiative, that of developing a scheme for higher education that would guide the colonies to self-rule while remaining intellectually and ideologically tied to British principles and values.

Following the approval of the proposals for the establishment of a medical school in Jamaica as an integral part of the College in association with the University of London in September 1946, the more immediate task was to transform the recommendations of the Irvine Committee into reality. This included legal provisions and procedures to actualising the entity, that is, identification of a site, acquiring a building or buildings and recruiting staff and students as well as applying for a "Royal Charter, and for admission to special relationship with the University of London" (Sherlock and Nettleford 1990, 32). The doors of the UCWI were opened in October 1948 with 33 students. The Royal Charter and Statutes of the UCWI were approved by the Privy Council in December 1948 and issued on 5 January 1949 and Her Royal Highness Princess Alice was installed as the Chancellor in February 1950.

The Pension Report (1954) and the Cato Report (1958) recommended that the UCWI should seek University status in its own right. The recommendation was based upon a review of the UCWI's structures of governance, its teaching standards, its research output, the "corporate social life" of its students, and its relationship with the wider West Indian community (Cobley 2000, 17).

The UCWI developed and expanded at a time when the West Indies saw the introduction of universal adult suffrage and the establishment of the short-lived Federation of the West Indies

comprising Trinidad and Tobago, Barbados, Jamaica, and countries forming the Leeward and Windward Islands. As the Federation was collapsing, "the university received a new Royal Charter which established it as an autonomous degree awarding body no longer dependent on the University of London for validation" (Cobley 2000, 17). UCWI was now renamed the "University of the West Indies" (UWI). Soon thereafter the Federation collapsed and Trinidad and Tobago and Jamaica were granted independence. A major fallout of the collapse of the Federation was the withdrawal of Guyana from the University and subsequent creation of the University of Guyana in 1963.

BOX 1.1: THE PROVISIONAL COUNCIL OF UCWI MEETS, JANUARY 1947

The first governing body of the College was a Provisional Council, composed of representatives of the seven contributing territories, Barbados, British Guiana (now Guyana), British Honduras (now Belize), Jamaica, the Leeward Islands and Trinidad, the Principal, two representatives of the Inter-University Council for Higher Education in the Colonies, and, when appointed the Director of Extra-Mural Studies and the Medical Advisor (Sherlock and Nettleford 1990, 30-31).

The first meeting of the Council took place on January 7th, 8th and 9th, 1947 and was held at the home of the British Council in Kingston. At the meeting, the Principal outlined plans to begin teaching medicine in October of 1948. In preparation, the architects, Norman and Dawbarn were instructed to draw up the plans for the site which included a library, teaching laboratories and some houses for faculty. The second meeting of the Provisional Council, held in January of 1948 was at the UCWI's temporary offices at 62 Lady Musgrave Road. It was not until the third meeting of the Provisional Council that it met in one of the barracks-style wooden buildings at Gibraltar Camp, the site selected for the UCWI

(Source: UWI. "Vice Chancellery – Welcome to the Centre ." Website. http://www.uwi.edu/administration.asp. 2013, n.p.).

Despite the collapse of the Federation in 1962, the UWI met the challenge of the new political realities and established a presence in the southern and eastern Caribbean. The ICTA at St. Augustine in Trinidad and Tobago was incorporated as a second campus of the UWI in 1960 and a third campus was established in Barbados in 1963. Around the same time, there was a call for the expansion of programmes offered in Trinidad and the "introduction of evening programmes at Mona and St. Augustine to widen the access to higher education to non-residential and part-time students in those islands" (Cobley 2000, 18). The proposals were approved at a meeting of the University Council in February 1963. Thus, the UWI was slowly moving away from its original 'single unitary residential' to a more diverse institution operating in a vastly different political, economic and social environment. As Tewarie (2011a, 124) noted "with the emergence of three full campuses decentralisation and greater autonomy became an issue" as did the ability "to sustain coherence and strengthen the regional character of the institution while facilitating decentralisation and autonomy." Of particular note in affirming the regional character of the UWI is the Grand Anse Declaration of 1989 which underscored the financial commitment of the governments and reaffirmed the value of the UWI as an agency of development.

From circa 1963 and for many years thereafter, numerous commissions and committees were appointed to review and advise on the administrative structures, funding and academic programmes aimed at making the University more responsive to its constituency and "democratize

access to higher education regionwide" while enhancing its reputation as an institution of higher learning (Cobley 2000, 19, 21). For instance, the 1974 Intergovernmental Committee on Caribbean University Education (chaired by William Demas) recommended "further devolution and democratization of the management structures of the university…. the establishment of community colleges in non-campus territories' (Cobley 2000, 19). Other notable committees or commissions included: the 1984 Chancellor's Commission on Governance which focussed on the devolution of authority of the three campuses and the creation of Offices of University Services at Cave Hill and Mona for coordinating the delivery of services to non-campus countries and the 1994 Chancellor's Commission on Governance which recognised that for the region to remain competitive there was need for a clearer articulation of the role of the UWI, further administrative and financial reforms and structural changes.

As the oldest, fully regional institution of higher learning in the Commonwealth Caribbean, the UWI provides a clear example of functional cooperation at the regional level. The thought at the time of establishment was that "no country could afford to establish a university on its own" (Miller 2007, 61) and regional cooperation was seen as the best option for launching a university. National governments, in the meantime, could work towards establishing a "single or multi-disciplinary college to address the functional needs for teachers, technicians, agriculturalists, nurses, medical technicians and various business related occupations" (Miller 2007, 61).

1.2. INSTITUTIONAL PROFILE - THE UNIVERSITY OF THE WEST INDIES

The UWI presently operates from several locations spread throughout the region. This includes its residential campuses at Cave Hill, Mona and St. Augustine as well as sites in the English-speaking territories of Anguilla, Antigua and Barbuda, The Bahamas, Belize, Bermuda, British Virgin Islands, Cayman Islands, Dominica, Grenada, Montserrat, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, and Turks and the Caicos Islands commonly referred to as the UWI-17.

The UWI is one of two regional cross-country universities in the world (the other being the University of the South Pacific established in 1968)[2] and this gives the UWI a unique identity and provides significant added value to its operations and scope. As a cross-country regional university, the UWI "can be more flexible than national universities as it has a broader governance structure that prevents it from being subjected to a particular jurisdictional power" and "is positioned to benefit from economies of scale and scope while ensuring subsidiarity and complementarity" (UWI Strategic Plan 2012-2017, 16).

Enrolment at the UWI has grown steadily since its inception, from 33 students including ten women (Cobley 2000, 15; Woodall 2011, 40) in 1948 to 555 of which 201 were females in 1958 (Cobley 2000, 15) to 1,268 in 1961, 10,026 in 1983 and 18,058 in 1996 (Brandon 1999,125). At the beginning of the twenty-first century, there were 23,270 students enrolled (on and off campus) in the university and by 2010 there were 48,575 students enrolled on the four campuses combined, a 109 per cent increase in students over the ten years. In 2012/2013, on and

off-campus enrolment reached 52,031. In spite of that, the UWI still remains classified as a small university with less than 150,000 students (UNESCO 2008, 313).

In 1960/1961, the residential campus countries provided 66.5 per cent of total enrolment and by the time of the preparation of the University's first development plan in 1988/1989 the campuses provided 93.4 per cent (Brandon 1999, 125). Today, the trend prevails with almost 90 per cent of total enrolment dominated by nationals of the residential campus territories. Over the ten year period, 2000/2001 to 2009/2010, the university increased its output of graduates by 60 per cent. For the academic year, 2009/2010, the university produced over 9,152 graduates and by 2013, the total number of graduates was 10,158, an increase of 11 per cent between 2009 and 2013.

The UWI is funded in part by the governments of seventeen (17) countries (Campus and Open Campus countries – see Box 1.2), tuition fees, investment of assets, fundraising of various kinds and philanthropic giving (Roberts 2011, 3). Generally, arrangements for payment of tuition fees vary among governments. The governments of the contributing territories sponsor their students by paying 80 per cent of the economic cost while students from contributing countries, not sponsored by their governments but who are admitted under the quota, pay 33.3 per cent of the economic cost.

BOX 1.2: CAMPUS CONTRIBUTING COUNTRIES

•Anguilla • Antigua & Barbuda • The Bahamas • Barbados • Belize • Bermuda • British Virgin Islands • Cayman Islands • Dominica • Grenada • Jamaica • Montserrat • St. Kitts & Nevis • St. Lucia • St. Vincent & the Grenadines • Trinidad & Tobago • Turks and Caicos Islands

Curriculum reform has enabled undergraduate and postgraduate programmes to respond to national needs and regional imperatives while at the same being influenced by global trends and standards. Significant advances in technology have been made thus, enriching the learning experience of students in the classroom and moving the university into the 21st century.

Over the years, universities have evolved their roles into a broader mission that better support the social and economic development of their societies. The aim is to contribute to the 'public good' of the communities, countries and region. As such, research and development activities at universities have become much more important. To that end, the UWI seeks to enhance its research profile in knowledge creation as well as knowledge application in the social, financial, cultural or scientific/natural environment fields relevant to national and regional needs. This can be seen as an extension of its traditional strengths in areas such as biotechnology, information technology, tropical medicine and non-communicable diseases (NCDs). The UWI has also committed to expanding research initiatives in health economics and health issues arising from certain chronic diseases as well as renewable energy, climate change and food security. There have been thoughtful attempts to link research and innovation by placing emphasis on entrepreneurship, competitiveness and diversification strategies. Further, the University through its research initiatives has been able to impact national and regional policy-making and

to strengthen analysis and evaluation of existing policy perspectives. The UWI has a rich repository of unique collections of Caribbean knowledge and artefacts, including books, reports, papers, flora and fauna. As such, the institution continues to be a dominant source for research, consulting and policy-making activities for other sectors to draw upon.

Since its inception, the UWI has produced graduates that have been able to reach the pinnacle of their profession and have served in leadership positions of their countries and also in regional and international development organisations. In fact, the university has provided the English speaking Caribbean region with its current leaders in government, business, education, law, engineering, medicine and many other key public and private sectors. It has also nurtured two Nobel Laureates - Sir Arthur Lewis and Derek Walcott - and several Rhodes Scholars.

The UWI remains committed to the economic, social, cultural and political development of the region through **Teaching, Research, Innovation, Advisory and Community Services** and **Intellectual Leadership**. It remains, irrefutably, the only genuinely regional higher educational institution in the Caribbean in concept, scope, reach, diversity and impact.

1.2.1. The University's Structure

An overview of the organisational structure of the UWI should prove useful in understanding the organisation of the statistical data, particularly for student registration and staff resources.

The governance form at the UWI supports consultation and communication through the establishment of major consultative committees and boards. Austin (2009, 23) noted the "basic structure for the UWI remained essentially intact between the time of its founding in 1948 except for changes to the Charter and Statutes in 1972." Modifications to the governance structure occurred in 1984 which "aimed to preserve the regional character of the university, and gave greater autonomy to campuses in order to respond to national needs, as well as the peculiar needs of the non-campus countries" (Stephens 2010, 61). This led to a decentralised campus governance which meant the establishment of campus councils, and finance and grants committees on each campus as well as the establishment of the University Centre (or centralised administration) "under the control of the Vice-Chancellor and the University committees were included in this office" (Austin 2009, 24; and Stephens 2010,61). There was the subsequent decoupling of the Principal of the Mona Campus from the Vice Chancellor in 1988. Further modifications were made to the governance structure in 1994 with the intent "to streamline the administration of the university, and to bring it in step with current and prospective needs and trends and to improve its effectiveness" (Stephens 2010, 62). Concerns with greater efficiency and efficacy of decision-making, accountability and transparency led to the establishment/reconstitution of new boards. Among these were the University Strategy Committee, the Board for Undergraduate Studies (BUS), the Board for Graduate Studies and Research (BGS&R), and the Board for Non-Campus Countries and Distance Education and the University Senate retained with restricted membership. Also, in 2004 additional modifications were made to the structure, which "served to improve the effectiveness of the major organs of governance at both Centre, and Campus levels, and to preserve and strengthen the image and presence of the University in the non-campus countries" (Stephens 2010, 62).

The UWI comprises four campuses, namely, Cave Hill in Barbados, Mona in Jamaica, St. Augustine in Trinidad and the Open Campus. All four campuses deliver high quality education, research and associate services to all seventeen (17) contributing countries that support the university.

1.2.2. The Regional Headquarters (Vice Chancellery)

The Regional Headquarters is the central administrative arm of the UWI and thus, facilitate the coordination and cohesion of its campus parts. It consists of both administrative offices and teaching and research centres located on any one or more of the three UWI campuses (see Table 1.1). The Vice Chancellery also has responsibility for university-wide projects such as leadership challenge, employee engagement, fundraising and the *Strategic Plan, 2012-2017.*

Table 1.1: Listing Of Administrative Units And Research Centres Within The Vice-Chancellery

ADMINISTRATIVE UNITS	RESEARCH CENTRES
Board for Undergraduate Studies	Alcan Professor for Caribbean Sustainable Development
Board for Graduate Studies and Research	Disaster Risk Reduction Centre
Central Office for Regional and International Affairs	Institute of Criminal Justice and Security
Institutional Advancement Division	Institute for Gender and Development Studies
Office of Administration	Institute for Sustainable Development
Office of Finance	Latin American Caribbean Centre
Office of Planning and Development	Michael Manley Professor of Public Policy
Office of the University Chief Information Officer	Sir Arthur Lewis for Social and Economic Research
The Caribbean Quarterly	The Centre for the Environment
The Legal Unit	Tropical Medicine Research Institute
The Quality Assurance Unit	
The University Archives	
The University Libraries	
UWI Consulting Company	

Source: UWI. "Vice Chancellery – Welcome to the Centre. " Website. http://www.uwi.edu/administration.asp. 2013, n.p.

1.2.3. Campus Organisational Structure

Each individual campus has an organisational structure comprising: campus administration, academic teaching Faculties and research entities.

With reference to campus administration this comprises the Office of the Campus Principal, Registry, Campus Bursary, Estate Management/Maintenance, Information Technology Services, Campus Libraries and Teaching Faculties/Departments.

The Faculties of Humanities and Education, Law, Medical Sciences, Science and Technology[3] and Social Sciences are common to Cave Hill, Mona, and St. Augustine. The St. Augustine campus has retained its differentiation by maintaining the Faculties of Engineering and Food Production and Agriculture. The Institutes of Business are affiliated institutions at St Augustine (Arthur Lok Jack Graduate School of Business), Cave Hill (Cave Hill School of Business) and the Mona (Mona Graduate School of Business and Management) and are considered to be a part of the Campus' Faculty of Social Sciences. It should be further noted that there are other Institutes that operate as departments of specific Faculties. For example, the Caribbean Institute of Me-

dia and Communication (CARIMAC) is a department of the Mona Campus' Faculty of Humanities and Education. Similarly, the Centre for Hotel and Tourism Management, which is physically located in The Bahamas, is a part of the Mona Campus' Faculty of Social Sciences.

1.2.4. The Open Campus

The Open Campus was established in 2007 to broaden access and improve the quality of tertiary education in countries and regions traditionally underserved by UWI and in genuine need of increased tertiary access. The Open Campus is an amalgamation of the previous Office of the Board for Non-Campus countries, the School of Continuing Studies (SCS), the UWI Distance Education Centre (UWIDEC) and the Tertiary Level Institutions Unit (TLIU). The Open Campus offers pre-University, professional development, undergraduate and graduate courses and programmes in online, face-to-face and blended format. It is a virtual campus with 42 physical site locations across the Caribbean region serving over seventeen (17) countries in the English-speaking Caribbean.

1.3. SOURCES OF DATA

The statistical information contained in this report was compiled by the University Office of Planning and Development (UOPD). This Review, however, is a collaborative effort by the Planning Departments or equivalents, from the four campuses of the UWI. Data for this publication were acquired from a myriad of sources but obtained mainly from the Office of Planning and Projects (Cave Hill); the Office of Planning and Institutional Research (Mona); the Institutional Research Unit and Office of the Director of Human Resources (Open Campus); and the Campus Office of Planning and Institutional Research (St. Augustine). Data were also obtained from the Office of the University Chief Information Officer (CIO) and Campus Information Technology Services. The compilation of these statistics, therefore, is truly a university-wide team effort.

This *Higher Education and Statistical Review (HESR) 2013* also draws upon University reports and in particular, institutional research reports prepared by the UOPD. Secondary sources of information were also reviewed using research from international development agencies to gather background information on the tertiary education trends. Of concern is the general paucity of verifiable international data on the tertiary education sector although there is the availability of fragmented studies, limited in scope, undertaken by various international development agencies. There were missing or incomplete datasets with regards to the reporting on tertiary education data for the Caribbean, especially student enrolment, graduation and expenditure on tertiary education data from industry recognised sources such as United Nations Educational, Scientific and Cultural Organization's (UNESCO) Institute of Statistics or World Bank EduStats. Data were also used from the World Bank and the International Monetary Fund (IMF) to determine the economic performance of the Caribbean countries.

The quality, reliability, timeliness and availability of comparable data for the Caribbean is also of particular concern. There is a clear need, therefore, for improved data quality through development of systematic framework for identification, collection and analyses of data nationally and regionally as well as the development of baseline indicators to facilitate proper monitoring and evaluation of institutions and the tertiary education system as a whole (Howe 2011, 56).

While there are holistic or thematic global or regional reports prepared by UNESCO and OECD (Organisation for Economic Co-operation and Development) or by NCSE (National Center for Science Education), HESA (Higher Education Statistics Agency) for the United States and United Kingdom, respectively, no such holistic study has been undertaken in the Caribbean to capture sector-wide data-sets and analyse trends within the tertiary education environment.

1.4. HIGHER EDUCATION AND STATISTICAL REVIEW IN CONTEXT

During the period, 2007/2008 to 2012/2013, the world was besieged by environmental, economic, political, technological and social changes (see Box 1.3). Key among them were the onset of the financial crisis in 2008.

BOX 1.3: SNAPSHOT OF GLOBAL DEVELOPMENTS, 2007-2013

- **Environment and natural disasters:** A total of 414 natural disasters killed more than 16,847 people worldwide, affected over 211 million others and caused US$74.9 billion of economic damages in 2007 (Scheuren et al 2007, 1). In 2013, 330 natural disasters were registered; the disasters killed 21, 610 persons and caused 244.7 million victims worldwide. Economic damages from natural disasters were the highest ever registered, with an estimated US$118.6 billion (Guha-Sapir et al 2014, 1), oil spill in the Gulf of Mexico, etc.
- **Economic:** onset of the financial crisis, Euro-zone debt crisis, the spectre of the United States fiscal cliff, introduction of austerity measures and bailout deals in Europe and stimulation measures in the US, etc.
- **Political:** leadership transitions (as in China, South Korea, France, Mexico, Venezuela, etc)
- **Technological:** introduction of new touch-screen computing via Apple iPad, launch of Android devices advances in tech-gadgets (tablets, smartphones, iPods, etc), upgrades in wireless technology; etc.
- **Social:** protests (the Arab Spring across Middle East and North Africa – MENA and the Occupy Movement - an international protest movement against social and economic inequality and the enormous change in the computing and internet industry (expanding role of new social media, growth in mobile apps), outbreak of the H1N1 influenza which was subsequently declared a global pandemic, etc.
- **Global security**

These unprecedented developments impacted on lives and livelihoods of persons across the globe and also changed the way in which business is done. More importantly, the continuing financial crisis and advances in technology have serious implications for the administration of the University and the evolution of structures and systems to nurture the next generation of students.

An annual compendium of the UWI data, the *UWI Annual Statistical Review*, focuses on providing a compilation of statistical information on student demographics, levels of participation, fields of study, funding and academic staff. Over the years, the *Review* has also produced time series data showing enrolment trends for a ten or a five-year period; the most recent being 2009/2010 to 2012/2013. Selected statistical data are also available on request.

This year the *Review* has been expanded. The primary purpose of this new and improved *HESR* is to provide an analysis of key regional and international trends in higher education impacting the UWI. It also presents graphic snapshots of student participation and staff resources within the university system during the academic years 2007/2008 to 2012/2013 for which data is

available. The idea underpinning this new thrust is to contextualise the information to make it coherent, readable and relevant to university administrators, researchers, tertiary education practitioners and policymakers. The data and analysis presented herein can thus inform developments within the sector as well as further inferential research to be undertaken by key sectoral actors. Therefore, this publication attempts to address some of the gaps mentioned earlier relating to the dearth of a comprehensive review of the tertiary education sector in the region.

The education indicators presented in this report are contextualised according to global trends in higher education and regional economic highlights. The *HESR* uses statistical information relating to student admissions, enrolment and graduation numbers; a profile of student distribution across the University system; and profile of academic, senior administrative and professional staff over a general six-year period, where possible. These indicators are presented for the UWI as a whole, as well as, for each Campus. Supplemental information on the region's population trends and economic trends provides background for evaluating education data. Such information facilitates an appreciation of the wider impact of the University on the development of the human resources in the region.

This *HESR* considers issues relating to the 'Teaching and Learning' (a strategic theme); 'Funding the Enterprise' (the major enabler) and 'Strengthening Regionality' and "International partnerships' (other areas of strategic interest) in the *Strategic Plan, 2007-2012*. It also considers issues relating to strategic Perspectives 'Finance' 'Teaching, Learning and Student Development' and 'Outreach' in the *Strategic Plan, 2012-2017*. The *HESR* has eight chapters focussing on:

- Global trends in higher education
- The higher education environment in the Caribbean
- Regional socioeconomic developments
- Demand, Enrolment, Output and Achievement
- Diversity and heterogeneity of the student body
- Technological Developments
- UWI Labour Market
- Financing the University.

The *HESR* concludes with a policy recommendations for the remaining years of the *Strategic Plan.*

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[1] According to Errol Miller (2007, 60), the first university to be established in Americas was the University of Santo Domingo in 1538, when the Vatican issued the charter to train priests from Spain to engage in the evangelisation of the Americas. By the end of the 18th century seven other universities were established in Latin America. Between 1821 and 1833 ten additional universities were established. The North American and Caribbean colonies of Britain were started around the same time in the second and third decades of the seventeenth century. In the North American colonies nine universities were founded before the declaration of American independence in 1776 however, up to the end of the eighteenth century not a single college had been established in the West Indian Colonies.

[2] For information of University of South Pacific (USP) see http://www.usp.ac.fj/. In 2005, the idea of a South Asian University (SAU) was mooted by the Prime Minister of India at the 13th South Asian Association for Regional Cooperation (SAARC) Summit in Dhaka, Bangladesh. The idea for the SAU was for member countries to pool their resources for creation of a Centre of Excellence in the form of a University that would provide world-class facilities and professional faculty to students and researchers drawn from every country of the SAARC region. The SAU was eventually established by an Inter-Ministerial Agreement for Establishment of South Asian University on 4th April 2007 during the 14th Meeting of the

SARCC New Delhi (India) by Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka. The SAU started its operations from the academic year 2010. For more information on SAU see http://www.southasianuniversity.org/index.php?option=com_content&view=featured&Itemid=101.

[3] At the annual university business meeting in April 2012 the decision was taken to demerge the Faculty of Science and Agriculture at the St Augustine Campus to create two discrete entities - Faculties of Food and Agriculture and Science and Technology. Stakeholders in the Agriculture sector have been calling for this reinstatement and it is hoped that the new Faculty with its focus on food and agriculture, will address the pressing problem of food security in the region. The decision was also taken to rename the Faculty of Pure and Applied Sciences on the Cave Hill and Mona Campuses to the Faculty of Science and Technology was not aimed only at standardising faculty names across the university but signalled a widening of focus and the repositioning of Science with Technology throughout the institution. (Clement Sankat "From the Principle Two New Faculties." UWI Today. April 29 2012.)

CHAPTER TWO: TRENDS IN GLOBAL HIGHER EDUCATION

This chapter examines the international trends in higher education (see Box 2.1) acknowledging that one cannot analyse the trends without understanding the context of the global political, economic and social events and the relationship between lower levels of schooling and in particular, secondary school which impinge on the access to higher education. Nevertheless, the chapter will provide an overview of international trends and critically assess selected key trends that have relevance to the UWI in the context of this *HESR*.

BOX 2.1: DEFINITIONS OF HIGHER AND TERTIARY EDUCATION

Tertiary education broadly refers to all post-secondary education, including but not limited to universities. Universities are clearly a key part of all tertiary systems, but the diverse and growing set of public and private tertiary institutions in every country—colleges, technical training institutes, community colleges, nursing schools, research laboratories, centres of excellence, distance learning centres, and many more—forms a network of institutions that support the production of the higher-order capacity necessary for development (World Bank 2013, n.p.).

In the Caribbean the term, tertiary education is routinely used interchangeably with higher education but both are intended to be inclusive and reflect a recognition "that education and training provisions in these third level institutions may and in fact do include non-university and university level programmes, technical and vocational education and training, professional and paraprofessional training, and continuing education programmes" (Howe 2011, 17).

…. the teaching and learning process that occurs following the completion of secondary education and provides academic credits and competencies that lead to certificates, diplomas and degrees from universities, university colleges, polytechnics, community colleges and similar institutions (UNESCO, 1998, n.p.).

In the current economic environment, there is a continued strong demand for education as a result of poor labour markets and low opportunity costs for education. The increasing importance of knowledge to competitiveness and growth makes it imperative for developing countries to improve access to knowledge. The joint World Bank and UNESCO study on the future of higher education in the developing world noted that "investment in the production of new knowledge yields potentially higher economic returns but entails higher risks" compared to investment in the production of goods (World Bank 2000, 35). As such, both developed and developing countries have reacted to the imperatives of the knowledge economy by placing greater emphasis on the formation of human capital via higher education in particular, as knowledge is seen as the springboard for development.

2.1. DISCUSSION OF KEY INTERNATIONAL TRENDS

The twenty-first century brings greater challenges and change to universities than at any other time in their history. Gazzola and Didriksson in a 2008 UNESCO Report of higher education in Latin America and the Caribbean (LAC) asserted that as the repositioning and re-dimensioning of the universities occurred at the beginning of the twenty-first century, "the form of public

university agendas began to change significantly" (UNESCO 2008, 30). The Report continued that in the last twenty years:

> *… emphasis shifted from the themes of serving social demands, growth, decentralisation, and planning, to a concern with themes such as assessment and accreditation to the use and management of financial contracting, extra-budgetary resources based on competitiveness, the charging of tuition and increases in their own resources to commercialisation and the intervention of international financial organizations" (UNESCO 2008, 30).*

In fact, universities and research institutes play a special and indispensable role in the financial intellectual complex as they are often utilised/contracted by multilateral agencies to undertake specific research and thus, play a critical role in the formulation of new paradigms (Jules 2006, 18). Within recent years, the international development community has expanded its focus on educational development and reform to include tertiary education as part of their poverty reduction and growth promotion strategies. The World Bank in recognising that the knowledge economy requires a well-developed education system has supported tertiary education projects by providing loans to countries (See Box 2.2).

BOX 2.2: WORLD BANK LENDING IN THE AREA OF TERTIARY EDUCATION

From 2003 to 2012 the World Bank lent over US$ 3.7 billion for 126 education projects with tertiary education components in 61 countries. In the ten years from 2003 - 2012, Bank lending for tertiary education averaged US$369 million per year.

The South Asia region received the largest share (34%) of Bank lending for tertiary education over the last 10 years, followed by the Latin America and Caribbean region (30%). The East Asia and Pacific accounted for 15%. The Africa region had 15%. The Middle East and North Africa region had 4%. The Europe and Central Asia region received 2%. Currently, the World Bank's education portfolio has over 76 active projects with tertiary education components to support tertiary education in developing countries.

In supporting the actual implementation of tertiary education reforms, the World Bank gives priority to programs and projects that can bring about positive developments and innovations by: (i) increasing institutional diversification; (ii) strengthening science and technology research and development capacity; (iii) improving the quality and relevance of tertiary education; (iv) promoting greater equity mechanisms to assist disadvantaged student; (v) establishing sustainable financing systems to encourage responsiveness and flexibility; (vi) strengthening management capacities; and (vii) enhancing and expanding ICT capacity to reduce the digital divide.

(Source: World Bank. Tertiary Education (Higher Education). 2015, n.p. http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTEDUCATION/0,,contentMDK:20298183~menuPK:617592~pagePK:148956~piPK:216618~theSitePK:282386,00.html#what_why.)

The changes in tertiary education which has been influenced by changes in demography, technology and macroeconomic policies have also led to the traditional roles of learning and discovery, largely exempt from political or cultural pressures, now being challenged. With the increasing 'privatisation' of tertiary education institutions (TEIs) in many countries, universities have to interface with a larger stakeholder base, including current, past and future students and their families, employees, governments, the private sector, multilateral development agen-

cies, clients and suppliers; each with their own demands and expectations. Universities are further expected to better engage with the wider society and in particular, local communities, to address concerns and develop indigenous solutions as well as work closely with the commercial sector to apply and exploit their discoveries for economic benefit. Further, national boundaries are blurring as not only many students take-up study outside their home country and researchers travel to the best research centres but also the role of Information and Communication Technologies (ICT) has contributed to dissolving national boundaries. Universities are therefore well placed to transcend political and cultural differences through knowledge creation, generation and transmission.

The higher education sector has been beset by multiple changes in recent decades. These principal changes include: (i) growing heterogeneity and diversity; (ii) broadening of access based on talent, skills, and effort; (iii) the growth of macro-universities and technical training institutions; (iv) expansion in the numbers of students; (v) the rise of the corporate university; and (vi) the growth of 'off-shore' and national TEIs. These developments occurred along with the increase of scientific research, the impact of the new technologies, the commercialisation of education, the development of new courses and new areas of interdisciplinary-based and transdisciplinary-based knowledge, and the growing importance of internationalisation. The evolving role of TEIs requires new models of training, learning, and innovation. Concurrently, the quality of tertiary education should be linked to pertinence, equity, and social responsibility, and should take into consideration the public commitments and social roles proper to educational institutions.

2.2. OVERVIEW OF SELECTED INTERNATIONAL TRENDS WITH RELEVANCE TO THE UWI

The selected trends discussed below are discussed in the context of enrolment, graduation outputs, staff and funding.

2.2.1. Increasing demand for higher education

With the effects of globalisation, the demand for better and higher education has increased. Carnoy (2005, 3) posited that "two of the main bases of globalisation are information and innovation, and they, in turn, are highly knowledge intensive." Consequently, the demand for education, especially university education, increases. In part, this is because "rising payoffs to higher education in a global, science based, knowledge intensive economy make university training more of a "necessity" to get "good" jobs" (Carnoy 2005,4). Further, the payoff for a higher educated labour force "increases the demand for university education, pushing governments to expand their higher education systems, and, correspondingly, to increase the number of secondary school graduates ready to attend post-secondary schooling" (Carnoy 2005, 5). While the demand for higher education has been driven by economic forces, it has also been influenced by socio-political developments and movements. Demographics (the changing family) and democratic ideals increase pressure on universities to provide access to groups that traditionally have not attended the university. This led to investments in the tertiary education sector or the development of policy initiatives that drive the growth of the sector that is, aimed at widening access. Globalisation thus "increases the potential for greater inequality of access to quality

education, even as globalisation brought new kinds of people into universities and other types of post-secondary schooling" (Carnoy 2005, 24).

Access, equity and quality are therefore challenges facing all levels of the education system. Since 2000, there has been an almost 50 per cent increase in enrolment at the tertiary level (Burnet 2008, 2). There has been increased expansion of the post-secondary age cohort enrolled in tertiary education particularly in upper middle income countries from 19 per cent in 2000 to 26 per cent in 2007 (UNESCO 2009, iv). Burnett (2008, 2) noted that enrolment has risen in Latin America and the Caribbean from 10 million to 16 million in ten years, 1996-2006. Nevertheless, "tertiary enrolments remain low in some regions: 5 per cent in Africa, 11 per cent in South and West Asia, 22 per cent in the Arab States, and 25 per cent in East Asia and Pacific" (Burnett 2008, 2). Although some developing countries still educate fewer than 10 per cent of the university-level age group (UNESCO 2009, iv), "participation rates of 40 to 50 per cent in higher education are now considered vital to economic growth" (Burnet 2008,2).

High entry rates in tertiary education suggest that a highly educated labour force is being developed. Entry rates for university-level programmes increased by an average of nearly 20 percentage points across OECD countries[1] between 1995 and 2012 (OECD 2014, 28). The effects of the financial crisis impacted on the number of persons entering university as there was a decrease of four percentage points since 2010. In 2012, an average of 58 per cent of young adults in OECD countries were expected to enter university-level programmes (OECD 2014, 28) compared to an estimated that 62 per cent of young adults in 2010 (OECD 2012, 18). Less than three per cent of young persons were expected to enter advanced research programmes (OECD 2014, 28). In 2010, the expected rate of entry was 25 per cent higher for women than for men and more than 90 per cent of all new entrant in to tertiary education were under 25 years in Belgium, Indonesia, Italy and Mexico (OECD 2012, 18). Further, entry rates in 2011 remained higher for women (65 per cent) than for men (52 per cent) although, in advanced research programmes the entry rates for women and men narrowed. Approximately 82 per cent of first-time entrants into university were under the age of 25 and the 57 per cent of students who entered advanced research programmes were under 30 years in 2011 (OECD 2014, 28). Social science, business and law were the most popular fields of study chosen by new entrants into tertiary programmes in all countries except Finland, South Korea and Saudi Arabia.

2.2.2. Removing barriers to access to higher education and reducing inequalities

The higher education environment has experienced surges in enrolment as a result of globalisation. Enhancing access for under-represented groups such as economically disadvantaged students, mature students, or persons with disabilities, and addressing inequalities such as gaps in enrolment and achievement among males and females and rural/urban disparities would contribute to the realisation of equity.

At the beginning of the twenty-first century many countries determined that widening access to individuals from a range of backgrounds (sex, age, ethnicity, class) to higher education would foster the necessary conditions for economic growth, competitiveness and mobility. However, increase in access to higher education "has not led to a proportionate decrease in inequality,

since access and completion remain dependent on socioeconomic factors" (World Bank 2009, 8). In other words, though participation has increased within the last twenty years inequalities of opportunities relating to access and persistence still endure. This may be explained by a parent's level of educational attainment (see Box 2.3), socioeconomic status (See Box 2.4), structural circumstances and labour market conditions and arrangements. The World Bank (2009, 8) document on equity and access to tertiary education in the LAC region also noted that "only in the Dominican Republic and Venezuela, is the expansion of access to education for the people aged 20-24 correlated with a diminution of social inequality."

In many countries, the student population is not representative of its society and some segments are often marginalised despite the many policy initiatives to support mass access in recent years. In fact, the expansion in higher education has benefitted mostly those of higher socioeconomic status however, the "new" demand comes from the aspirations of the 'rising' lower middle social class (Carnoy 2005.9, 15). Despite the many policy initiatives to support mass access in recent years, broader post-secondary participation has not benefitted all sectors of the society equally. A UNESCO Report (2009, v) cited a recent comparative study of fifteen (15) countries (mainly in the North and mostly upper income countries) that showed despite greater inclusion, the privileged classes have retained their relative advantage in nearly all nations.

Expansion alone may not be sufficient to reduce differences in rates of access of learners from different social and economic groups. As such, the state can and should play an important role in offsetting these inequalities by providing targeted guidance and support or reserved places for under-represented groups (i.e. affirmative action). For example, in Brazil the legislature has mandated universities to reserve space for disabled and Afro-Brazilian students, while in Ghana, Kenya, Uganda and the United Republic of Tanzania lowered admission cut-offs have been established for women to increase female enrolment. Although some countries may have instituted legal frameworks to offset inequities in access and participation in tertiary education, enrolment of the under-represented population continues to be generally low. This may be due to slow changing perceptions by self and society or they may lack the necessary pre-requisite qualifications. For instance, the participation of lower castes, rural populations and Muslims in India lags behind the general population, and lower castes tend to be clustered in less expensive programmes despite the fact the Indian government obliges universities to reserve a set of spaces for "socially and backward classes" (UNESCO 2009, vi). Despite the quotas reserved for the Afro-descendants population in Brazilian public universities, "less than 2 per cent have access to higher education" (World Bank 2009, 12). While initiatives (e.g. financial aid, creation of universities for indigenous populations with bilingual and intercultural education, institutional reforms etc.) have been implemented, deficiencies such as relevance of higher education to the indigenous communities, financial assistance, quality of lower levels of schooling and the persistence of strong social pressures need to be addressed (World Bank 2009, 12).

BOX 2.3: DOES PARENTAL EDUCATION AFFECT STUDENTS' CHANCES?

On average, at least 35% of 20-34 year-olds in tertiary education have at least one parent who has completed that level of education. In Canada, Estonia, Germany, Japan, Norway and Sweden, at least 65% of these students do. The likelihood of a student participating in tertiary education is twice as great if at least one of the parents attained upper secondary or post-secondary non-tertiary education, and about 4.5 times as great if both parents attained tertiary education. On average, only 9% of tertiary students have parents with low levels of education.

On average among countries, about 40% of adults (aged 25-64 years) have a higher level of educational attainment than their parents. Intergenerational educational upward mobility is the highest in Belgium, Finland, South Korea and the Russia, where more than 55% of adults have attained a higher level of education than their parents. On the contrary, 12% of non-student adults have lower educational attainment than their parents. In Austria, Denmark, Estonia, Germany, Norway, Sweden and the United States more than 15% of this population does.

On average, 32% of young people have achieved a higher level of education than their parents, while only 16% have not been able to reach their parents' education level, among OECD countries with available data. In all countries except Estonia, Germany, Norway and Sweden, upward mobility in education is more common than downward mobility, reflecting the expansion of education systems in most OECD countries.

(Source: OECD. *Education at a Glance 2014: Highlights.* OECD Publishing. 2014. 24. http://dx.doi.org/10.1787/eag_highlights-2014-en)

BOX 2.4: SOCIO-ECONOMIC CONDITIONS CONTINUE TO BE A DETERMINING FACTOR OF INEQUITIES

- Access, completion and value of degrees depend on the households' socio-economic and educational backgrounds. Within the context of exclusive societies in LAC, poverty, race, ethnicity and rurality are linked with and constitute factors of unequal access to education. LAC countries have the lowest average Education Equity index score, showing that socio-economic status has a relatively higher influence on the access to education compared to high-income countries. As a consequence, the region presents lower accessibility to tertiary education system.
- There is unequal access depending on the students' economic background. In most of the countries, 50% of the richest quintile has access to higher education, while for the poorest quintile; this proportion is between 10% and 20%.
- Expansion has benefited mostly the middle classes while continuing to exclude the poorest section of the population. Differences between and within countries are measured by income quintiles and by the Gini coefficient; results denote that the most elitist countries are Brazil, Chile, México and Costa Rica. Chile and Brazil have the most elitist education systems. In Brazil, 59% of the students enrolled in public universities and 74% of those in private institutions belong to the richest income quintile and this proportion is 52% in Chile.
- Inequities in the education system originate due to the socio-economic disparities in the region (population living under the poverty line is 50% in Bolivia and Ecuador, 44.30% in Peru and 25% in Colombia). The access to education (any educational institution in urban areas) for people aged 20-24 belonging to the poorest quintile is relatively low (13.1% in Colombia, 17.1% in Ecuador, 24.4% in Peru, and 32.9% in Bolivia). In the Andean countries, it is estimated that barely 45% of the population that completes secondary education has access to higher education and the access to higher education for the population aged 20-24 in urban areas belonging to the poorest quintile, is less than 3%.

(Source: World Bank. *Literature Review on Equity and Access to Tertiary Education in the Latin America and Caribbean Region.* 2009, 9..http://siteresources.worldbank.org/EDUCATION/Resources/278200-1099079877269/547664-1099079956815/547670-1276537814548/WorldBank_LAC_Equity_LitReview.pdf)

The cost of higher education is also a significant barrier to access. Though tuition may be low or free in some countries, students still have to bear other costs such as administrative fees and living expenses. Some countries offer scholarships, grants and/or loan programmes (e.g. loans with income-contingent repayment combined with means tested grants) to reduce this financial burden. While scholarships, grants and/or loan programmes have some degree of success they cannot by itself remove economic barriers. In countries such as Australia, New Zealand and South Africa income-contingent loan schemes (where repayment plans are tied to post-graduation earnings) have gained popularity. In some countries the labour market is characterised by occupational segregations and inequalities, a result of socio-historical circumstances, while, in other countries, graduates face discrimination in the labour market as a result of a high unemployment rates in certain disciplines, and a mismatch between education and/or skills and labour opportunities.

Greater access to higher education also brought about the challenge of more diverse student populations - students from a wider range of social classes and educational backgrounds. It is not only sufficient to enhance access, but strategies have to be introduced to limit continuing differences in participation or implied differences between groups in access to learning and other resources. This speaks to the need to pay special attention to the internal efficiency and effectiveness of the products and services at universities.

2.2.3. Open access to education

Open and distance education, transformed by the ICT revolution, has contributed to broadening access. Generally, "distance education enrolments represented between 5-15% of the total enrolments at institutions in industrialised countries and between 10-20% in developing nations in 2007" (Woodall 2011, 11). The advent of massive open online courses or MOOCs (see Box 2.5) facilitates increased enrolment, especially free courses to anyone who has internet access. At the same time, access to the internet is constrained by the adoption, use and appropriation of ICTs within countries, across geographical regions and by groups of people ('digital divide') which limits the availability of online education. Thus, ICTs can reinforce, exacerbate or reduce inequalities. The findings of a 2012 survey of online learning noted only 2.6 percent of HEIs currently have a MOOC, and another 9.4 per cent report MOOCs are in the planning stages (Allen and Seaman 2013, 8).

With the growth of online learning in the last ten years, more than 30 per cent of higher education students participated in at least one online course despite the fact that the majority of institutions are not yet involved in the provision of online education (EUA 2013, 13). Allen and Seaman 2013, 17) noted that between 2002 and 2011 the average growth in students taking at least one online course was 568,000 students per year. They further noted the "increase from 1.6 million students taking at least one online course in fall 2002 to the 6.7 million for fall 2011 represents a compound annual growth rate of 17.3 percent" (Allen and Seaman 2013, 18). They continued that "the overall higher education student body has grown at an annual rate of 2.6 percent during this same period – from 16.6 million in fall 2002 to 21.0 million for fall 2011" (Allen and Seaman 2013, 18). The data suggest that there was a robust growth in the online learning.

BOX 2.5: BROADENING ACCESS BY WAY OF INNOVATIVE TECHNOLOGY

MOOCs or Massive Open Online Courses that emerged in 2008 are online courses with no formal entry requirement or participation limit and are free of charge but the individual do not earn credits. Generally, a profit or non-profit private company would partner with universities or individual scholars to offer MOOCs with the universities or the individual academics being responsible for the content (and the quality) of the courses while the company is in charge of the production and its technical facilitation. Among the more popular MOOCs companies and consortia are:

- EdX is a not-for-profit enterprise of its founding partners, the Massachusetts Institute of Technology (MIT) and Harvard University that offers online learning to on-campus students and to millions of people around the world. EdX currently offers HarvardX, MITx and BerkeleyX classes online for free.
- Coursera is a social entrepreneurship company that partners with the top universities in the world to offer courses online for anyone to take, for free.
- Udemy is a portal that facilitates online courses, mainly in the area of entrepreneurship, IT, software use, design, arts and sports. It also charges moderate fees for some of its courses.
- Udacity is a for-profit company that has been cofounded by a Stanford professor, who started to offer information science courses online in 2012. Courses are free, but fees may be charged for certification.
- Futurelearn was established in late 2012 and is the first one launched outside of North America. Courses are planned to start in the second half of 2013. Initially Futurelearn will be a limited company financed and owned by The Open University, UK. In a first round, in addition to the Open University, another 11 UK universities will participate (8 Russell Group, 2 from 1994 Group, and 1 non-aligned). The universities of Bristol, St Andrews and Warwick are among them. The fact that institutions have been selected on the basis of league tables has raised some criticism.

Most existing MOOCs have a specific start and finish date and students sign up online. The courses are usually offered two to three times a year and tend to last for weeks. A student can use a wide range of media and interactive online tools (e.g. video lectures, online discussion boards, blogs, wikis and social networking sites) to engage with other participants and learn alongside them. Assessment of MOOC courses includes peer-assessed written assignments and computer marked tests.

Demographic profile: The age of students vary and can range from 14 to 74 years depending on the type of courses. MOOC providers make the point that students come from all over the world. Both Coursera and Udacity claim that most of their students reside outside the US (74% for Coursera). A survey carried out among the participants of a Coursera course called "machine learning" revealed that half of them were working professionals, many of them enrolled elsewhere in education. Other smaller groups that could be identified were school pupils and the unemployed. Dropout rates for MOOCs can be high. Of 104,000 students who enrolled in the 2011 online Coursera "machine-learning" class, 46,000 submitted at least one assignment, 20,000 completed a substantial portion of the course and 13,000, or 12.5%, passed. Course providers also make the point that even if only 10% of the participants achieve the course goals this would still outnumber the regular students who graduated over a decade ago from the same course taught in a brick and mortar setting.

Recognition: Course providers have made clear from the beginning that they would not award credits for MOOCs, but only certificates of attendance and completion. However, there are slight shifts in recognition of MOOCs. For example, the American Council for Education (ACE) announced recently that it would assess the possibility for the ACE College Credit Recommendation Service (ACE CREDIT) to provide college credit for selected Coursera course.

Producing a MOOC can be quite costly, as it usually requires a large production team. It has been estimated, that over the past months (of 2012), some 100 million USD in funding has been directed toward MOOCs. Harvard and MIT alone have apparently invested 30 million USD each into edX.

Universities may consider MOOCs for various reasons: lowering the cost of education; using existing resources more efficiently, e.g. by supplementing traditional classroom education with MOOCs (blended learning); offering traditional students more flexible learning opportunities; or reaching out to new learner groups, thus for enhancing visibility and for self-promotion.

(Source: European University Association. "MOOCs Massive Open Online Courses." By Michael Gaebel. *EUA Occasional Papers.* January 2013, 5-6, 7. http://www.eua.be/Libraries/Publication/EUA_Occasional_papers_MOOCs.sflb.ashx).

Despite the growth of the online learning community, academic leaders are yet to be persuaded that online courses are equivalent in value to face-to-face courses. Some 77 per cent of aca-

demic leaders rate the learning outcomes in online education as the same or superior to those in face-to-face (Allen and Seaman 2013, 5, 24). However, only 30.2 per cent of chief academic officers believe that their faculty accepts the value and legitimacy of online education and 69.1 per cent of chief academic leaders said that online learning is critical to their long-term strategy (Allen and Seaman 2013, 16, 27). An estimated 60 per cent of those institutions with full online programmes indicated that online learning is significantly represented in their strategic plan (Allen and Seaman 2013, 16).

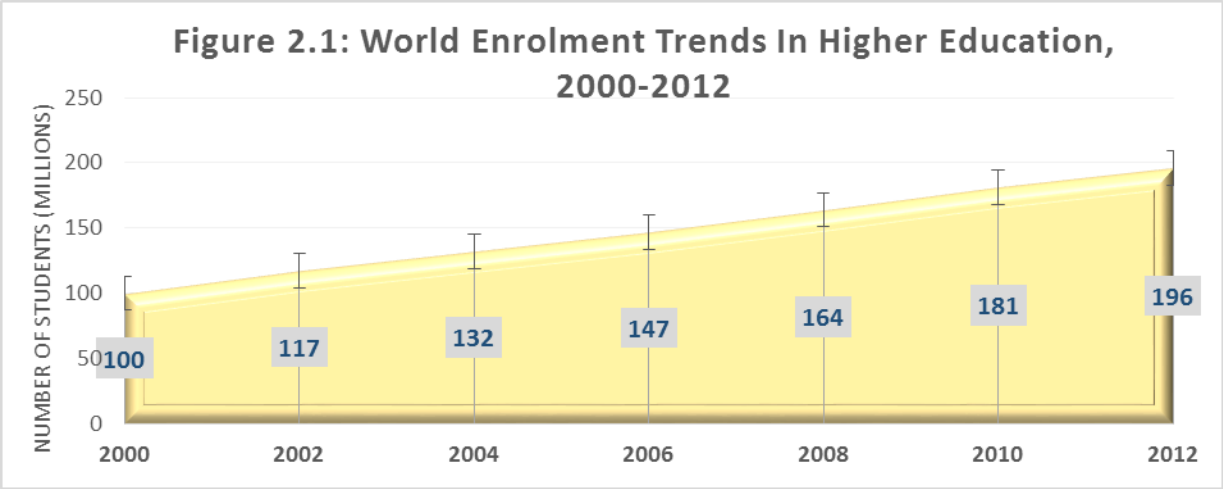
There are some clear benefits of MOOCs to students such as access and continuous professional development, and to the institution, namely; increased visibility, a means through which university staff can engage in public service especially to underserved populations, and as a provider of feeder courses, which will allow students to become familiar with the institution and possibly enrol in a paid programme. At the same time, there are areas of concern – disconnect between university activities and online programmes which is sometimes managed by an external provider, the extent of faculty involvement in the design and delivery of courses that can detract from research and other teaching duties. Other concerns relate to the high dropout rate and recognition of badges or honour certificates of achievement.

While MOOCs appear to be the salvo for lowering cost, reducing inefficiencies and improving access and equity, the capital outlay can be quite high. There are several facets to building a MOOC - writing lecture scripts, rethinking course structure, creating a slew of multiple choice quizzes, adapting grading software, filming lectures and (sometimes) discussion groups, editing footage, and building a course page and once the course goes live, there is the cost for feed monitors, glitch repair, and a squad of tutors and administrators (Petterson 2013, n.p.). Udacity budgets $200,000 for each course it makes and "in its partnership with Georgia Institute of Technology's new MOOC-ified master's degree in computer science, Udacity expects to double its costs to $400,000 per course" (Petterson 2013, n.p.). Another MOOC provider, "EdX gives its partners the option of producing a MOOC on their own and then submitting the finished product to EdX, or else paying for EdX's design and consulting services at a rate of $250,000 per course plus another $50,000 each time the course is re-run" (Petterson 2013, n.p.). There are private donors who contribute to promote the use of MOCCs. For instance, the Bill & Melinda Gates Foundation has spent millions of dollars promoting MOOC use, especially advocating for MOOCs in remedial education (Petterson 2013, n.p.).

As the cost of tuition rises for face-to-face delivery along with a concomitant demand for higher education, new educational models are emerging that improves access to higher education and caters to the non-traditional student. Examples include the University of Phoenix, Peer to Peer University (a grassroots open education project for lifelong learning where teaching and learning is undertaken by peers for peers) and the University of the People (the world's first tuition-free, non-profit, online academic institution which offers undergraduate programmes in Business Administration and Computer Science) places emphasis on openness, the use of digital resources, a distributed faculty and student base, and global reach.

2.2.4. Increasing participation and enrolment

Global tertiary enrolment grew from just under 100 million in 2000 to 181 million in 2010, an increase of 81 per cent for the twelve year period as can be seen in Figure 2.1 (UIS 2014). By 2012 (the latest year for which figures are available globally), the number of students enrolled in tertiary education was 196 million (UIS 2015). The increase participation in tertiary education has been driven by efforts to increase the competitiveness of countries and it is forecasted that demand is likely to continue. Kanwar (2013, slide 8) projects that number of students enrolled in tertiary education is likely to increase to 263 million by 2025 (Kanwar 2013, slide 8).



Source: UNESCO Institute of Statistics, 2014. http://data.uis.unesco.org/Index.aspx?queryid=128. Note: Figures rounded up for convenience.

Although there have been massive increases in enrolments over the last decade particularly in Africa, LAC, the Middle East, and Eastern and Central Europe, "the demand for higher education has exceeded supply in many parts of the world, particularly in developing countries where the gross enrolment ratio is still quite low" (UNESCO 2009, 123). While there have been gains in tertiary level enrolment globally, it may be posited that this is not reflective of demand as enrolment is governed by a supply constraint relating to institutional capacity. Despite the increases in tertiary enrolment globally, "in low-income countries tertiary-level participation has improved only marginally, from 4 per cent in 2000 to 7 per cent in 2007", while in LAC, "enrolment is still less than half that of high-income countries" (UNESCO 2009, vi). Using data from the UIS Praveen Mohadeb (2012, slide 5) concluded that most countries with a Gross Domestic Product (GDP) less than $1000 have tertiary gross enrolment ratios (GERs) generally less than 15 per cent, while countries with GDP more than $15,000 have tertiary GERs generally higher than 50 per cent. Table 2.1 shows that regions overall were able to improve their gross enrolment ratios between 2000 and 2012.

An estimated 60 per cent of higher education enrolments in LAC was concentrated in three countries: Brazil (28 per cent), Mexico (17 per cent), and Argentina (14 per cent), followed by Peru (6 per cent), Chile (4 per cent), Bolivia (2 per cent), and the Caribbean (1 per cent) (UNESCO 2008, 27). The authors of that Report further noted that in Cuba, Uruguay, Bolivia, Panama, Honduras, and Argentina there is a concentration of students of between 75 to 100

per cent in public institutions, while in Brazil, Chile, El Salvador, Colombia, Costa Rica, Nicaragua, and Dominican Republic 50 to 75 per cent of students are enrolled in private institutions (UNESCO 2008, 27). Ecuador, Mexico, Venezuela, Paraguay, Peru, and Guatemala have significant proportions of students in both the private and the public sectors (UNESCO 2008, 27).

Table 2.1: Gross Tertiary Enrolment Ratios*, 2000-2012 (%)

		2000	2005	2010	2012
Regions**	Arab States	18.6	22.2	25.6	26.3
	Central and Eastern Europe	43.0	58.5	67.9	70.9
	Central Asia	21.7	27.1	24.2	24.6
	East Asia and the Pacific	15.5	22.6	27.3	30.7
	Latin America and the Caribbean	22.6	30.5	40.7	43.0
	North America and Western Europe	60.0	69.1	76.7	78.9
	South and West Asia	8.7	10.4	17.4	22.8
	Sub-Saharan Africa	4.3	5.7	7.4	7.9
World$^{\Delta}$	Developing Countries	55.0	66.6	73.5	75.5
	Developed Countries	12.3	16.8	22.4	25.6
Income Groupings$^{\phi}$	High Income Countries	56.1	66.4	72.8	75.1
	Middle Income Countries	40.2	56.3	73.7	84.8
	Low Income Countries	4.2	5.3	8.5	9.2

Source: UNESCO Institute of Statistics, February 2015.
http://data.uis.unesco.org/Index.aspx?DataSetCode=EDULIT_DS&popupcustomise=true&lang=en.
Notes: Gross enrolment ratios for ISCED 5 and 6, that is, all tertiary education programmes from baccalaureate to Ph.D. GER shows the general level of participation in a given level of education. Shaded cells are UIS estimates. ** Data based upon UIS Global Education Digest grouping. $^{\Delta}$Data based upon the UIS Millennium Development Goals Grouping. $^{\phi}$ Data based upon the UIS World Bank Grouping. The categories of lower, middle and upper middle income countries were aggregated to middle income countries.

While Europe and Central Asia have consistently high tertiary GERs, Sub-Saharan Africa generally lags behind. Between 2007 and 2010, of the ten countries with the lowest tertiary enrolment rates, eight (Niger, Eretria, Chad, Central African Republic, Burundi, Burkina Faso, Madagascar and Ethiopia) were in Sub-Saharan Africa, while Dominica and Djibouti, the remaining two, were located in the Caribbean and Eastern Africa, respectively (World Bank Edstats 2011, slide 6). Countries in Europe and Central Asia such as Romania, Greece, Cyprus, Ukraine, Slovenia, Czech Republic and Lithuania improved their tertiary gross enrolment ratios by 29 to 43 percentage points between 2000 and 2009 (World Bank Edstats 2011, slide 7). For the same period, Cuba and Venezuela more than doubled their 2000 gross tertiary enrolment by 95.5 and 49.8 percentage points, respectively with Venezuela attaining 117.8 per cent and Cuba achieving 78.2 per cent in 2009 (World Bank Edstats 2011, slide 7).

Based on demographic and macroeconomic factors, China, Colombia and Brazil should start closing the gap in tertiary education enrolments on advanced economies (British Council 2012, 36). China, India, United States and Russia account for 45 per cent of the total global enrolment, and between 2002 and 2009 China and India accounted for almost half (26 million) of the

overall increase (55 million) in enrolment globally (British Council 2012, 39). The economies of Brazil, Russia, India, China, India, Poland, Indonesia, Mexico and Turkey showed a strong growth in tertiary level enrolments as shown in the Table 2.2.

Table 2.2: Gross Tertiary Enrolment Ratios – High Growth And Emerging Economies, 2000-2012 (%)

COUNTRY	2000	2005	2010	2012
China	7.8	18.3	23.3	26.7
India	9.5	11.0	18.2	24.8
Indonesia	15.1	17.7	24.9	31.5
Iran	19.2	22.9	43.1	55.2
Malaysia	25.7	27.9	37.1	
Mexico	19.3	23.3	26.7	29.0
Poland	50.3	63.6	73.5	73.2
Russia	55.4	72.6		76.1
Saudi Arabia	22.6	28.7	37.3	50.9
South Korea	78.8	93.5	101.0	98.4
Thailand	35.1	44.2	50.0	51.4
Turkey		32.8	55.9	69.4

Source: UNESCO Institute of Statistics. February 2015. http://data.uis.unesco.org/Index.aspx?DataSetCode=EDULIT_DS&popupcustomise=true&lang=en#.

Note: Gross enrolment ratios for ISCED 5 and 6, that is, all tertiary education programmes from baccalaureate to Ph.D. Incomplete or no data available for emerging and growth-leading economies such as Brazil, Nigeria, Philippines, Singapore, South Africa.

Enrolment numbers are influenced by many factors including the economic climate, public policies that support attendance at university, the population size of the related age cohort, the rates of secondary school graduation and excellence, absorptive capacity of the institution and the perception of an appropriate match between higher education and the labour market.

University enrolment is likely to remain strong in the short-to-medium term unless the effects of the economic crisis reshape the prospective student population or there are changes in the application of economic cost for tertiary education (See Box 2.6). Nevertheless, the British Council (2012, 39) noted that there will be a significant slowdown in tertiary education enrolments from 5-6 per cent per annum over the past decades to 1.4 per cent per annum this decade (2010-2020) which will also slow the growth of globally mobile students. This slowing down in growth is related to the higher education sector maturing or slowing in some markets, and demographic trends no longer as favourable as a result of declining birth rates over the last 20 to 30 years (see Box 2.7).

Within the United Kingdom, online programmes offer tuition at the postgraduate level and for continuing professional development. Online distance education market was concentrated in courses in business, law, medicine, science, social studies, technology and education (Hanover Research Trends 2011, 4-5). Conversely, in the United States undergraduate degrees (41 per cent) constituted the largest percentage of fully-online programmes followed by graduate or first professional degrees (25 per cent) during the 2006-2007 academic year (Hanover Research Trends 2011, 5).

BOX 2.6: ENROLMENT GROWTH SCENARIOS

Based on past labour-market trends and projected population changes, Association of Universities and Colleges of Canada (AUCC) expects that there will be close to 1.3 million more jobs for university graduates in 2020 than there were in 2010. In addition, there will be approximately 700,000 to 900,000 more jobs for university graduates to replace those graduates who will retire over the coming decade. To meet this demand, the number of new graduates would need to grow by about 1.3 percent per year over the course of the decade. If this growth in new graduates is not reached, there will likely be labour shortages in knowledge intensive occupations.

Canada: Annual increases of 1.3 percent in the number of graduates will likely require very similar increases in enrolment levels. By 2020, that kind of growth would generate an increase of 125,000 fulltime students in addition to the 900,000 students enrolled in 2010.

Low growth scenario: Average annual enrolment growth of 0.45 percent per year and 0.9 percent per year would translate into increases in full-time students of 40,000 and 80,000, respectively, by 2020.

High growth scenario: Aggregate full-time enrolment will increase by 125,000 students or about 14 percent between 2010 and 2020, compared to nine percent in the medium growth scenario and just five percent in the low-growth scenario. To put these changes into context, student enrolment increased by 4.6 percent from 2009 to 2010 and 44 percent over the last decade (2000/2001-2010/2011). For the high growth scenario there would have to 2-3 percentage point increase in participation rates for age cohorts 18-21 years, 22-24 years and 25-29 years (mostly graduate students).

Emerging economies like China, India and Brazil anticipate very strong increases in enrolment. Already these countries, along with the US, have the largest total number of higher education students. As their economies expand, there is a strong potential for rapid enrolment growth, which will likely exceed domestic capacity for students, and in turn, will create international student demand. Similarly, developed counties are projecting enrolment and participation rate increases for 2010-2020.

China: The population in China in the 18-to-24 age range is expected to fall by 22 percent or some 36 million fewer youth in that age range between 2010 and 2020. Therefore, future enrolment increases will be driven exclusively by increases in participation rates. The ongoing growth in China's economy, combined with the expansion and reform of its higher education system should also promote even higher levels of demand for study abroad experiences. The government plans to increase access to universities for some five million students by 2020.

India: India will grow from 13.6 million students in 2008 to 22.1 million by 2020. Population growth will drive some of the anticipated enrolment growth in student numbers during that period, with the vast majority of the growth arising from expanded access and increased participation rates (ACCU). India estimates that an additional enrolment capacity of 10 million students including 1 million in open and distance learning would be created by the end of the Twelfth Plan (2012-2017). This would enable roughly 3 million more students in each age cohort to enter higher education and raise the country's GER from 17.9 per cent (estimated for 2011–12) to 25.2 per cent by 2017–18 and reach the target of 30 per cent GER by 2020–21 which would be broadly in line with world average.

United States: The National Center for Education Statistics (NCES) projects that between 2007 and 2018, full-time enrolment in four-year U.S. universities and colleges (public and private) will increase by between 10 and 19 per cent. These projections are driven mostly by increases in participation rates in the youth cohorts, and by some limited increases in enrolment driven by population growth, especially between the ages of 25 and 34.

Australia: To meet future labour market demand, university degree completion within the population of youth 25-to-34 years-old would need to grow from 32 percent in 2007 to 40 percent in 2025. To reach this goal, Australia's universities would need to expand capacity by some 40 per cent to accommodate an additional 284,000 students, beyond the 716,000 full-time students who were enrolled in 2006. On the enrolment front, while growth in the Australian youth population is projected to drive a 14 percent increase in enrolment demand, most of the projected growth would need to come from increases in university participation rates. At current participation levels, population growth would generate demand for about 105,000 spaces, meaning that participation growth would need to generate an additional 180,000 students.

European Union: Most of the countries in the EU-27 will see population in the key 18-to-24 age range decline over the coming decade, some by more than 20 percent by 2020. The Europe 2020 Strategy plan calls for 40 percent of 30-to-34 year-olds in the E.U. to have completed a post-secondary degree or diploma (up from 31 percent in 2008) by 2020.

United Kingdom: The UK anticipates a 13 percent decline in the 18-to-21 year-old population between 2010 and 2020. The UK is expecting growth in university participation rates to meet labour market demands. A study by the Higher Education Policy Institute noted that there is unmet enrolment demand in England. The proportion of applicants failing to receive an offer from institutions has grown from six per cent in 2003 to 14 per cent in 2010 and is expected to continue to grow in the foreseeable future. The Institute projects that demand could grow by as much as 10 percent from 2008 to 2020.

(Sources: Government of India Planning Commission. *Twelve Five Year Plan.* Social Sectors (Volume III) 2013, 91. http://planningcommission.gov.in/plans/planrel/12thplan/welcome.html.
Association of Universities and Colleges of Canada. *Trends in Higher Education* Volume 1. Enrolment. 2011, 56, 57, 59-63. http://www.aucc.ca/wp-content/uploads/2011/05/trends-2011-vol1-enrolment-e.pdf.)

BOX 2.7: DEMOGRAPHIC AND ECONOMIC CHANGES WILL RESIZE THE GLOBAL HIGHER EDUCATION LANDSCAPE BY 2020

The largest higher education systems are likely to be China with some 37 million students, India with 28 million, the US with 20 million and Brazil with nine million. Brazil, Indonesia, Turkey and Nigeria will become increasingly important players in the global higher education sector.

While China and India dominated global growth in higher education enrolments between 2002 and 2009, the pace of growth in these two countries could fall in the future. Their predicted additional enrolments between 2012 and 2020 are likely to be around 12 million. Growth in enrolments in China is predicted to fall from a 17 million increase to five million. India's tertiary enrolment growth overall is forecast to outpace China's during the period. Following China and India, other emerging economies with predicted significant enrolment growth over the next decade will include Brazil which could add 2.6 million students, Indonesia projected to increase enrolments by 2.4 million, Nigeria with an increase of 1.4 million and the Philippines, Bangladesh and Turkey with increases of around 700,000.

(Source: Yojana Sharma "Fast pace of higher education enrollment growth predicted to slow." *University World News.* 13 March 2012. n.p. Issue No:213 http://www.universityworldnews.com/article.php?story=2012031308172)

Certificate programmes at the undergraduate and postgraduate level constitute 22 per cent and 12 per cent of fully online programmes respectively (Hanover Research Trends 2011, 5). As online learners become older and use distance learning programmes as a means of advancing within their careers, distance learning programmes must meet these needs. According to Hanover Research, a United States based research institute, nearly three-quarters (74.5 per cent) of all US institutions participating in a survey reported an increase in the demand for online courses and programmes as a result of the economic downturn, compared to just 48.8 per cent reporting an increase in demand for face-to-face courses (Hanover Research Trends 2011, 7-8).

Given the increasing focus on Science, Technology, Engineering and Mathematics (STEM) as the means to drive economic growth and thus, catalysing and supporting innovation, many developed countries are gearing their education systems to be gateways to STEM careers (see Box 2.8). The knowledge economy requires individuals who are competent in mathematics, science and engineering, critical thinking, and the ability to work in teams. This requires the availability of a high-level and diverse pool of individuals with a capacity for basic research, discovery, and innovation. As such, this requires HEIs to produce well-prepared students with baccalaureate degrees some of whom would eventually persist through doctoral education to work within the STEM industry. Focus is shifting to STEAM (Science, Technology, Engineering, Arts, and Mathematics) which adopts a more integrative approach to "understanding the systems and connections that bind together the hard sciences, technology, engineering and mathematics, in order to help solve the problems of a rapidly changing world" (Yakman and Lee 2012, 1073). More specifically, it revolves around the concept that "Science & Technology interpreted through Engineering & the Arts, [are] all based in Mathematical elements" which supports the "ability to transfer knowledge with higher order thinking between disciplines so that students may obtain a functional literacy" (Yakman and Lee 2012, 1074, 1075).

BOX 2.8: THE RACE FOR STEM SKILLS

The number of STEM graduates will have to increase by 20-30% by 2016 to meet the projected growth of the US economy.
An indication of stagnant demand might be the fact that for every STEM graduate who works in a STEM field there are another three who work in non-STEM fields, an indication, perhaps, of how important STEM skills are across all sectors.
By 2015 there will be a shortage of between 380,000-700,000 ICT workers in Europe.
STEM supply has remained relatively stagnant over the last decade. Interest in undertaking STEM studies is dropping in many EU countries, and the share of STEM graduates fell in relation to the total number of graduates from 24.8% in 1999 to 22.7% in 2005.
41% of all degrees awarded by Chinese institutions in 2011 were in a STEM subject, almost twice the proportion of STEM degrees awarded in the UK and three times the rate in the US.
India and Brazil are rapidly increasing their STEM enrolments, as local companies operating in capital-intensive sectors become world leaders and need skilled workers. It is predicted that Brazil will increase its engineering graduates by 68% by 2015 and will produce more PhD engineers than the US by 2016.

(Source: Alex Katsomitros. "The global race for STEM skills." *The Observatory on Borderless Higher Education*. 2013. n.p. http://www.obhe.ac.uk/newsletters/borderless_report_january_2013/global_race_for_stem_skills)

Generally, personal interest, parents, earning potential, and teachers influence students' choice of university programmes. Hall et al (2011, n.p.) noted that "secondary school setting represents a critical point in helping adolescents become aware of potential STEM careers and connecting these career decisions to educational decisions" and as such, "parents and teachers (and counsellors) represent strong influences on consideration of potential careers" (Hall et all 2011, n.p.). However, the limited knowledge/expertise of STEM occupations is a constraining factor for STEM/STEAM career opportunities.

In a 2014 study conducted by University of California, Los Angeles (UCLA) based on the annual results of a "freshman survey" on a national pool of new undergraduates at four-year institutions, researchers, Jerry A. Jacobs and Linda Sax, stated "from 1997 to 2005, the proportion of first years planning to enrol in STEM fields declined, hitting a low in 2005 of 20.7 per cent" (cited by Jaschik 2014, n.p.). However, the "percentage of first years planning to major in STEM increased from 21.1 per cent in 2007 to 28.2 per cent in 2011" (Jaschik 2014, n.p.). Growth, however, was not consistent across the fields - Engineering saw a 57.1 per cent increase, biology had gains of 28.2 per cent, physical sciences saw gains of 11.1 per cent and mathematics was up by 12.6 per cent (Jaschik 2014, n.p.). Hall et al (2011, n.p.) noted that while college enrolment increased over the past ten years the proportion of students receiving undergraduate degrees in STEM declined from 32 per cent in 1994/1995 to 27 per cent in 2003/2004. In the United States, "fewer than 40% of the students who enter college with the intention of majoring in a STEM field complete a STEM degree" (PCAST 2012, 5).

The United States graduates about 300,000 bachelor and associate degrees in STEM fields annually (PCAST 2012, 2). An estimated 74 per cent of those having a baccalaureate degree in STEM are not employed in STEM occupations (US Census Bureau July 2014, n.p.). While "engineering and computer, math and statistics majors had the largest share of graduates going into

a STEM field with about half employed in a STEM occupation", "science majors had fewer of their graduates employed in STEM" (US Census Bureau July 2014, n.p.).

Within the United Kingdom, the overall number of "qualifiers" (that is, students who have qualified for their award - graduates) in STEM subjects at undergraduate level increased from approximately 118,000 in 2002–2003 to over 140,000 in 2009–2010 (United Kingdom House of Lords Report 2012, 27). The same Report (2012, 29) noted that number of United Kingdom domiciled STEM Master's degree qualifiers rose by 30 per cent over the same eight-year period in contrast to a 34 per cent increase in the number for non-STEM subjects. There were also increases in the number of UK domiciled PhD qualifiers across the board, with a 15 per cent increase in STEM subjects and 15 per cent increase in non-STEM subjects for the eight-year period (United Kingdom House of Lords Report 2012, 29). According to the Report (2012, 32), 41 per cent of recruiters prefer to hire STEM graduates and were willing to pay a premium for persons with qualifications they value. It is estimated that 80 per cent of new jobs are in high skill areas and require high tech graduates, and that over half of the jobs to be filled in the UK to 2017 will require people to hold graduate level qualifications (United Kingdom House of Lords Report 2012, 33). Further, industries in science, technology and engineering alone show a demand for 600,000 professionally trained skilled staff by 2017 and thus, there must be an increase by over 40 per cent on current levels of persons studying degrees in these areas if this demand is to be met (United Kingdom House of Lords Report 2012, 33).

2.2.5. Graduation outputs

Over the last three decades, tertiary attainment levels have increased considerably and "nearly 210 million people in OECD countries having completed tertiary education" (OECD 2012, 12). As such, it is useful to know that level of tertiary attainment among the adult population to determine effective participation in the development of the economy and society. While there are strong incentives to obtain a tertiary qualification (namely, higher salaries and better employment prospects), graduation rates (that is the number of persons obtaining tertiary education) are often influenced by university-readiness of the student population, type of degree and institutional type, degree of access to these programmes and the demand for higher skills in the labour market.

For the period, 1985-2012, "university-level graduation rates have risen by 22 percentage points on average across OECD countries with available data" (OECD 2014, 30). The Report (2014, 30) also noted that an estimated "39 per cent of young people, on average across OECD countries with comparable data, will graduate from university level programmes during their lifetimes, based on current patterns of graduation." In 2009/2010, graduation rates ranged from 25 per cent and below for Mexico, Saudi Arabia and Turkey, to 50 per cent and above in Australia, Denmark, Iceland, Poland and the United Kingdom (OECD 2012, 20). However, the graduation rates ranged from less than 25 per cent in Chile, Hungary, Luxembourg and Mexico, to 50 per cent or more in Australia, Iceland, New Zealand and Poland (OECD 2014, 30).

In the United States, the "2012 graduation rate for first-time, full-time undergraduate students who began their pursuit of a bachelor's degree at a 4-year degree-granting institution in fall

2006 was 59 percent" (NCES 2014, n.p.) Further, students in OECD countries obtain their first university level degree at the age of 27 on average (OECD 2014, 30). The United States 2010 Census revealed that more than 30 per cent of the cohort 25 years and over have attained at least a bachelor's degree compared to less than 25 per cent who earned a bachelor's degree in 1998 (Groves 2012, n.p.). Additionally, "among the employed population 25 and older, 37 percent of women had attained a bachelor's degree or more as of 2010, compared with 35 per cent of men" but "among all adults 25 and older, 29.6 per cent of women and 30.3 per cent of men had at least a bachelor's degree" (Embassy of the US 2011, 9).

There are clear disparities in graduation rates between men and women that reflect the outcomes of a variety of behaviours, such as the higher rate of high school graduation among females, higher university enrolment, better academic preparation and university performance, and higher rate of persistence in university through the first year. On average in OECD countries, more women than men will complete university-level education. In 2009/2010, 47 per cent of women and 32 per cent of men we expected to obtain university level qualifications (OECD 2012, 29) while in 2011/2012 there was little change - "an estimated 47 per cent of women and 31 per cent will complete university-level education over their lifetimes, based on current patterns of graduation" (OECD 2014, 30).

The "completion of higher education remains fundamental to economic redistribution as it considerably increases the probability of being employed" (World Bank 2009, 6). Within the United States the average time to completion of the baccalaureate degree and the time to degree have increased associated with slower accumulation of degree credit. Bound et al (2007, Abstract) noted that between 1972 and 1992 the average time to complete the baccalaureate degree (i.e. eight years) increased by more than one-quarter of a year. They also noted that:

> *… between the cohorts graduating from high school in 1972 and 1992, average time to degree increased by more than one-quarter of a year, the completion rate among college attendees dropped from 51.1% to 45.3% and, among those receiving degrees, the percent receiving a degree within 4 years dropped from 56.8% to 43.6% (Bound 2007, Abstract).*

The rise in the fraction of high school graduates attending college has not been met by a proportional increase in the fraction who finish and further, this decline is most pronounced amongst men and at lower ranked public four-year schools and community colleges (Bound et al 2009, 2). Conversely, "completion rates increased at public universities ranked in the top 50, as well as at private colleges and universities" (Bound et al 2009, 2). This change, Bound et al (2009, 2-3), argued was indirectly related to changes in the preparedness of entering students and directly related to the increased stratification in US higher education and reductions in collegiate resources outside the top-tier of institutions. Retention and completion are thus becoming more and more of a concern for universities. This trend is also affirmed in SCUP's 2011 *Trends in Higher Education* which noted that about half of US college students who start a four-year degree finish in six years and fewer than 30 per cent of students pursuing a two-year degree full-time earn it within three years (SCUP 2011, 2).

The United States hoping to regain the world's top ranking in college degree attainment, has set a goal of having 51 per cent of Americans hold a college degree by 2020 (Henrich 2012, n.p.), while the Europe 2020 Strategy set the headline target that at least 40 per cent of 30-34 year olds should have a tertiary degree or an equivalent qualification by 2020 (European Commission n.d., 1). The Indian government plans to increase the higher education participation rate from 18 per cent to around 30 per cent by 2020, a target that would require an increase of 14 million spaces over six years and 50 per cent by 2030 (Kumar and Bagaria 2014, 5 and ICEF Monitor 2015, n.p.).

2.2.6. Increasing the diversity and heterogeneity in student body

Demographic changes and in particular, the composition of the population may influence the character and policies of TEIs. Demographic trends suggest changes in the future growth of college-bound population. For the United States, there is likely to be an increase in minority students, adult students, and other previously underserved groups, whereas in the United Kingdom, there is likely to be an increase in older part-time students and larger numbers from non-traditional backgrounds and fewer full-time students at the age of 18. These trends require a rethink of student needs and services to meet the changing demographics and diversity of students. It will impact not only on pedagogy, curriculum and resources (faculty, classroom, technology) but also have implications for operations of plant and services provision.

Within the last two or so decades (circa 1990-2012) the participation of differently-abled students in higher education was facilitated by the introduction of national public policy and the international bill of rights for the disabled (Convention on the Rights of Persons with Disabilities). Nevertheless, the sub-population of differently-abled students generally remains underrepresented in higher education often well below the proportion of disabled people in the population (Riddell et al n.d., 9). Further, their participation in higher education tends to be lower in disciplines with fieldwork.

Based upon the receipt of Disabled Student Allowance (DSA), the United Kingdom Higher Education Statistical Agency (HESA) calculated that students with disabilities (SWDs) represented about 6.5 per cent of all full-time first degree students in 2012/2013 up two percentage points from 2007/2008 for all United Kingdom (HESA 2009, 2014). Among all part-time undergraduates, SWDs comprised 2.4 per cent in 2007/2008 and 3.5 per cent in 2012/2013 (HESA 2009, 2014). The breadth of disabilities, as listed in Box 2.9, also poses a particular challenge to HEIs in terms of providing access, resources including human and infrastructure and services. Further, special provisions related to the pedagogy and assessment may be required for SWDs.

Colleges in the United States are likely to witness increased enrolment of many older, non-traditional students who are raising families and already participating in the labour market. Recent secondary school leavers and not-so-recent (aged 24 and above) will also continue to grow. Further, there is likely to be an increase enrolment of females.

BOX 2.9: LIST OF DISABILITIES AS IDENTIFIED BY HESA

(categorised "**Known to have a disability")**

- A specific learning disability
- Deaf or a serious visual impairment
- Personal care support
- Social communication/Autistic spectrum disorder
- Two or more conditions
- Blind or a serious visual impairment
- A physical impairment or mobility issue
- Mental health condition
- A long standing illness or health condition
- Another disability, impairment of medical condition

Source: HESA 2013. https://www.hesa.ac.uk/intros/studefs1213.

Data for the United Kingdom indicate that the number of applicants dropped by 8.7 per cent in 2012 compared with 2011 (Vasagar 2012, n.p.). Further, the number of 18- year old UK applicants -the largest single group of applicants – decreased by 3.6 per cent compared to 2011 as did the percentage of mature candidates (Vasagar, 2012, n.p.). The fall of 18-year olds applicants may be related to demographic changes as 18-year-olds declined by 1.4 per cent suggesting fewer 18-year olds in 2012 compared to 2011 (Vasagar 2012, n.p.). There was a sharper drop among male applicants down 8.5 per cent from 2011, and similarly, female applicants were down 6.7 per cent (Vasagar 2012, n.p.).

Since the mid-1990s, participation in higher education has been mainly in favour of women which initially led to a reduction in gender inequalities (see Box 2.10). The reversal of gender inequalities in the OECD countries has led to equality of education levels between the two sexes for the entire population aged 25 to 64 years. On average, there are more women than men irrespective of age in higher education. In 1985, there were 1.2 males for every female and by 2005 there were 1.2 females to every male (OECD 2008a, 266). Despite that, some clear challenges remain with regard to female participation particularly at the doctoral level where men remain, on average, in the majority, although women are visibly catching up and parity has almost been achieved at least within OECD countries. Although the humanities, education and social science fields remain female-dominated, science and technology and in particular, engineering, mathematics and information technology are characterised by gender imbalance generally in favour of males. OECD countries "awarded 57 per cent of their degrees on average to women (1.3 female graduates for each male graduate)" in 2005 and it is predicted that "if recent trends were to be maintained, the percentage could reach 63% by 2025 (1.8 female graduates for each male graduate)" (OECD 2008a, 270, 272). It is noteworthy that the widening of the gap between men and women does not reflect a decline in the number of degrees awarded to men so much as the higher rate of growth in the percentage of women graduates. Educational inequalities disadvantaging men are very likely to persist and increase. While educational inequalities in higher education stem from demographic, economic, sociological and educational factors, the OECD (2008a, 293) noted that "'generation replacement means that the female population will in any case continue to be better educated than the male population."

BOX 2.10: GENDER PARITY IN TERTIARY ENROLMENTS

Globally, the gender parity index (GPI) for tertiary enrolments has been increasing from 0.98 in 1999 to 1.08 in 2009. The global female GER is now higher than the global male GER. MENA (Middle East and North Africa) is the only region within +/-0.05 of gender parity in 2009. LAC and Europe and Central Asia have consistently had higher female GERs and East Africa and the Pacific has reversed from a male bias to a female bias. South Asia and Sub-Saharan Africa have remained stagnant over time with a male bias in tertiary enrolments (Chad [0.17]; Congo Republic [0.21]; Afghanistan [0.24]; Ethiopia [0.31]; Eritrea [0.33]; Guinea [0.34]; Congo Dem ep [0.35]; Niger [0.36]; Mali [0.41]; Tajikistan [0.41]).
Only 11 countries globally are within +/-0.05 of gender parity in tertiary enrolments. Sixty-four (64) per cent of countries have a female bias in tertiary enrolments. Many of these countries are in LAC or are high income countries. In eight (8) countries, the female GER more than doubles the male GER. These counties are island nations in LAC (Dominica [3.22]; St. Lucia [2.58]; Bermuda [2.56]; Jamaica [2.22]; Antigua and Barbuda [2.21]; Cayman Islands [2.16]; and St. Kitts and Nevis [2.10]) and Qatar [6.31].

(Source: World Bank edstats. *The State of Education Series Tertiary Education A Global Report.* Author: Jennifer Klein and Emilio Porta September 2011, Slides 10-12. http://www.slideshare.net/Kolds/tertiary-ed)

2.2.7. Postgraduate participation in higher education

With the expansion of the knowledge society, many nations are reassessing their public policies related to higher education, science, technology and innovation to drive major social and economic transformations. To improve a university's positioning in the global knowledge economy and to stimulate economic growth and competitiveness by way of innovation through cutting-edge research, there is growing focus on the organisation, structure, and form of postgraduate education by the advanced economies. Essentially, the talent and skills developed in the postgraduate education system are seen as critical to maintaining and building on the success of research outputs and in particular, the commercialisation of same. Further, as a result of the progressively challenging business environment, rising employer expectations and the volatile nature of the economy, more people are turning to postgraduate studies to enhance their employment prospects, upgrade themselves or simply to ride out the global recession. In other words, further education has proven to be highly important in both industry and academia regardless of shifts in the global economic climate. Around "70 per cent of employers sought out Masters graduates because they valued the analytical thinking and problem-solving skills that a Masters degree provides" (United Kingdom House of Lords Report 2012, 39). Of those that recruited PhD students, "they valued the "subject-specific skills and research and technical skills" as well as the new ideas and innovation that they brought to their business" (United Kingdom House of Lords Report 2012, 39).

With the expectation that more university graduates will seek entry into postgraduate education, there is a need to rethink the relative distribution of resources to research and non-research programmes in the context of labour market opportunities both within and outside of the academy. During the last few years in the United Kingdom the total number of postgraduates has grown faster – 36 per cent between 1997/1998 and 2009/2010 - than the number of undergraduates, "so that now around one quarter of all students studying in UK HEIs are doing so at postgraduate level" (United Kingdom Department of Business Report 2012, 11,34). Post-

graduate degrees in high demand often focus on specific work-related fields as they can lead to professional advancement (see Box 2.11). In OECD countries some "1.6% of young people today are expected to complete advanced research programmes on average among OECD countries, up from 1.0% in 2000" (OECD 2014, 30).

BOX 2.11: PROFILE OF THE POSTGRADUATE STUDENT IN THE UNITED KINGDOM

- The most significant growth has been in the number of people registering for taught masters – up by over 50,000 between 2002-03 and 2007-08.
- Entrants to research based qualifications rose 14%; most popular subject areas are: Business and Administrative Studies; Social Sciences; and Engineering.
- PhD qualifiers are more likely to be registered for science, technology and engineering subjects.
- Among UK domiciled postgraduates, women make up 60% of the cohort and outnumber men in all but doctoral and research masters degrees.
- An estimated 20% of postgraduates enter directly from undergraduate study.
- Full-time postgraduates are much more likely to be in their early twenties, whereas a far greater proportion of part-time participants are aged over 30.
- Those studying for postgraduate diplomas and certificates, professional qualifications and 'other postgraduate qualifications', are much more likely to be doing so on a part-time basis – suggesting that these qualifications are often combined with employment.
- Just over half of all taught masters courses are now taken on a part-time basis. Research degrees remain a predominantly full-time undertaking and growth in this area has been almost exclusively in full-time students.

(Source: UK Dept for Business, Innovation and Skills. *One Step Beyond: Making the most of postgraduate education*. March 2010, 23-26. http://www.bis.gov.uk/assets/BISCore/corporate/docs/P/10-704-one-step-beyond-postgraduate-education.pdf.)

2.2.8. The changing nature of the academic profession

Internationally, some universities are facing ageing staff population across its different employee categories which have implications for an increasing retirement surge.[2] Within the most OECD countries the average age of teaching staff is 45 for the 23 countries for which data is available (OECD 2008a, 62). Further, it may be that within individual academic areas, the ageing population may be more marked than others which may be related to the nature of the subject area – practical experience versus primarily research-oriented disciplines. This was illustrated by a study on the demography of the social sciences in the United Kingdom which revealed that social sciences academics were generally older than their colleagues in the natural sciences (quoted in OECD 2008a, 63). Between 2000 and 2011 in the United States the number of professors age 65 and up had more than doubled. Weinberg and Scott (2013, 346) noted that:

> *… at some institutions, including Cornell, more than one in three tenured or tenure-track professors are now 60 or older. At many others— including Duke and George Mason Universities and the Universities of North Carolina at Chapel Hill, Texas at Austin, and Virginia—at least one in four are 60 or older.*

Generally, universities also have low staff turnover. Despite that, the recruitment and retention of staff in particular disciplines or areas of expertise are related more often to the competitiveness of the labour market and somewhat less to the demography in higher education. The OECD Report also noted that in the United Kingdom that "many teacher-researchers in the so-

cial sciences are recruited from graduates who though they do not have British nationality obtained their doctorate in the United Kingdom or the United States" (OECD 2008a, 64).

Female representation in the academia has been increasing since the 1970s in developed and developing countries. Women now comprise nearly half of new full-time academic appointments and about 20 per cent of senior appointments (Baker 2012, 6). Despite that, notable differences continue to exist in disciplinary specialisation and career development of male and female academics in Australia, New Zeeland, Canada, United States and the United Kingdom (Baker 2012, 68, 71). Generally, men occupy between 76 and 82 per cent of the senior positions and are more likely to work full-time with few career interruptions; experience more satisfaction with early career mentoring, job-security, teaching loads and advancement opportunities; and publish more peer reviewed articles (Baker 2012, 8, 41). The author (2012, 40, 41) also noted that female academics were more likely than their male counterparts to work part-time and have higher attrition rates and struggle for workplace recognition and collegial acceptance.

Universities normally hire both temporary and permanent employees. The tenure-track stream continues to remain a prized commodity for university staff (see Box 2.12). However, there will be the erosion of tenure as the academic profession falls victim to the diminishing fiscal resources and the need for more institutional flexibility to meet needs as student enrolment fluctuates or as demand for particular specialties changes, or as grant support is acquired. The profession will thus become more diversified and specialised, and subject to varied employment contracts that is either fixed or serial. Simultaneously, there will be increasing alignment of the academics' activities with the interests and needs of their institution; therefore an academic's career becomes more bound to or intertwined with an institution (Enders and Kaulisch 2006, 90).

BOX 2.12: TENURE STATUS AT US COLLEGES AND UNIVERSITIES

The 2007 NCES National Study of Postsecondary Faculty institutional survey found that 71.5 per cent of all institutions awarded tenure. Moreover, although only 64 per cent of public community colleges awarded tenure, 100 per cent of public doctoral, 98 per cent of public master's-level institutions, 93 per cent of non-profit master's, 92 per cent of non-profit doctoral, and 84 per cent of non-profit baccalaureate institutions offered tenure.

The continued prevalence of the tenure system is also reflected in the most recent (fall 2007) report of tenure status by type of institution. The 50 per cent of all full-time faculty who teach at public four-year institutions, two-thirds are either tenured (46 per cent) or probationary tenure-track (20.8 per cent). Full-time non-tenure-track positions are now one-third of all full-time faculty positions at four-year public institutions and more than two-fifths at private non-profit four-year institutions.

(Source: Ernst Benjamin. *The Eroding Foundations of Academic Freedom and Professional Integrity: Implications of the Diminishing Proportion of Tenured Faculty for Organizational Effectiveness in Higher Education* AAUP Journal of Academic Freedom Vol One 2010, 5. http://www.academicfreedomjournal.org/VolumeOne/Benjamin.pdf.)

As universities adopt more corporate practices, more stringent accountability measures, diversification of funding streams and profit-making opportunities, cost-cutting practices are likely to impact on staff. This is becoming more apparent with the continuing global economic crisis. As such, there will be a substitution of lower cost part-time faculty for higher cost full-time academic staff. In the United States, for instance, lean budgets led administrators to close or consolidate academic programmes and to rely increasingly on adjunct instructors, who now make up 70 per cent of the professoriate (Chronicle of Higher Education 2012, n.p.). It will be a strategy applied to address increasing participation in higher education (massification). In light of continued competition for academic jobs as well as resource constraints of institutions the trend towards the hiring of adjunct professors is likely to continue.

Many adjunct faculty teach courses at several HEIs however, some institutions impose workload caps to restrict contact hours and course assignments. Universities are also hiring temporary part-time faculty to teach large undergraduate classes thus freeing senior academics to engage in research and graduate supervision. Further, the rise of online education has also fostered a reliance on adjunct faculty to teach and maintain the online classes. This has led some universities like University of Pennsylvanian to draft revised guidelines to limit their faculty's freelance work for online educational companies (Rivard 2013, n.p.). The need to respond to the demands of higher education may cause the average qualification for academics in many countries to decline particularly among the adjunct faculty.

With the growing internationalisation of the labour market, more academics and university administrators are seeking promotional jobs and productive research opportunities outside their country of origin especially as the academic market may be seen as 'boundaryless'.

Another aspect of this demographic trend that requires consideration is the replacement stock for the academic and administrative staff that is on the verge of retiring. The replacement faculty stock will see the influx of Generation X (born between 1965 and 1980) faculty who are technically proficient and open to innovation, and who "seek quality over quantity in research, are less formal with students and interact significantly with them in and out of class and are interested in interdisciplinary work" (Morris 2011, 288).

2.2.9. The cost of financing higher education

The persistent global economic instability continues to directly impact on the functioning of universities. The view of the tertiary education as a quasi-public good requires a greater response capacity to support increases in student enrolment at universities, improvement in retention and greater relevance and quality of programme offerings. These factors in turn require improved institutional strategic and change management projects, academic management, and financial administration for institutional effectiveness.

In spite of expanding access as part of the political commitment that education is a public good, an alternative view is emerging that tertiary education is a private good. That (re) emerging public discourse combined with the contracting of government revenue fuelled by the protracted economic crisis has resulted in a cut in public expenditure for higher education thus, leading

to the introduction of cost-sharing measures between the government and student. Simultaneously, the high politics of developing states remain focussed on access. Nevertheless, the debate on new financing policies for tertiary education has led to the introduction of price hikes in tuition fees in some countries. In the United Kingdom, "tuition fees doubled in 2012, as part of a government plan to stabilise university finances", while South Korea "increased the level of public support available to students for higher education, to expand access to and improve equity in university-level education" in 2011 (OECD 2014, 56).

Tuition fees for first-degree national students at public universities vary widely across OECD countries. For instance, in Denmark, Finland, Iceland, Mexico, Norway, Poland, Slovenia and Sweden students are not charged tuition fees while tuition fees are under US$1,500 in Turkey, France, Belgium, Austria, Switzerland, Spain and Italy (OECD 2014, 56). In New Zealand, Australia, Canada and the United Kingdom tuition fees range between US$3,000 and US$5,000 but over US$5,000 in Chile, Japan, South Korea and the United States (OECD 2014, 57).

In the United States, "the cost of university per student has risen almost five times the rate of inflation since 1963 making it less affordable and increasing the amount of debt a student must take on" (Economist 2012, n.p.). The article continued that "between 2001 and 2010 the cost of university education soared 23 per cent of median annual earnings to 38 per cent", and thus a student who earned a baccalaureate degree in 2011 graduated with an average of US$26,000 in debt (Economist 2012, n.p.). More than four out of five freshman students in college for the first time in 2009/2010 in the United States had grants or loans (Lipka 2012, n.p.).

The OECD Report on education highlights (2014, 56) also noted that for second and further degree programmes tuition fees are generally not much higher than those for first-degree programmes for public institutions and government-dependent private institutions, across OECD countries however, exceptions to this pattern are found in Australia, Chile and the United Kingdom. On average, OECD countries spend 21 per cent of their public budgets for tertiary education on subsidies to households and other private entities (OECD 2012, 52). Identifying viable solutions for cost-sharing mechanisms and financial support remain critical as without such there will be a further increase in the inequalities in access to tertiary education which may lead to a decrease in the size of the tertiary education system (see Box 2.13).

BOX 2.13: TYPOLOGY OF COST SHARING IN OECD COUNTRIES

- No or low tuition fees, and generous student support systems; this includes the Nordics.
- High tuition fees and well-developed student support systems; this includes Australia, Canada, the Netherlands, New Zealand, the United Kingdom and the United States.
- High tuition fees but less developed student support systems; Japan and South Korea.
- Low tuition fees and less developed student support systems; this includes Austria, Belgium, the Czech Republic, France, Ireland, Italy, Poland, Portugal, Switzerland, Spain and Mexico

(Source: OECD. Education at a Glance 2012: Highlights, OECD Publishing 2012, 52. http://dx.doi.org/10.1787/eag_highlights-2012-en)

TEIs are also expected to deliver on the mission – teaching, research and public service - in an environment in which there are contracting public resources and generally low private sector participation in the financing of tertiary education. Further, universities are facing a dilemma in that they are becoming more international in focus, but are expected to deliver solutions to national and regional issues. This predicament may impact on universities being able to quickly respond to changing socioeconomic conditions.

The subject of cost per student in an educational institution is particularly important at a time of economic crisis and tight public spending. For the financial year 2009, the OECD countries spent on average US$9,252 per student each year across primary, secondary and tertiary education, although spending levels vary widely among countries. OECD countries on average spend US$7,719 per student at primary level, US$9,312 at secondary level and US$13,728 at tertiary level (OECD 2012). For 2011, the cost increased slightly - the OECD countries spent "on average US$9,487 per student each year from primary through tertiary education" and when disaggregated by level of schooling the OECD countries on average spent US$8,296 per primary student, US$9,280 per secondary student and US$13,958 per tertiary student (OECD 2014, 48). In other words, OECD countries spent on average nearly two-thirds more per student at the tertiary level than at the primary level.

In addition to core educational services (i.e. teachers' salaries, construction and maintenance of school buildings, teaching materials, books, and administration of schools), tertiary education cost also includes research and development activities. Spending on research and development represents an average of 32 cent of total spending per student according to the OECD 2014 Report (48).

Generally, the higher education sector is labour intensive and over 80 per cent of current expenditure is devoted to staff costs in Brazil, Columbia and Iceland (OECD 2014, 58). On average, OECD countries spent 90 per cent of total expenditure was on recurrent costs (OECD 2014, 59). Other recurrent costs included campus buildings, teaching materials, books and administration, and research and development which affects the quality of service delivered. Current expenditure other than staff costs is largest at the tertiary level, where it reached 33 per cent of all current expenditure, on average for OECD countries. This is partly due to the higher costs of facilities and equipment in tertiary education in 2011 (OECD 2014, 58). Capital expenditure in tertiary education is higher than that for primary, secondary and post-secondary non-tertiary levels of schooling.

While "spending per student at the primary, secondary and post-secondary non-tertiary level in OECD countries increased by an average of 56 per cent between 1995 and 2009", at the tertiary level as expenditure did not always keep up with expanding enrolments and spending per student fell between 1995 and 2009 (OECD 2012, 44). The "average spending on tertiary education in OECD countries remained stable between 1995 and 2000 but then increased in 2000-2005 and 2005-2009, as governments invested massively in response to the demand for tertiary education" (OECD 2012, 44). At the tertiary level, spending per student rose by 15 per cent on average in OECD countries between 2000 and 2009. The 2014 OECD Report (48) noted that while

spending per primary, secondary and post-secondary non-tertiary student increased on average more than 60 per cent between 1995 and 2011 in OECD countries except Italy, spending per tertiary student has decreased in more than a third of countries, mainly because enrolment increased faster than spending (OECD 2014, 48).

Universities as a corporate organisation are increasingly partnering with businesses and commercial enterprises to attract funding from private sources. Maringe and Foskett (2010, 23) noted that:

> *Universities are no longer just places that generate knowledge for its own sake or for society; they are increasingly partnered with commercial and business corporations to create knowledge that has economic value. They have also become corporate organisations in their own right, maintaining a watchful eye on the bottom line and, in some cases, seeking to generate profit using minimum resources.*

The financing of TEIs is shared between public and private entities. Given the continuing economic constraints, governments are finding it difficult to provide the level of resources to support the increased demand for tertiary education through public funds alone (OECD 2014, 52). As such, there is a call for more private investment in tertiary from individuals who benefit (tuition fees) and from the private sector. In 2009, private funding at the tertiary level represented on average 30 per cent of total expenditure on educational institutions (OECD 2012, 50). The proportion of expenditure on tertiary institutions covered by private sources ranged from less than 5 per cent in Denmark, Finland and Norway, to more than 40 per cent in Australia, Israel, Japan and the United States, and to over 70 per cent in Chile, [South] Korea and the United Kingdom" (OECD 2012, 50). On average in OECD countries in 2011, 84 per cent of all funds for tertiary institutions come directly from public sources and 16 per cent come from private sources including subsidies for payments to educational institutions from public sources (OECD 2014, 52). While the share of private funds exceeds 35 per cent in Chile and South Korea, it is less than 3 per cent in Finland and Sweden. In 2011, private spending on educational institutions as a percentage of GDP, on average among OECD countries, was highest in tertiary education; it represented between 1.7 per cent and 1.9 per cent of GDP in Chile, South Korea and the United States (OECD 2014, 50). Although the "average share of public funding for tertiary institutions decreased from 73.7% in 2000 to 69.1% in 2005, and then slightly to 68.3% in 2011" (among 20 OECD countries), there was a commensurate increase in private funding by six percentage points between 2000 and 2011 (OECD 2014, 52).

In the United States, return on investments for college endowments rose by an average of 19.2 per cent in 2011, up from 11.9 per cent the previous year, and private donations to colleges and universities rose by 8.2 per cent in 2011. Donations were up by 4.8 per cent in 2011, adjusted for inflation, marking the first time that the rate had increased since the recession (Chronicle of Higher Education 2012, n.p.).

The Higher Education Price Index (HEPI), an inflation index designed specifically for use by institutions of higher education, calculates eight cost factors - faculty salaries, administrative sala-

ries, clerical salaries, service employee salaries, fringe benefits, miscellaneous services, supplies and materials, and utilities (see Box 2.14).

BOX 2.14: WHAT IS HIGHER EDUCATION PRICE INDEX?

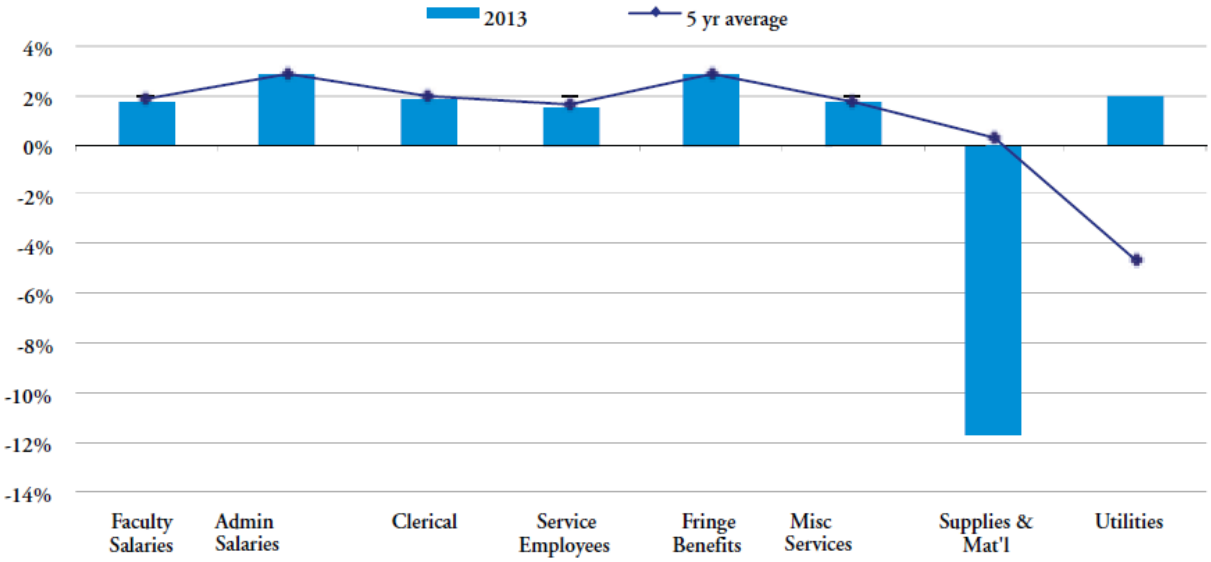
The HEPI is produced annually by Commonfund Institute, a US headquartered institutional investment firm that delivers solutions for strategic investors within both the non-profit and pension investment communities. This Index is compiled from data reported by government agencies and industry sources. It measures the average relative level in the price of a fixed market basket of goods and services purchased by colleges and universities each year through current fund educational and general expenditures, excluding research. A more accurate indicator of cost changes for colleges and universities than the Consumer Price Index (CPI), HEPI is used primarily to project future budget increases required to preserve purchasing power. It is an essential tool enabling schools to determine increases in funding necessary to maintain both real purchasing power and investment.

The eight cost factors (faculty salaries, administrative salaries, clerical salaries, service employee salaries, fringe benefits, miscellaneous services, supplies and materials, and utilities) contribute to the HEPI regression calculation. The regression equation assigns a different weighting to each cost factor, and therefore a change in one component may influence the final HEPI calculation more than another. The components that are most heavily weighted are faculty and clerical salaries and fringe benefits.

(Source: Commonfund Institute. HEPI, 2011, 1, 5)

University spending is driven by the need to be competitive on the international rankings. They are spending more on administration and support services (Economist 2012, n.p.). The Commonfund Institute (2013, 5) HEPI calculation revealed that inflation for colleges and universities was 2.8 per cent in 2007, 2.3 per cent in 2009 and 1.6 per cent in 2013 (fiscal year ending June 30). The Annual Percentage Change in Eight HEPI Cost Factors (see Figure 2.2) shows a five-year analysis (2009-2013) of HEPI's components in the United States. The greatest deviation from the preceding five-year period average was in the category of supplies and materials, which saw a deflation rate of -11.7 percent for FY2013, 1,200 basis points lower than the five-year average of 0.3 percent (Commonfund Institute, 2013, 7). The Report (2012, 7) also noted that "for the FY2012, the change in fringe benefit costs was 150 basis points lower than the five-year average for this factor, at 1.8 per cent versus 3.3 per cent." Utility costs was 670 basis points higher than the five-year average for this factor, at 2.0 per cent versus -4.7 per cent (Commonfund Institute 2013, 7). The Report (2013, 7) noted that other factors (faculty salaries, administrative salaries, clerical, service employees and miscellaneous services) had 2013 readings that ranged from 0 to 20 basis points below their five-year averages. The sole exception was fringe benefits, where the 2013 inflation rate of 2.9 per cent was 10 basis points above the five-year average of 2.8 per cent (Commonfund Institute 2013, 7).

Figure 2.2: Annual Percentage Changes in the Eight HEPI Cost Factors (2012) vs. 5-year average



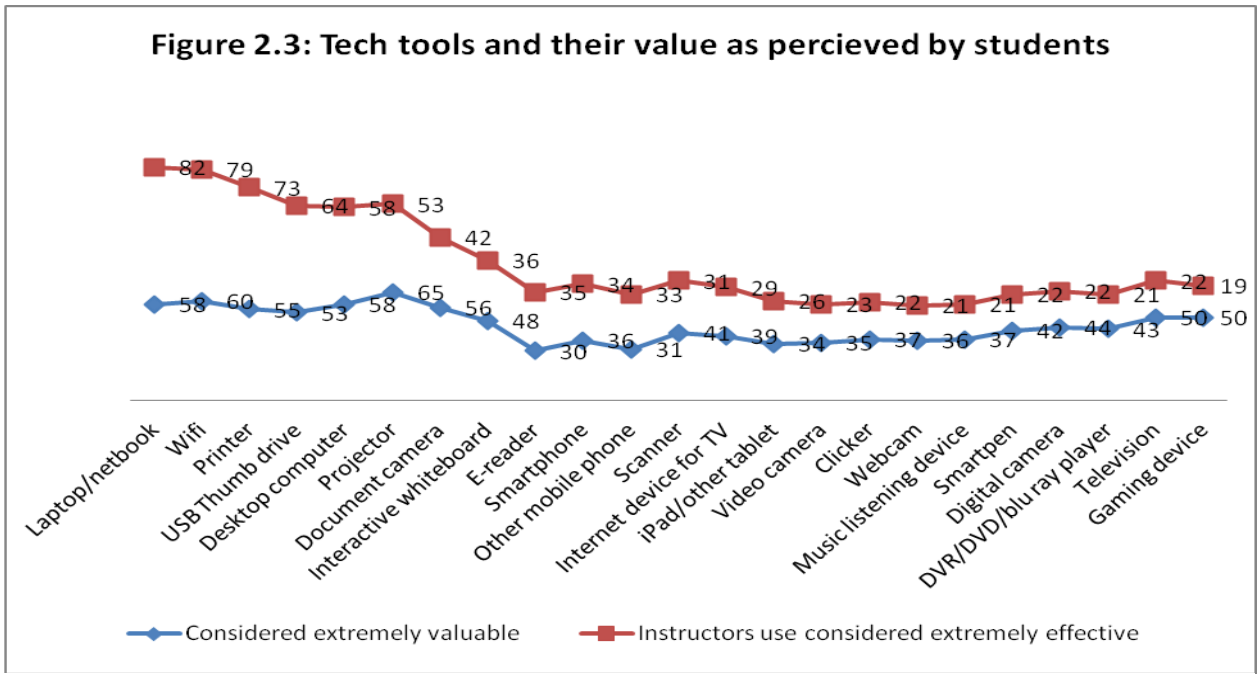
Source: Commonfund Institute. *Higher Education Price Index*. Washington D.C. 2013, 7. https://www.commonfund.org/CommonfundInstitute/HEPI/HEPI%20Documents/2013/2013%20HEPI%20Report.pdf.

2.2.10. The increasing use of technology – revolutionising the University's mission and processes

From tablets and e-books to mobile devices and learning apps, new technologies are transforming pedagogy, learning and marketing on campuses. The explosion of tablet computing has enabled the growth of e-books while augmenting interactive experiences, supporting classroom note-taking and research activities, and allowing readers to interact socially. Further, M-learning or mobile-learning is emerging to build on the advances of e-learning, or the use of Internet and learning management systems (LMS) that allows for increased access and participation within the learning environment.

Universities are utilising the Internet and social networking tools to enhance and facilitate collaborative learning. Social collaboration systems on Facebook, Flickr, Twitter, Instagram, LinkedIn, iTunes U and YouTube are just some of the applications being reconfigured to support more content and student collaboration. Many US students say they would like more technology in the classroom giving support to the idea of a smart classroom. Yet, many students admitted to lacking some basic technology skills. In 2011, 87 per cent owned laptops and 55 per cent had smartphones that provided access to the Internet as well as took calls (Chronicle of Higher Education 2012, n.p.). Fifty-seven per cent of US college graduates in 2011 reported using a laptop, Smartphone or tablet device in class at least sometime (SCUP 2012, 9). Figure 2.3 shows the extent to which students' value technology compared to how effectively they, the students, think their instructors use it. According to students, only a minority of professors use the latest technology very effectively in their teaching, about 22 per cent for clickers (Chronicle of Higher Education 2012, n.p.). Instructors got high marks for their use of now basic technology like pro-

jectors, Wi-Fi and laptops but they were not perceived as doing so well with classroom clicker response systems, iPads or smartphones by the students surveyed.



Source: Chronicle of Higher Education 2012 (http://chronicle.com/article/How-Much-Students-Value/132911/)

As technology becomes more available and as Generation X enters the classroom as academics, the use and application of technology will likely become more pervasive. This would match the expectations of Generation Y or the Millennial (born between 1980 and 2000) and later on, Generation Z (born post-2000), of the application and use of technology in the teaching and learning environment.

Students, however, are making use of technology and technological devices. For instance, 73 per cent of college students said they cannot study without technology, 70 per cent of them use keyboards to take notes, 91 per cent use email to communicate with their professors, 98 per cent of students who own an e-reader read an e-textbook, 65 per cent use digital devices to create presentations, and 38 per cent cannot go 10 minutes without checking their email/tablet/laptops/smartphone (ICEF 2012a, n.p.). This co-dependency between student and technology have implications for campus infrastructure the use and application of software.

Thin client technology, machines on networks that deliver applications and data via a centralised computing model with the majority of processing carried out by the servers, is also well-suited to student learning environment – computer labs, libraries, etc. This type of technology makes it possible to reduce costs and energy consumption by installing application software on a powerful remote computer (server) and allowing users to access the software via the network.

A growing number of American TEIs are turning to open source LMS such as Moodle. The percentage of institutions using Moodle rose from 4.2 per cent to 7.8 per cent between 2006 and 2007. This trend was even more pronounced in private colleges, where the percentage increased from 10 to 17 per cent (Woodall 2011, 14).

Contact North, Ontario's distance education and training network, noted that "over 99 per cent of surveyed colleges and universities in the United States reported operating a LMS as their core platform for blended and online learning" in 2008 (Contact North 2012, 2). The Report (2012, 2) also noted that in 2010, "97 per cent of campuses had a single, standard (campus-wide) LMS system installed" however, "60 per cent of schools support only one proprietary LMS" in 2010. Moodle is deployed at 40 per cent of Canadian universities (well above the adoption rate in the United States), while Blackboard (with Angel and Web CT) claimed 36 per cent of the market, and Desire2Learn (a Canadian company based in Ontario) 14 per cent (Contact North 2012, 4). There was commensurate increase in the number of students using LMS as there was in the number of courses using LMS. According to the Contact North Report (2012, 2), the number of students using an LMS increased from 80 per cent in 2006 to 91 per cent in 2009 while the percentage of courses that use an LMS rose from 15 per cent in 2000 to more than 53 per cent in 2008. Nevertheless, the findings of a survey as identified by Contact North (2012, 2) noted that "only one in four students think that these LMS systems are being used effectively within their institutions, and only one in five think that the LMS systems are well integrated in classroom activities for blended learning." In a 2012 survey of undergraduates by Educase reported in the ICEF Monitor (2012a, n.p.) "49% of students want to see an increased use of learning management systems (LMS), 57% want more open educational resources (OER), 46% yearn for more online videos, and 55% are hungry for more game-based learning."

Virtual meeting-places and application-sharing tools provide enhanced opportunities for cross-institutional collaboration among faculty and graduate students. The advent of dedicated network connections such as Internet2 facilitates the linking of research networks with peer networks in other parts of the world to support science and engineering research and education applications. As more and more academics upload research informally online, new vistas to measure Web-driven scholarly interactions, such as how often research is blogged about, tweeted, or bookmarked (altmetrics) are emerging to gauge scholarly influence and reach of their virtual product. In the era of competitive higher education, Webmometrics Ranking of World Universities produced by Spanish National Research Council gauges the performance and prestige of academic and research universities based upon web presence, visibility and web access.

The Internet is a viable way to market academic programmes to prospective students while enhancing the University's academic and co-curricular brand. As such, universities are utilising You Tube education channels, iTunes U and Internet to market their brand. SCUP (2012, 9) noted while HEIs are using social media it is mostly for admission purposes. Some colleges in the United States have "developed student blogger programs to attract prospective students, where an assigned roster of current students blog about their daily routines"; while other universities have "respective "fan pages" on Facebook to enable communications with incoming

students" (Wilen-Daugenti and McKee 2008, 4). The ICEF Monitor (n.d.) noted that 44 per cent of prospective students in the US 'liked' a college on a social network; 57 per cent watched the videos created by the college, and 53 per cent read posts about the college via social media.

Another way in which ICTs are being used is by prospective students and their families to perform due diligence by seeking third-party verification of any claims colleges and universities make. Universities are increasingly using prospective students' social media profiles when considering them for admission. A new Kaplan Test Prep survey of 350 US college admissions officials reported that 27 per cent of them Googled applicants (up from 20 per cent in 2011) and 26 per cent of them checked Facebook. Of those who checked, 35 per cent said they found information that negatively impacted an applicant's chance of acceptance, a significant increase from 12 per cent in 2010. Offenses cited included essay plagiarism, vulgarities in blogs, alcohol consumption in photos, things that made them "wonder," and "illegal activities" (ICEF Monitor 2012b,n.p.).

Voice-over-IP call centres and text messaging are being used not only to attract students, but also to retain them. Wilen-Daugenti and McKee (2008, 4) indicated in their paper*, 21st Century trends for Higher Education*, that universities (not specified in the literature) are also making use of call centres as a way of leaving voicemails for students who have missed a number of classes and to assist those who may have health challenges, work overload, or personal issues. This "personal approach" is effective in keeping students from dropping out of school. As the cloud computing (e.g. AppleMobileMe, Google Docs) gains momentum universities utilise "cloud" applications that are housed (and accessed) online and provide vast storage capacity that can be used for portfolio assessments, school records, written documents and even video recordings.

2.11. Growing internationalisation

The growing internationalisation of higher education has been sharpened as a result of world ranking tables, while the increasing demand from stakeholders for accreditation credentials has brought the commodification of higher education into sharper focus (see Box 2.15). Pursuing tertiary education in a foreign country allows students to expand their knowledge of other societies and languages, and thus improve their employment prospects. It also offers an economic value to host societies – raising revenues and a means to recruit highly educated/skilled migrants.

BOX 2.15: WHAT IS INTERNATIONALISATION?

Universities are knowledge-producing entities and have social, cultural, ideological, political and economic responsibilities to society. A key strategy for responding to the influence of globalization adopted by universities across the world is internationalization, generally understood to mean the integration of an international or intercultural dimension into the tripartite mission of teaching, research and service functions of Higher Education.

(Source: Felix Maringe and Nick Foskett. *Globalization and Internationalization in Higher Education Theoretical, Strategic and Management Perspectives*. London: Continuum International Publishing Group, 2010, 1)

Internationalisation is high on the agenda of universities. In fact, half of all colleges in the United States have placed internationalisation among their top five strategic priorities according to a 2012 report, *Mapping Internationalization on U.S. Campuses*, by the American Council on Education (see Box 2.16). Maringe and Foskett (2010, 27) citing research undertaken in 2008 noted that "newer universities tend to emphasize student recruitment, development of offshore programmes and curriculum internalization while older universities place more emphasis on student and staff mobility and partnerships in research and enterprise." This difference, Maringe and Foskett (2010, 27) noted is a result of the importance given to research by older universities and teaching by newer ones.

BOX 2.16: HIGHLIGHTS OF THE AMERICAN COUNCIL ON EDUCATION REPORT, MAPPING INTERNATIONALISATION ON UNITED STATES CAMPUSES

The Report is the result of an extensive survey of more than 1,000 US colleges and universities in 2011.

- The degree of international engagement differs sharply by institutional type. 93% of respondents from doctoral institutions, 84% of master's institutions and 78% of baccalaureate institutions perceived that internationalisation had accelerated on their campuses between 2008 and 2011.
- There was a robust increase in the share of colleges that specifically include international or global education in their mission statements, from less than 40% of respondents in 2006 to more than 50% in 2011.
- The percentage of institutions with campus-wide international plans edged up slightly, from 23% to 26%, while 44% of colleges have a committee working on institution-wide global efforts. More than half have developed internationally focussed measures of student-learning outcomes.
- Overall, the percentage of colleges working to internationalise the undergraduate curriculum rose, from 41% in the 2006 survey to 55%. However, the share of colleges that insist students take a course that focuses on global trends and issues increased while courses that emphasise international perspectives as part of a general-education requirement declined. Approximately 28% of institutions require undergraduates to take courses featuring global trends and issues, a slight increase from 2006 but a 8% decrease (to 29% in the institutions that require undergraduates to take courses that feature perspectives, issues or events from countries outside the United States. The share of institutions that require students to take a foreign language to graduate fell to 37% down from 45% in 2006.
- Virtually all doctoral institutions have an office that coordinates and leads internationalisation efforts and 41% of baccalaureate institutions have a senior-level administrator for international programmes.
- More than 60% of doctoral, master's and baccalaureate institutions provide scholarships or other financial aid to international undergraduates.
- Nine out of 10 doctoral institutions have money available to students for study abroad. Overall, 42% of institutions surveyed said none of their 2011 graduates studied abroad, while 36% reported that fewer than 5% of graduates did so.
- Institutional financial support for professors' international work and travel has declined. Just under half of the institutions surveyed say they support international conference travel, down from 56% in the earlier study, while 31% provide money for research abroad, compared with 36% in 2006.
- A growing number of colleges take international background, experience, and interests into account when hiring faculty. Some 68% of respondents indicated that they give such preferences, up significantly from 32% five years earlier. Just 8% of colleges include international work in guidelines for faculty promotion or tenure, the same share as in 2006.

(Source: Karin Fischer. "Colleges' Efforts to Internationalize Slip in Some Areas." *The Chronicle of Higher Education*. June 27 2012, n.p. http://chronicle.com/article/Colleges-Efforts-to-Globalize/132661/)

As a consequence of the expansion of the tertiary education sector, students, education funding agencies, and other stakeholders are demanding that educational institutions show evidence that their programmes have been carefully assessed and have gone through the rigours of a quality assurance or accreditation exercise by an external body (UWI 2012, UWI-12, 11). With the rise of global educational providers across national borders, increased mobility of the labour force including academics and the implementation of the General Agreement on Trade and Services (GATS), there is a clear need to give due consideration to questions and issues surrounding cross-border quality assurance and accreditation (Knight 2011, 134). In other words, there are many centripetal forces supporting internationalisation including government policies that encourage international student mobility even in the face of the emerging 'internationalisation at home' movement (de Wit 2010, 9).

Over the last two decades, the approach to internationalisation was mixed, ranging from institutionally focussed strategies to national policies oriented towards cooperation and capacity building for developing countries. Hans DeWitt (2013, n.p.) noted there is a reorientation towards development of national policies in countries such as Australia, Brazil, Canada, Japan, Norway and the United Kingdom, and even some signs of a national focus in the United States (skilled immigration, global citizenship). deWitt (2013, n.p.) also noted that India, Malaysia, Romania, South Africa and The Netherlands are working on national policies for internationalisation. The drivers of these policies are based more on national interests to strengthen human capacity by increasing the immigration of talent and scholars and the development of global professionals; generation of revenue by increasing the number of full-cost fee-paying students; the creation of a stronger research base; increased profile; and status of the national knowledge base (de Wit 2013, n.p.). Further, the current economic crisis implies that budget cuts in capacity building and scholarship schemes for students from developing countries are likely to become the norm in many countries that up to now had maintained a strong focus and budget for development cooperation, such as The Netherlands (de Wit 2013, n.p.).

World ranking league tables have become all important in the higher education market as a result of competition and commercialisation. Altbach (2013, 85) posits that "there are strong links between the central or peripheral status of a country or academic culture and the placement of their universities in the rankings." The universities and academic systems, located in the world's knowledge centres, and the scholars and scientists in these institutions not surprisingly have major advantages in the rankings. Nevertheless, emerging economies, like China, are increasingly active as well, and they are moving from periphery to centre. It may well be possible for well-supported universities located within the periphery with thoughtful planning and adequate resources to reinvent themselves as academic centres. For instance, the Times Higher Education (THE) World University Rankings, 2011/2012 and 2012/2013 identified universities in Brazil, China, India, Israel, Singapore, South Africa and Turkey (see Table 2.3.) among the top 400 ranked universities based upon teaching, research, knowledge transfer and international outlook.

Table 2.3: Examples Of The World University Rankings, 2012-2013 -Developing Countries							
		2012/2013			2011/2012		
COUNTRY	EXAMPLES OF UNIVERSITIES IN TOP 200	NUMBER OF UNIVERSITIES IN TOP 400	OVERALL SCORE	RANKING	NUMBER OF UNIVERSITIES IN TOP 400	OVERALL SCORE	RANKING
BRAZIL	University of São Paulo	2	50.5	158	2	44.1	178
CHINA	Peking University	9	70.7	46	10	65.6	49
	Tsinghua University		67.1	52		59.5	71
	University of Science and Technology of China		*	201-225		42.7	192
HONG KONG	University of Hong Kong	6	75.6	35	6	72.3	34
	Hong Kong University of Science and Technology		64.4	65		61.7	62
	Chinese University of Hong Kong		54.5	124		46.6	151
JAPAN	The University of Tokyo	13	78.3	27	16	74.3	30
	Kyoto University		66.8	54		64.8	52
	Tokyo Institute of Technology		53.7	128		52.8	108
INDIA	Indian Institute of Technology, Kharagpur	3	*	226-250			
	Indian Institute of Technology, Bombay		*	251-275		*	301-350
	Indian Institute of Technology, Roorkee		*	351-400			
ISRAEL	Hebrew University of Jerusalem	3	53.1	137	4	50.4	121
	Tel Aviv University		50.5	158		45.4	166
	Technion Israel Institute of Technology		46.9	193		*	201-225
SINGAPORE	National University of Singapore	2	29	77.5	2	70.9	40
	Nanyang Technological University		59.4	124		45.0	169
SOUTH KOREA	Pohang University of Science and Technology	6	67.1	52	6	64.6	53
	Seoul National University		65.9	59		50.1	124
	Korea Advanced Institute of Science and Technology (KAIST)		64.0	68		54.5	94
SOUTH AFRICA	University of Cape Town	4	55.8	113	3	53.2	103
TURKEY	Middle East Technical University	4	*	201-225	4	*	276-300
	Bilkent University		*	226-250		*	201-225
	Koç University		*	226-250			

Source: Times Higher Education (THE) World University Rankings, 2011/2012-2012/2013. http://www.timeshighereducation.co.uk/world-university-rankings/2012-13/world-ranking and http://www.timeshighereducation.co.uk/world-university-rankings/2011-12/world-ranking.
Notes: * Withheld by THE.

As international rankings become more entrenched, students may consult with the League Tables or other ranking measures as part of the process of due diligence before seeking entry into top-ranking universities (see Box 2.17).

The number of foreign tertiary students enrolled in OECD countries doubled since 2000, for an average annual growth rate of 7.2 per cent (OECD 2012, 24). In 2009, China, India, United States and Russia accounted for 45 per cent of the total enrolments with strong growth recorded in Brazil, Indonesia and Turkey (British Council 2012, 15). At the same time, the world's 18-22 age population grew at 1 per cent per annum, implying significant rise in the GER.

BOX 2:17: PERSPECTIVES OF INTERNATIONAL STUDENTS ON RANKINGS AND LEAGUE TABLES

The extent to which international students consult rankings and league tables to choose where they intend to study is significantly less important. Data gathered during the Autumn 2009 wave of the International Student Barometer – the cohort of international students in the UK – indicate that only 18% of all students consulted 'league tables' when making a decision on where to study in the UK. To put this in its context, the influence of 'friends' (46%), 'institution website' (40%), 'parents' (36%), 'university prospectus' (27%) and 'previous teacher or tutor' (20%) are all more important as sources than rankings. Who appears to listen to rankings most, apart from university leaders? According to i-graduate, it is international undergraduate students, 22% of whom factor rankings into their decision-making process – the same as attending an open day or listening to the views of current students. Who listens least? PhD students, 13% of whom consult either a national or international ranking before deciding where to study. International Masters students currently in the UK sit somewhere in the middle, with 16% of students citing rankings as an influence on where they chose to study, the same as former tutors and slightly above the importance of 'agents' (14%).

(Source: Tim Rogers. "The hullabaloo about rankings: Who's really listening?" *International Focus* (62). October 6 2010, 4. http://www.international.ac.uk/media/1417421/International_Focus_62.pdf)

The Report by the British Council (2012, 16) indicated that there were 3.5 million international students in 2009 up from 800,000 in mid 1970s (see Box 2.18). Again, China and India make up 29 per cent of the tertiary enrolments, but only 21 per cent of the globally mobile students. The OECD countries attract three out of four students studying abroad, with Australia, Canada, France, Germany, the United Kingdom and the United States together receiving more than 50 per cent of all foreign students worldwide (OECS 2014, 32). Although Europe hosts 48 per cent of tertiary students enrolled outside their country of origin, North America 21 per cent, Asia 18 per cent and Oceania less than 10 per cent, other regions such as Africa, Latin America and the Caribbean are also seeing growing numbers of international students (OECD 2014, 32). Students from OECD countries are also mobile; on average, there were three foreign students per European citizen enrolled abroad in 2012 (OECD 2014, 32). The OECD Report (2014, 32) also noted that "international students represent 10% or more of the enrolments in tertiary education in Australia, Austria, Luxembourg, New Zealand, Switzerland and the United Kingdom" and "account for more than 30% of enrolments in advanced research programmes in Australia, Belgium, Luxembourg, the Netherlands, New Zealand, Switzerland, and the United Kingdom."

BOX 2.18: INTERNATIONAL STUDENTS

- More than 7.2 million students will be studying outside their home countries in 2015.
- Eight countries host 72 per cent of the world's international students – US (20%), UK (13%), Germany and France (8% each), Australia and China (7% each), Canada (5%), and Japan (4%).
- Newer hosts countries are: China, New Zealand, Malaysia and Singapore.
- Sub-Saharan Africa has the highest proportion of outward-bound students while North America and Canada have the lowest.

(Source: Felix Maringe and Nick Foskett. Globalization and Internationalization in Higher Education Theoretical, Strategic and Management Perspectives. London: Continuum International Publishing Group, 2010, 5).

Generally, outbound mobility ratios vary across countries from over 30 per cent for Mauritius, Trinidad and Tobago to 50 per cent for Botswana, to less than 1 per cent for the United Kingdom, United States, Russia, Indonesia, Philippines, Egypt and Brazil (British Council 2012, 4).

MOOCs, as noted earlier, are contributing to broadening access. They also encourage faculty to use online lectures and reserve on-campus class time for interaction with students. While faculty may have to refine pedagogy, MOOCs will contribute to the growth of cyber-internationalisation by facilitating global exchanges via online learning communities.

2.3. CONCLUSION

Universities can be critical sources of equalisation of chances and democratisation for the society by making possible equal opportunities for people. In this way, universities contribute to economic growth as well as to social equality or, at least, lesser inequality. Castells (2009, 1) has pointed out that universities have the "ability to develop new cultures; that is, to be the source of cultural renewal and cultural innovation which is linked to the new forms of living which we are entering." HEIs are operating in new expressions ('new normal') of cultural, social and economic relations, and globalisation and regionalisation. They are also being called upon to produce and transfer new thought on developmental issues and challenges and in some cases, be the engines of innovation to foster economic growth. Universities are also now being driven by efficiency, external accountability and monitoring with an emphasis on standards. Additionally, HEIs are adopting a more business-focussed approach in their management by utilising a multiplicity of tools – institutional quality and audit, maintaining an ethic of effectiveness, surveillance and reward structures. Based upon the preceding discussion, the following broad based issues have been identified:

- Need to provide better access, ensure equity and improve the diversity and heterogeneity of the student population while addressing quality in the face of increasing demand. While there has been rapid growth in enrolment in some cases this took place in a mixed resource environment, that is, additional resources in some cases and limited resources in others. There is also need to improve persistence rates and throughput rates of students.
- Changing trends in the academic profession that is embracing of more cost effective approaches to labour management. Such an approach provides universities with opportunity to respond to their fiscal space and human resource needs.
- Contraction of financial resources provided by governments has forced universities to optimise internal efficiency and develop complementary modes of financing. At the same time, the contracting of public finances have sparked the debate whether higher education is a public or private good and thus, who should bear the cost of financing higher education.
- ICTs have transformed the higher education landscape and its ubiquity will continue to inform the teaching and learning environment, research environment, operations and funding. As such, universities will have to respond to this 'new normal' to address the ripple effects ICT will have on their modus operandi.

- The internationalisation of higher education through the mobility of students and academics and collaborative partnerships and networks is a permanent feature in higher education settings.

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[1] The current OECD member countries are Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Switzerland, Turkey, United Kingdom, and United States. However, the OECD publication, *Education At A Glance,* features data from the OECD countries plus Brazil and the Russian Federation, Argentina, China, Colombia, India, Indonesia, Latvia, Saudi Arabia and South Africa.

[2] The standard retirement age varies from country to country but generally ranges from 50 to 70 years. In the United States and the United Kingdom there is no mandatory age for retirement. Generally, in the OECD countries the retirement age is 65 years.

CHAPTER THREE: THE HIGHER EDUCATION ENVIRONMENT IN THE CARIBBEAN

The hallmark of the modern global economy is premised on the ability to create, use, and exchange/integrate knowledge into systems, processes, products and services. The sustainable development of countries is thus increasingly dependent on knowledge and education. For developing countries to participate successfully in the knowledge economy; achieve financial stability, economic growth and higher stands of living; and attract foreign investment, their citizens must be well educated. Carnoy and Rhoten (2002, 5) suggested that "the payoff to higher levels of education is rising worldwide as a result of the shifts of economic production to knowledge-intensive products and processes". In this regard, the Caribbean tertiary education institutions are under increasing pressure to provide education for a larger number of students. Accordingly, increased availability of and participation in tertiary education will enable the Caribbean to participate more fully in the global knowledge economy and promote development.

This chapter will look at the evolution of higher education in the Caribbean and some of the challenges the sector faces. The chapter is premised on the argument that historical rooted narratives of colonisation and post-colonisation as well as globalisation have influenced the evolution of higher education system in the Caribbean. The Caribbean as a group of small states faces unique economic and social challenges and this have implications for the higher education sector.

3.1. EDUCATIONAL DEVELOPMENT

The notion of 'development' is highly contested both as a theoretical construct and in its policy and programme manifestations. Ideas of development have shifted from an exclusive focus on economic growth towards a more integrated and multidisciplinary approach that takes into consideration the human dimensions of development. Education, in this regard, is seen as highly critical to the growth and development of a nation. It is expected to promote competitiveness and productivity; reduce inequalities and poverty; mitigate conflict and crisis; and promote human capability and achieve social justice. Nations in recognising the relevance and value of education to economic growth and development place emphasis on human resource development that would facilitate the construction of a 'just society'. In fact, the 2013 United Nations Development Programme (UNDP) Human Development Report noted that the greater human development gains in more than 40 developing countries in the South were largely attributable to sustained investment in education, health care and social programmes, and open engagement with an increasingly interconnected world (UN News March 2013, n.p.). Thus, and perhaps, ideally, there should be alignment between education policy and developmental planning as the provision of education requires significant investment.

For the Caribbean, the evolution of an indigenous education system followed a path of progressive expansion of access to increasingly higher levels of education from the advent of public education in the post-Moyne Commission period to the post-independence era (Jules 2010, n.p.).

In this regard, education is seen as a 'public good' that is a social right extended to all, aimed at reducing inequalities and striving to extend social justice. The education system in the Caribbean was developed to service the industrial economy, the public service, the service economy and the information economy. To that end, there was the introduction of universal primary education generally followed by access to universal secondary education based upon attainment of appropriate standards. Currently, there is an emphasis on tertiary education to facilitate the region's participation in the information society and enhance competitiveness and economic growth that will enable the region to participate more fully in the global knowledge economy. However, the major driver of educational progress in the Caribbean in the past twenty years has been international trends in education facilitated by the intellectual financial complex (Jules 2010, n.p.) as well as the public policy of national governments. Consequently, educational development in the Caribbean may be seen as a response to a "range of interconnected factors including global political and economic pressures" that obliged governments to make adjustments to its macroeconomic policy and public spending (Land 2004, 1).

Tertiary education is operating in an environment that is characterised by fierce competitiveness; a high demand for innovation and flexibility; rapid and massive flows of information; "acceleration in the generation and proliferation of knowledge, [and] the transgressing and fissuring of disciplinary boundaries" (Land 2004, 2). Thus, universities are expected to adopt the following components to be not only more competitive, but also closely linked to the needs of the global economy and employability:

- Improve teaching and assessment practices, curriculum design and learning support;
- Enhance the professional development of academic staff;
- Produce organisational and policy development within the context of tertiary education;
- Facilitate informed debate about learning, teaching, assessment, curriculum design and the goals of higher education; and
- Promote the scholarship of teaching and learning and research into higher education goals and practices (Percival and Tucker 2004, 19, 26, 37).

In the contemporary world where effectiveness and competitiveness steers academia, the position of teaching is changing. High quality teaching is emerging as an asset in the highly competitive tertiary education market and therefore, more activities are aimed at improving quality. Thus, universities globally are increasingly developing strategies to improve the quality of their teaching/learning environments. Other changes within the academe relate to increasing student numbers and student diversity; flexibility and transferability within the curriculum; adoption of the virtual learning environment; growing emphasis on quality; and changing pedagogical paradigms. Additionally, TEIs are expected to be more accountable and adopt a managerialism model to acquire efficiency and effectiveness while faced with reduced resources.

3.2. THE SOCIAL ENVIRONMENT

The Caribbean is operating in a harsh and dynamic international environment in which adjustments have to be made in a short space of time if the region is to reorient its production and fiscal systems, increase its international competitiveness, generate new opportunities, foster

and enhance human resources development and increase investments in health, environment, education and training. This transformation will be taking place in an environment where the Caribbean has to tackle the rising crime and violence in several of its societies; react to the demographic changes; address the HIV and AIDS epidemic; tackle climate change; develop new areas of growth; resolve and ensure that it does not increase its high public debt to GDP ratio; and prevent the decline in multilateral development finance and donor assistance to the region. In other words, the Caribbean has to address social, economic and environmental vulnerabilities. Further, the region has to accept and respond to changes in the global economy, the shifting geopolitical environment, and the attendant escalating expenditure on security as a result of the war on terrorism. While the Caribbean faces similar problems as other developing nations, it is often exacerbated by the characteristics of size as small states (see Box 3.1).

BOX 3.1: THE CONCEPT OF SMALL STATES

Simon Kuznets' Economic Growth of Small Nations (1960) flagged that small states have several advantages namely, good natural resources and small and cohesive populations that allows them to adapt better to change and forge political consensus. However, small states face obstacles to development – they tend to have product specialisation and small specialised export markets. Over time, he refined that concept of the characteristics of developing states and challenged the one linear development paradigm. He argued that underdeveloped countries possess characteristics different from those that industrialised countries faced before they developed.
(Source: William Easterly and Aart Kraay, *Small States, Small Problems? Income, Growth, and Volatility in Small States*. 2000, 3,12)

The concept of small states was also raised by William Demas (1965) in his seminal work, *The Economics of Development in Small Countries with Special Reference to the Caribbean*. He noted that without the development of a 'relevant analytical framework' a rational choice in the field of economic policy could not be made. He indicated that the economic structure of small states was different from that of larger countries, and new analytical tools and concepts were necessary to consider their economic problem. Since then, a corpus of scholarly work from academics, policy makers, and development organisations have emerged focussing on the potential difficulties and opportunities facing small states.
(Source: Robert E. Looney. "Economic Characteristics Associated With Size: Development Problems Confronting Smaller Third World States.' *The Singapore Economic Review* XXXVII (2)1992, 2.)

During the 1980s and 1990s the concept of small states (re) emerged in the literature and in international discourse whereby the main criteria for size are area and population (generally under 3 million). These small states are located in the Caribbean or South Pacific and part of an island chain or landlocked and have distinctive characteristics and structures different from large or medium sized states. These features in the economic and social domains namely, narrow resource base, lack of economies of scale, relative openness, infrastructural costs, remoteness, natural disasters, international capital markets, migration and the number and quality of role-relationships have implications for the higher education sector.

(Source: Michaela Martin and Mark Bary ed. *Tertiary education in small states. Planning in the context of globalization*. UNESCO Publishing and IEP Policy Forum. 201137, 42-43)

These small states borne out of historical conditions of colonialism, its processes and institutions, and geography (small physical size) now have to develop fundamental and creative fiscal and monetary policies, financial and social safety nets to establish financial sustainability (Venner 2009, 28). The role of tertiary education and research thus becomes critical to the achieve-

ment of sociocultural, economic and political transformation of the region. This transformation can be achieved by training a new generation of scientists, technicians and professionals; contributing to problem-solving research and building science, technology and innovation (STI) capacities and capabilities; and developing a closer partnership with academies of science, research units and centres of excellence that would contribute to sustainable human development.

According to Miller (2007, 69) the prime age adult population (20 to 49 years) is now significantly larger that the school age population (5 to 19 years). This suggests that there are fewer children entering primary and secondary schools than are leaving them each year. Consequently, tertiary education in the Anglophone Caribbean "cannot continue to target recent secondary school leavers" but must target "the entire population of qualified persons who desire education and training at this level" (Miller 2007, 69). Further, the youth sub-population of 15-29 is likely to present challenges and opportunities for retention in the education sector, school-to-work transition, employability, increase in demand side of the economy, and training/professional development. For the Caribbean region, the changing demographics will impact on HEIs leading to shrinking enrolment of 18-year olds (see Table 3.1). It also suggests that additional consideration will have to be given to an economically active population (usually aged 24-64) - adult-student population - especially as individuals may experience several career shifts. This means that policy shifts to broaden access and participation will need to consider enhancing seamless modalities of delivery (full-time face-to-face, part-time face-to-face, vacation packages, weekend packages, and on-line delivery and allow students to move easily between these modalities) and supporting lifelong learning including establishing alternative routes to tertiary education.

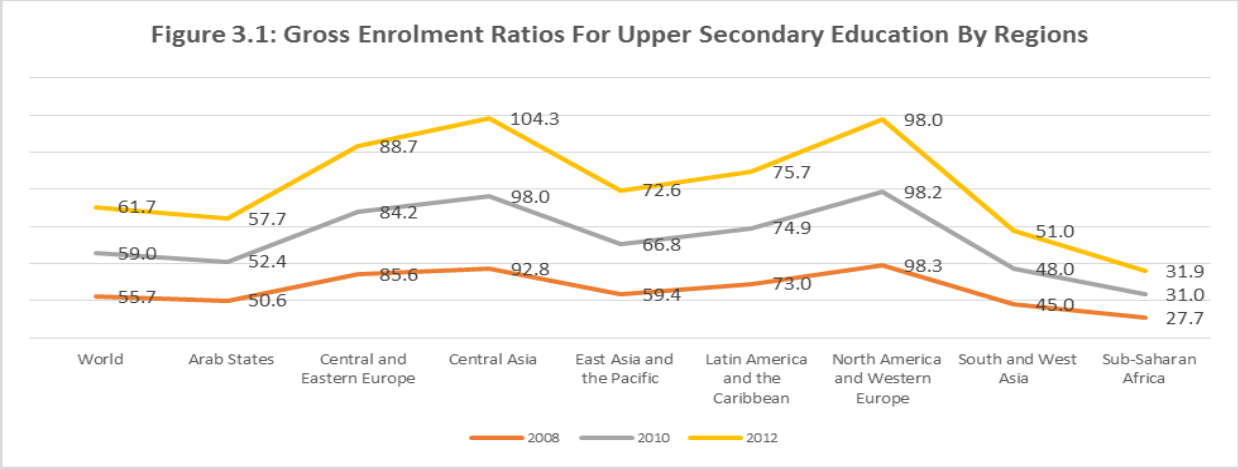
Table 3.1: Demographic Profile Of The Caribbean *(Medium Variant), 2010-2030

Indicator	2010	2015	2020	2025	2030
Population (thousands)	41 646	43 041	44 322	45 457	46 363
Male population (thousands)	20 671	21 356	21 977	22 522	22 948
Female population (thousands)	20 975	21 685	22 345	22 935	23 415
Percentage aged 5-14 (%)	17.8	16.7	15.9	15.1	14.4
Percentage aged 15-24 (%)	17.6	16.7	15.9	15.1	14.5
Percentage aged 15-59 (%)	61.6	61.9	61.7	60.6	59.6

Source: UN Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2010 Revision, http://esa.un.org/unpd/wpp/index.htm.
Note: * The Caribbean includes: Anguilla; Antigua and Barbuda; Aruba; Bahamas; Barbados; British Virgin Islands; Cayman Islands; Cuba; Dominica; Dominican Republic; Grenada; Guadeloupe; Haiti; Jamaica; Martinique; Montserrat; Netherlands Antilles; Puerto Rico; Saint Kitts and Nevis; Saint Lucia; Saint Vincent and the Grenadines; Trinidad and Tobago; Turks and Caicos Islands and United States Virgin Islands.

Within the Caribbean region, most countries offer good (if not universal) access to primary education and a large proportion of the population have access to secondary schooling (and presumably completing it). According to the UIS (2015), net enrolment ratio (NER), an indicator measuring access to education of a particular sub-population, in secondary schools in Barbados was 90.1 per cent in 2005 and 89.7 per cent in 2011 thus, showing a decline. In Jamaica, access to secondary schooling also declined: 83.4 per cent in 2005 (UIS estimates) and 74.3 per cent in 2011, respectively (UIS 2015). For Trinidad and Tobago, where data was only available for 2007,

the rate was 72.7 per cent based upon UIS estimates (UIS 2015). Although variation in access and participation differs from country to country, secondary education remains the key to accessing tertiary education, which is associated with even better work opportunities and provides a much higher probability of remaining above the poverty line. As such, it may be useful at this juncture to take a look at the GERs in upper secondary education. Globally, GER for upper secondary was 55.7 per cent in 2008 and 61.7 per cent in 2012, while for Latin America and the Caribbean it was 73.0 per cent in 2008 and 75.7 per cent in 2012 well above world average (see Figure 3.1). Although GERs in upper secondary were high, and while it is not a guarantee of eligibility to enter tertiary education, the GERs suggest that there is a potential need to increase participation at the higher education level given the pool of secondary school graduates. As have been stated in the previous chapter, tertiary level attainment is also predicated on the quality of education at lower levels of the system which has emerged as a concern thus, raising the issue of university-readiness of the prospective higher education student.



Source: UNESCO Institute of Statistics (2015). http://data.uis.unesco.org/.

Beckles et al (2002, 89) noted that the Caribbean has low enrolment ratios in higher and tertiary education and in fact, based upon UIS 2015 data enrolment ratios remain low. While the global GER for tertiary education for 2005 was 24.1 per cent, enrolment ratios had increased to 32.2 per cent by 2012, the GER in LAC in 2005 was 30.5 per cent and in 2012 it was 43.0 per cent (UIS 2015). According to data available for Barbados and Saint Lucia, there is a serious issue with respect to tertiary education enrolment for the period 2005 to 2010. Tertiary GER in 2007 for Barbados was 53 per cent and in Saint Lucia 9 per cent, declining 4 percentage points in two years (UWI 2012, UWI-12, 11). The same Report also noted that less than 50 per cent of the young people 18-24 in the Eastern Caribbean were enrolled in a tertiary level institution. Table 3.2: Tertiary GERs for Selected Countries reveals the general level of participation in tertiary education was somewhat high for Barbados but not so for Jamaica.

Table 3.2: Gross Tertiary Enrolment Ratios For Selected Countries						
		YEAR				
REGION/BLOCS	**COUNTRY**	**2005**	**2007**	**2009**	**2011**	**2012**
Developing economies	Brazil	25.5				
	Russia	72.6	74.1	75.5	76.5	76.1
	India	11.0	13.5	16.4	23.3	24.8
	China	18.3	20.0	21.8	24.3	26.7
	South Africa					19.7
	Turkey	32.8	38.5	46.1	60.7	69.4
	Mexico	23.3	24.4	25.7	27.7	29.0
	Indonesia	17.7	18.4	23.7	27.2	31.5
Emerging education hubs*	Qatar	18.4	13.3	10.1	11.7	12.1
	Malaysia	27.9	30.2	35.7	36.0	37.2
Emerging economies**	Philippines	27.5		28.2		
	Poland	63.6	66.7	71.2	73.5	73.2
	Sri Lanka				15.0	17.0
	South Korea	93.5	100.8	101.6	100.8	98.4
	Thailand	44.2	48.1	48.6	52.6	51.4
OECD Countries	Australia	71.2	71.5	75.6	83.2	86.3
	Finland	91.8	94.0	91.8	95.5	93.7
	Iceland	70.4	71.8	74.5	80.9	81.4
	Japan	55.0	57.8	57.7	59.9	61.5
	Norway	78.6	75.4	72.6	73.1	74.1
	New Zealand	80.6	79.0	82.7	80.8	79.8
	Sweden	82.0	75.0	71.4	73.9	70.0
	Switzerland	45.7	47.1	50.0	54.3	55.6
	United Kingdom of Great Britain and Northern Ireland	58.7	58.7	59.0	61.2	61.9
	United States	81.3	82.3	87.7	95.3	94.3
Caribbean***	Antigua and Barbuda			14.8	14.4	23.5
	Barbados		56.5	70.5	60.8	
	Belize	16.0	18.2	22.9	22.9	25.8
	Bermuda		26.2	32.1	31.2	30.8
	Jamaica	20.2		25.2	28.2	30.8
	Saint Lucia	13.1	8.7	17.7	16.3	10.2
	Trinidad and Tobago					
Commonwealth Countries	Malaysia	27.9	30.2	35.7	36.0	37.2
	Mauritius	21.3	24.5	32.2	36.0	39.9
World		24.1	25.7	27.8	30.9	32.2
Arab States		22.2	23.4	24.8	25.2	26.3
Central and Eastern Europe		58.5	62.5	65.8	69.1	70.9
Central Asia		27.1	26.8	24.6	24.4	24.6
East Asia and the Pacific		22.6	23.9	25.9	28.6	30.7
Latin America and the Caribbean		30.5	35.0	39.1	42.1	43.0
North America and Western Europe		69.1	70.0	73.2	78.6	78.9
South and West Asia		10.4	12.8	15.6	21.4	22.8
Sub-Saharan Africa		5.7	6.2	6.9	7.8	7.9

Source: UNESCO Institute of Statistics (2015). http://data.uis.unesco.org/.

Notes: Gross enrolment ratios are provided for ISCED 5 and 6 which is equalled to the tertiary level.

Data for countries such as Canada, and Singapore are not available from the UNESCO Institute of Statistics.

*Emerging Education hubs according to David Stockley (2010) include High profile examples include the various "knowledge cities" which provide local education capacity and strive to become international education hubs. Asia (Singapore, China, and South Korea) and the Middle East (UAE, Qatar) are at the forefront

**For further discussion on emerging economies see Ruchir Sharma, "Broken BRICs Why the Rest Stopped Rising" Foreign Affairs November/December 2012.

*** No data was available for The Bahamas, Cayman Islands, Dominica, Montserrat, St. Kitts and Nevis, St. Vincent and the Grenadines, Trinidad and Tobago, and Turks and Caicos Islands.

In recent years, the recognition of developmental benefits of higher education has come into focus again. Tertiary education builds high level human capital and fosters an environment conducive to innovation and the quick diffusion of new knowledge that supports the foundations for sustainable development thus, supporting a country or region through the stages of development. The Caribbean countries are at varying levels in their development status and are characterised by a mixed bag of economic activities – extractive industries, manufacturing and service (as will be discussed in Chapter 4). They generally perform well on UNDP's development indicators (Human Development Index or HDI, Gender Empowerment Measure or GEM, Gender-related Development Index or GDI). The HDIs, which measures performances in health, education, income, and other quality of life indices, ranks the states of the Anglophone Caribbean high[1] (see Box 3.2).

BOX 3.2: HDI 2013 RANKING OF CONTRIBUTING COUNTRIES OF THE UWI (of 185 countries)

High Development: The Bahamas (51); Barbados (59); Antigua and Barbuda (61); Trinidad and Tobago (64); St. Kitts and Nevis (73); Grenada (79); Belize (84); St. Vincent and the Grenadines (91); Dominica (93); Jamaica (96); St. Lucia (97)

(Source: UNDP. *Human Development Index (HDI) - 2013 Rankings*. http://hdr.undp.org/en/statistics/.)

Table 3.3 shows that countries of Latin America and the Caribbean and SIDS (of which the Caribbean are part) are generally between medium and human development.

Table 3.3: Human Development Index Rating By Regions, 2000-2013

		2000	2005	2010	2013
HDI -Caribbean	Antigua and Barbuda			0.778	0.774
	The Bahamas	0.766	0.787	0.788	0.789
	Barbados	0.745	0.761	0.779	0.776
	Belize	0.675	0.71	0.714	0.732
	Dominica	0.691	0.708	0.717	0.717
	Grenada			0.746	0.744
	Guyana	0.570	0.584	0.626	0.638
	Jamaica	0.671	0.7	0.712	0.715
	Saint Kitts and Nevis			0.747	0.750
	Saint Lucia			0.717	0.714
	Saint Vincent and the Grenadines			0.717	0.719
	Suriname		0.672	0.698	0.705
	Trinidad and Tobago	0.697	0.745	0.764	0.766
HDI by Region	Latin America and the Caribbean	0.683	0.705	0.734	0.740
	Small Island Developing States (SIDS)	0.613	0.637	0.662	0.665
	World	0.639	0.667	0.693	0.702

Source: UNDP. *Human Development Indicators.* 2000-2013. http://hdr.undp.org.

The interaction between the higher education sector and the wider society and economy is complex. The World Bank (2013, n.p.) noted there is a strong relationship between access to quality tertiary education and a "country's economic growth and standard of living as learning outcomes are transformed into goods and services, greater institutional capacity, a more effec-

tive public sector, a stronger civil society, and a better investment climate." Improved and accessible tertiary education coexisting with effective national innovations systems can help a developing country progress towards sustainable achievements in the Millennium Development Goals (MDGs) and other Internationally Agreed Development Goals (IADGs). Within the Caribbean as elsewhere the MDGs were adapted to fit local needs. Among common identified strategies to the achievement of the MDGs were poverty-reduction and the creation of sustainable livelihoods with an emphasis on equality, achieving sustainable development, and the promotion of economic growth and competitiveness. The latter would require key strategic interventions, particularly in science and technology and research and development. Thus, a good quality, merit-based, equitable, efficient tertiary education and research institution remains critical for national development, competitiveness and innovation (World Bank 2013,n.p.). For this to be achieved it requires greater coordination, harmonisation and rationalisation of structures and processes to enhance the outcomes of tertiary education at both the national and regional levels.

The Economic Commission of Latin America and the Caribbean (ECLAC) suggested the Caribbean region recast the MDG targets in terms of the achievement of specified enrolment ratios at the primary, secondary and tertiary levels of education (UNDP 2004, 69). That ECLAC Report placed emphasis on tertiary education in the case of the Caribbean given its contribution to the generation of the necessary intellectual capital that plays such a critical role in the development of globally competitive societies. In 2010, ECLAC suggested "raising the requirement from completion of basic (primary) education to completion of secondary education is an adaptation to the second MDG (achieve universal primary education) that is appropriate for many countries in the LAC region" (ECLAC 2010, 12). This was because LAC had made significant progress "in terms of expanding coverage and access to education" and "had practically achieved universal access to primary education by the early 1990s" (ECLAC 2010, 111). However, the Report cautioned that "the process of educational devaluation that accompanies the move towards mass provision in each cycle means that in some countries even completing the upper secondary cycle is now insufficient to provide access to jobs that pay enough to lift people out of poverty" (ECLAC 2010, 12). Nevertheless, the Caribbean ranks above the world average on the UNDP HDI- Education Index which captures the mean years of schooling for adults aged 25 years and expected years of schooling for children (see Table 3.4). While Barbados ranks above the regional average, all other contributing territories of the UWI rank below the regional average.

Table 3.4: Human Development – Education Index, 2000-2013				
	2000	2005	2010	2013
Antigua and Barbuda			0.687	0.681
The Bahamas	0.668	0.708	0.714	0.714
Barbados	0.684	0.714	0.743	0.740
Belize	0.603	0.660	0.675	0.689
Dominica		0.248	0.295	0.306
Grenada			0.724	0.724
Guyana	0.533	0.587	0.576	0.582
Jamaica	0.588	0.648	0.668	0.668
Saint Kitts and Nevis			0.638	0.638
Saint Lucia			0.626	0.631
Saint Vincent and the Grenadines			0.657	0.657
Suriname		0.261	0.306	0.306
Trinidad and Tobago	0.607	0.684	0.700	0.700

Source: UNDP. HDRO calculations, Education Index (2013): International Human Development Indicators http://hdr.undp.org.
Note: The education component of the HDI is now measured by mean of years of schooling for adults aged 25 years and expected years of schooling for children of school entering age.

3.3. HIGHER EDUCATION SITUATION AND IMPERATIVES

The growing social demand for higher education combined with the recognition that the increasing skilled human resource can better contribute to enhanced productivity, competitiveness and economic growth contributed to governments' interest in tertiary education. The Caribbean Community (CARICOM) in 2002 had set "a 15 per cent target participation rate for the region by 2005; and in 2005 CARICOM revised the target to 20 per cent by 2015" (Martin and Bray 2011, 124). Countries also developed specific targets - Trinidad and Tobago set a target of 60 per cent participation by 2015 while Barbados defined a target of one higher education graduate per household (Martin and Bray 2011, 74). The authors further noted that "a proposal on tertiary expansion, rationalization and integration, suggested a minimum participation rate for the region of 35 per cent by 2020" Martin and Bray 2011, 74).

Setting a participation target has to be mediated by local markets needs and domestic labour market absorptive capacity. A study by Caribbean Knowledge Learning Network (CKLN) published in 2006 "confirmed that employers find it difficult to attract and retain skilled, adaptable, and flexible workforce" (cited in Martin and Bray 2011, 74). The World Bank in a study released in 2007 noted that "employers were not able to recruit qualified candidates in emerging skill areas such as in the use of ICTs" in the Eastern Caribbean (cited in Martin and Bray 2011, 74). The findings of the 2009 survey of the UWI graduates experience on labour market destination are also informative (see Box 3.3).

BOX 3.3: EXPERIENCES OF THE UWI GRADUATE IN THE LABOUR MARKET

Based upon surveys that solicited responses from four first degree cohorts - 2007, 2008, 2009 and 2011 at St Augustine, Mona and Cave Hill and the Open Campuses (2011 cohort only) - the findings revealed that the majority of graduates find employment at least one year after graduation. Despite that, there are still large numbers of unemployed graduates and the time series data suggest that there is a trend of decreasing employment rates moving from an overall rate of 87% in 2009 to 78% in 2013.

There is heavy reliance on public sector employment and limited private sector absorptive capacity in both Jamaica and Trinidad and Tobago while in Barbados employment in the private sector is higher than the public sector.

In the Trinidad and Tobago economy, levels of unemployment for university graduates are significantly higher than the national unemployment levels. Unemployment is highest in in Science, Agriculture and Humanities suggesting a mismatch between market demand and supply of these graduates.

In the Jamaica economy, there is limited capacity of the economy to employ graduates from Sciences, Social Sciences and Humanities. Over the period examined, a clear pattern of declining employment rates have been observed for graduates in these faculties.

Of great concern in the Barbados economy is the absorption of Sciences graduates which recorded employment rates of 71.4% in 2011 and 50% in 2013. In this regard, there is a need to critically examine the labour market employability of these graduates especially with the increase in tuition fees which would likely increase the debt burden of these graduates.

The majority of graduates not employed indicated that they were experiencing difficulties in getting employment due to lack of opportunities, lack of jobs related to their degree or lack of experience. Just over one third indicated that they were not employed because of further studies. Young and inexperienced graduates (under 30) were the hardest hit in terms of job opportunities and the situation seemed to have worsened over the observed period.

A significant minority of employed graduates reported that they were employed in low level jobs that require a minimum of secondary level education. A significant minority of graduates in Social Sciences and Agriculture and to a lesser extent Humanities are stuck in clerical or other lower level jobs. This level of underemployment revealed a "waste" of investment in higher education skills.

There is limited relationship between current job and area of study/skills acquired particularly in specific disciplines. Graduates from Social Sciences, Science and Humanities were more likely to say that their degrees were not related to their current jobs and their skills not being fully utilised.

Graduates are of the opinion that their ability to work effectively with modern IT Communication technology is not strong enough. Graduates feel that their innovative and entrepreneurial skills are not sufficiently developed. Social and political awareness is lacking in many graduates, particularly those in the area of Science and Technology.

Increasing number of graduates are enrolled in further studies. Shrinking employment prospects have left many graduates with no alternative but to try to ride out the recession by extending their studies. This trend masks extent of unemployment among graduates. However, a low percentage of graduates enrolled in research degrees

Many graduates are pursuing further studies outside UWI suggesting greater competition from other institutions for enrolling UWI graduates in their postgraduate programmes.

A large group of graduates indicated that UWI is not their first choice to do postgraduate studies for a number of reasons including 'program offered', 'program not offered online', 'programs are not marketable', 'bad experience' and 'poor quality teaching and learning environment'. A significant percentage of graduates now opting to work and study simultaneously.

An assessment of the results of the surveys indicate that there is a need to fundamentally enhance the employability skills/attributes of students which is a necessary ingredient in transforming the skilled workforce to be more innovative and entrepreneurial among other things that are critical to social and economic transformation.

(Source: UOPD. *Report On Recent UWI First Degree Graduate Experience Beyond Graduation – A Comparative Analysis Of Four Tracer Surveys Conducted In 2009,2010, 2011 And 2013 For UWI Campuses.* 2015, 7-10).

Graduation rates are often influenced by both the degree of access and the demand for higher skills in the labour market. Within the UWI, approximately 11 per cent of the new admissions for 2008/2009 academic year did not return to continue their studies for the 2009/2010 academic year (UOPD 2010a, 2), while an estimated 16 per cent of new admissions for the academic year 2009/2010 did not return to continue their studies for the following academic year (UOPD 2013, 8). When the 2008/2009 non-returnees were asked to give "the single most important reason for leaving", the top-five reasons were: (i) conflict between the demands of the job and University (13.4 per cent); (ii) health related problems (12.2 per cent); (iii) course/programme availability (11.6 per cent); (iv) made a decision to attend another university (9.9 per cent); and (v) a change in career plans (8.1 per cent) (UOPD 2010a, 5). For the 2009/2010 non-returnees, financial challenges (28 per cent); time management (24 per cent); unforeseen financial expenses (23 per cent); conflict between the demands of the job and University (22 per cent); and family responsibilities (20 per cent) were identified by respondents as among the top-five factors that impacted on their decision to leave the University (UOPD 2013, 22). A shift clearly took place between the 2008/2009 non-returnees where the major reasons for attrition were institutional and personal factors and 2009/2010 non-returnees the chief reasons were financial constraints and personal reasons. Nevertheless, the differing needs of part-time and full-time students or special student population (e.g. the differently- abled) need to be understood to address the problem of retention.

Students and researchers leaving their country of origin or residence in search of education and knowledge is not a new phenomenon. As noted earlier, global student mobility is increasing. Within the Caribbean region, student mobility has become popular as several island states encourage the movement of their students across international borders to pursue advanced studies. Governments have rationalised their funding of tertiary level education by way of reducing budget allocations to universities; designing specific scholarships for those students wanting to attend approved public or private institutions or making funding available for studies outside the Caribbean where it is perceived to be more affordable. In 2001, "there were more students from UWI-12 countries attending US universities than the UWI" (UWI 2012, UWI-12, 12). Data from the same Report (2012, 12-13) demonstrated that the number of students from UWI-12 countries at the UWI was 19,236 in 2000/2001 while 11, 472 were studying in the United States. This suggested a potential loss of 40 per cent (or 7,774 students) of the market. The vestiges of colonialism remain whereby access to tertiary education in the United Kingdom is still prized, while others have close ties to the United States that makes it easier for Caribbean nationals to gain access to education in that country (UWI 2012, UWI-12, 13). Further, the scholarship/grant programmes by European Union, Australia, Canada, China, Japan, and the United States have made the practice of leaving the Region for studies even more attractive.

One measure of the proportion of students abroad is the outbound mobility rate. Based upon available data it shows that Caribbean students demonstrate a strong tendency to study abroad (see Table 3.5). It could be a substitute for lack of domestic provision of tertiary education or availability of programmes in a particular field of study. Overall, Jamaica, Trinidad and Tobago, The Bahamas, Barbados, and Bermuda had the highest outbound students internationally. The

UIS (2015) data show that generally over 65 per cent of the outbound students were pursuing tertiary education in North America and Western Europe.

Table 3.5: Outbound Mobility rates for tertiary educated students										
	Total number of outbound internationally mobile tertiary students					Number of outbound internationally mobile tertiary students studying in North America and Western Europe				
Country	**2005**	**2007**	**2009**	**2011**	**2012**	**2005**	**2007**	**2009**	**2011**	**2012**
Antigua and Barbuda	602	630	670	622	552	356	334	316	299	267
Bahamas	2600	2611	2660	2521	2521	2314	2366	2388	2255	2250
Barbados	1663	1524	1395	1235	1139	1205	1085	941	801	727
Belize	796	752	882	837	761	796	752	882	837	761
Bermuda	1197	1270	1153	1221	1435	1170	1195	1130	1199	1198
British Virgin Islands	373	325	369	454	513	255	273	257	393	448
Cayman Islands	312	388	343	321	373	303	379	336	317	369
Dominica	808	723	784	743	765	481	451	420	380	396
Grenada	466	563	612	523	574	305	410	381	278	340
Jamaica	6728	6495	5858	4834	4262	5819	5369	4892	3933	3375
Montserrat	65	62	54	45	41	43	40	33	30	22
Saint Kitts and Nevis	462	556	563	468	483	290	370	374	277	314
Saint Lucia	1128	1274	1252	1389	1156	655	638	641	771	573
Saint Vincent and the Grenadines	677	802	874	838	799	289	282	279	237	204
Trinidad and Tobago	5236	5424	5563	5193	4970	4532	4702	4699	4222	3965
Turks and Caicos Islands	243	268	241	176	179	227	255	221	155	152

Source: UNESCO Institute of Statistics (2015) http://data.uis.unesco.org/.

For countries, where data were available, the inbound mobility rate shows the percentage of students who have crossed a national or territorial border for the purpose of education and are now enrolled outside their country of origin. As can be discerned from the data in Table 3.6, there is a lower rate of students arriving in the region to study. This requires institutional specialisation and differentiation by establishing educational and cultural niches that give the region an advantage.

Table 3.6: Total number of inbound international mobile students				
Country	**2007**	**2009**	**2011**	**2012**
Antigua and Barbuda		80	102	215
Barbados	890	1504	1714	
Bermuda		70	92	86
British Virgin Islands		247		
Cayman Islands	210			
Grenada		4235		
Saint Lucia	94	206	296	325

Source: UNESCO Institute of Statistics (2015) http://data.uis.unesco.org/.

The CARICOM Single Market and Economy (CSME) provides *inter alia* for the free movement of goods, services and skills between the CARICOM Member States. Under the CSME arrangements, a discretionary and phased approach to movement of labour has been adopted (see Box 3.4). Tewarie (2010, 6) made the point "that the free movement of skills will no doubt accelerate the growth of Tertiary Level Institutions (TLI) in the region - and it is inevitable that a global knowledge economy and new developments such as the EPA [Economic Partnership Agreement] will also have a positive impact on the growth of the tertiary sector and the knowledge sector generally."

BOX 3.4: CSME FREE MOVEMENT OF SKILLS

The free movement of skills entails the right to seek employment in any Member State and the elimination of the need for work permits and permits of stay.

Definition of Categories for free movement of skills:

- **Graduates** are persons who have obtained at least a Bachelor's Degree from a recognised university.
- **Media Persons** are persons whose primary source of income is drawn from media and media-related work or persons who are qualified to enter this field.
- **Artists** are persons who are active in or qualified to enter a particular field of art with the specific purpose to earn a living.
- **Musicians** are persons who are active in or qualified to enter a particular field of music with the specific purpose to earn a living.
- **Sportspersons** are persons who are active in or qualified to enter a particular field of sports with the specific purpose to earn a living as a professional or semi-professional.

(Source: Free Movement in the CARICOM Single Market and Economy (CSME) http://caricom.org/jsp/single_market/skill.jsp?menu=csme).

The first Caribbean Conference on Higher Education Conference (CCHE) discussed: (i) trends and perspectives of higher education in the Caribbean, (ii) quality assurance and accreditation, (iii) science, technology and innovation in the Caribbean, (iv) internationalisation and academic cooperation and (v) the revitalisation of the higher education system of Haiti led to the release of the Declaration of Paramaribo (2010), a call to action for CARICOM Member States, HEIs, and inter-governmental organisations. The Declaration also called for a redirection of the scope of mobility that is a shift from a principally South-North focussed movement to a South-South movement encouraging academic exchange and mobility (faculty, students, staff and leadership) within the LAC.

The issue of sustainable funding for tertiary education particularly for small states needs to be considered in the context of increasing social demand for higher education. This demand as well as the desire of countries to be part of the knowledge economy has led governments to invest in higher education. According to World Bank EduStats (2011, slide 15), between 2007 and 2012 countries on average spent 57.7 per cent of GDP per capita per tertiary student, while the LAC region spent on average 27.3 per cent per tertiary student as a percentage of GDP per capita for the same period, a difference of 30.4 percentage points. Jules (2010, n.p.) noted that Caribbean governments, nevertheless, spend a much larger percentage of public money on education than many developed countries and in most Caribbean countries educational expendi-

ture as a percentage of GDP is higher or on par with many OECD countries. Based on the data in Table 3.7, Barbados in 2005 spent 31.6 per cent of public expenditure on tertiary education which decreased marginally to 30.2 per cent in 2012. Jamaica in 2005 spent 22.1 per cent of public education expenditure on tertiary education which declined in 2012 to 17.6 per cent (UIS 2015).

Table 3.7: Public Expenditure On Tertiary Education as a Percentage of government expenditure on education, 2005-2012

Country	2005	2007	2009	2011	2012
Barbados	31.6	30.2	29.9		30.2
British Virgin Islands	34.2	33.1			
Jamaica	22.1	20.0	20.3	19.8	17.6
Saint Lucia			6.3	5.0	
Saint Vincent and the Grenadines	3.7	5.7	5.4		

Source: UNESCO Institute of Statistics (2015) http://data.uis.unesco.org/.

Bray (2011, 52) commented that higher education is a costly enterprise compared to primary and secondary education and as such, demands considerable resources. Also, discussing the cost of sustaining tertiary education was Tewarie (2011b, 235) who noted that "providing a full range of learning options and opportunities in small states can be very costly, and unit costs are likely to be higher than in countries with larger populations and higher rates of participation." The rising cost of tertiary education in the Caribbean as noted by Howe (2011, 25) is related to:

- The rapid increases in enrolment in tertiary education, and the increased costs associated with providing adequate physical space, increasing staff complements and improving student services, among other areas;
- Unit cost increases being related to improvements in compensation packages of faculty and staff, and the generally higher wage rates in the tertiary education sector;
- The rapid spread and use of new and often expensive technologies in education, plus the need for constant renewal as a result of the relatively short lifespan of these technologies;
- The need for tertiary institutions to be regularly changing or developing programmes and courses, to meet new industry imperatives including those related to the job labour market;
- The high capital costs of science and technology training and research.

As such, there is need to interrogate the returns on investment in tertiary education for the region. The rising costs are of particular concern given the tendency towards high dependence of public tertiary institutions on government direct funding. While "small states are often constrained in their access to both external and internal capital" including limitations in the number of private sector organisations, institutions are further limited "in the availability of wealthy alumni able and willing to be benefactors and in opportunities for income from contract research" (Tewarie 2011b, 235). As part of the response to the rising cost of tertiary education, Bary (2011, 52) suggested a clearly articulated formula for subsidies and fees, a balance between private and public sectors and a focus on the structures for efficient operation in order to avoid unnecessary costs. As small states try to achieve economies of scale and scope they can create multi-level institutions or multi-faceted institutions, engage in international recruitment, facilitate regional cooperation or operate as a distance education institution. For the

UWI, already a regional institution, it has evolved to embrace broader clienteles and modes of learning and adopted internationalisation as a strategy in the 2007-2012 and 2012-2017 Strategic Plans. Howe (2011, 24) and Jules (2010, n.p.) concur that the region's high spending was not commensurate with education outcomes as a result of inadequate accountability measures and inefficiencies. Howe (2011, 24) further suggested that it is conceivable that the "lack of realisation of the expected benefits of the high spending in part explains the reluctance of governments to shift resources away from other competing sectors of the economy for educational purposes."

In many small states tertiary education is free or subsidised which is becoming unsustainable especially, at a time when many countries are facing financial constraints. Tewarie (2011b, 242) noted that "expansion of tertiary access invariably means that tuition fees for an expanding number of students will have to be made available through some structured system." With regard to cost-sharing mechanisms it may be recalled that during the 1980s when Structural Adjustment Policies (SAPs) were pervasive in the region tuition fees were introduced. More recently, in the context of the limited fiscal space which many countries in the region operate the issue of funding tertiary education has arose. The Government of Barbados in being proactive commissioned a report on Tertiary Education Reform to Government which was prepared by Professor Hilary Beckles, PVC and Principal of Cave Hill Campus and others. The Report proposed a new funding model for tertiary education in which the State would continue to absorb 85 per cent of academic costs with the student covering 5 per cent ('social costs') and the remaining 10 per cent would come from the private sector. In fact, the Cave Hill campus introduced a three per cent amenities fee a few years ago which covers the cost comprehensive medical insurance, enhanced sporting facilities and the ability to travel across the globe participating in various events like debating. The five per cent fees will contribute to modernising the plant and to developing facilities for the students aimed at improving their experiences. This funding model of 85/5/10 is believed to be sustainable for at least ten to fifteen years. In considering options for cost-sharing underpinned by a range of initiatives such as saving incentives, investment funds through which grants and scholarships, subsidies are provided, or creating education loans and taxation systems, serious consideration must be given to the broader implications for access, equity and achievement of national and regional development goals (see Box 3.5).

BOX 3.5: EXAMPLES OF HIGHER EDUCATION FINANCING INITIATIVES

Cost-sharing can take the form of: (i) introduction of user fees or user charges to recover expenses associated with such services as student housing and health services which are normally subsidised by the state; (ii) implement a fee, which is not called tuition, for the majority of students; (iii) introduction of tuition fees where none previously existed, or sharp increases in tuition fees; (iv) reduction in the amount of public funds allocated to grants, allowances or tax benefits to families, and emphasis on encouraging students to take loans; (v) increases in interest rates on student loans; and (vi) capping enrolments of public tertiary education institutions as a way of controlling costs. Internationally, many institutions and countries, both developed and developing, have identified solutions to the funding of higher education. The examples below illustrate and focus on elements of some of these tertiary education financing initiatives which may be relevant to the Caribbean context.

Example 1: Savings and Tax Credit Credits Schemes (Canadian Model)

One of the cornerstones of the Canadian approach to funding tertiary education has been to put greater emphasis on incentive schemes focussed on getting families to begin saving as early as possible for their children's tertiary education, so as reduce the levels of loans they may need to take later.

(a) Registered Education Savings Plans (RESP)

The registered education savings plan is a tax sheltered investment mechanism designed to help parents deal with the reality of the steadily rising cost of tertiary education by encouraging them to start saving for their children's education at a very early age. This mechanism enables parent to develop significant savings until the child is ready for tertiary education from around age 18.

(b) The Canada Education Savings Grant (CESG)

The Canada Education Savings Grant is a complimentary mechanism to the RESP which involves the government providing matching funds to help the RESP grow faster.

(c) The Canada Learning Bond (CLB)

The Canada learning bond is an additional grant especially targeted at lower income families and children to help them save for their children education. Measures are also put in place to have unused savings from the Registered Education Savings Plan interfaced with the country's Registered Retirement Savings Plan (RRSP).

Example 2: Education Investment Funds and Endowments

Education development funds represent another innovative type of mechanism which can be used to help stimulate and provide investments in any level of education.

(a) The Australian Investment Fund (EIF)

The Fund's primary aim is "to build a modern, productive, internationally competitive Australian economy by supporting world-leading, strategically-focussed infrastructure investments that will transform Australian tertiary education and research". The EIF funds projects "that create or develop significant infrastructure in higher education institutions, research institutions and vocational education and training providers", with the goal of: (i) transforming Australia's knowledge generation and teaching capabilities; (ii)boosting participation in tertiary education; (iii) positioning Australia to meet domestic skills needs now and into the future; (iv) enhancing Australia's innovation capacity; (v) invigorating the growth of Australia's research capabilities; and (vi) enhancing Australia's international competitiveness in education and research.

(b) The Australian Rural Tertiary (Education) Hardship Fund

This fund aims to provide help to disadvantaged students from rural areas who might otherwise not be able to access tertiary education. Its main objectives are to: (i) increase higher education participation rates of rural and regional students and (ii) contribute to the Government's target of 20 percent low socioeconomic status undergraduate enrolments in higher education by 2020.

(Source: Glenford Howe Transforming Tertiary Education in the Caribbean: Imperatives for a Regional Tertiary Education System (RTES) and Council (RTEC). A Paper Prepared for the CARICOM Secretariat. 2011, 33-36).

3.4. SCOPE OF THE TERTIARY EDUCATION SYSTEM

Tertiary education in the Caribbean has to a large extent been the domain of public institutions although over the last ten years private providers have become more widespread and important players in the tertiary education landscape providing more choices of programmes to students. Borrowing from Tewarie (2010, 2), it is worth noting that the development of tertiary education in the Caribbean post-1980s was aided by: (i) the global liberalisation of education, (ii) the growing momentum for democratisation of tertiary education in the region as manifested by increasing demands for access by regional governments and (iii) the growing market demand as the information age became a reality and as the knowledge economy began to evolve and skilled, knowledge workers became essential to building a competitive regional economy. The implementation of the GATS saw several CARICOM Member States making commitments in education, training, and research and development in a range of activities and at various levels in 1994.[2] While Barbados and many Eastern Caribbean states adopted a conservative approach to liberalising their services in trade, Jamaica and Trinidad and Tobago opened up more of their respective markets to competition when compared to their CARICOM counterparts (Beckles 2005, 11).

The tertiary education community is now characterised by a plurality of public and private institutions providing a wide array of tertiary education programmes through different modalities of learning and catering to diverse student and workforce needs (see Table 3.8). It may be further argued that considerable diversity exists within the sector as it relates to the characteristics such as size, profile and mission between institutions within the system. This growth of HEIs took place in a "sometimes chaotic and unplanned way leading to unnecessary duplication, uncertain quality control, inefficient linkages between education programmes and societal needs, variation in policies with respect to financing and insufficient attention to the roles various sectors of societies must play in such financing (Harris 2010, 6-7). These have now become the challenges that face the sector demanding a coordinated response at both national and regional levels. Hence, the call for a tertiary level education system for the region.

The public tertiary education landscape is characterised by national universities, community colleges and the regional university, the UWI. States embarked on the creation of national universities which may be seen as an expression of national aspirations and sovereignty and a means of offering niche programmes which are of strategic importance to national demand and catering to social demand. National universities/colleges have been created through the amalgam of existing HEIs as in Belize (University of Belize), Jamaica (University of Technology), Guyana (University of Guyana), Trinidad and Tobago (University of Trinidad and Tobago) and The Bahamas (University of the Bahamas). This approach to merge small TEIs in order to make larger bodies was seen as the best way to rationalise the educational system and resources thus making it more efficient and ensuring that it responds adequately to the needs of the state. Even in countries where campuses of the regional university exist such as Jamaica and Trinidad and Tobago, the governments established national universities in 1995 and 2004, respectively. In some of the territories of the UWI it has also become costly to finance a growing number of students at the regional university. This, as Bary (2011, 92) noted, combined with the "percep-

tions of polarisation of benefits towards campus territories and unequal shares of students and fees, has fuelled the idea of full-fledged national universities."

Table 3.8: Selected Higher Education Institutions In The Anglophone Caribbean			
Country	**Institution**	**Public/Private**	**Level of Programmes Offered**
Barbados	Barbados Community College	Government	UG/GR (1 graduate programme)
	Erdiston College	Government / Regional	UG / GR
	Samuel Jackson Prescod Polytechnic	Government	UG / GR
	UWI, Cave Hill Campus	Regional	UG/GR
Belize	Muffles Junior College	Government	UG
	Sacred Heart Junior College	Government /Private	UG
	Belize Adventist Junior College		UG
	Galen University	Private	UG/GR
	Central American Health Sciences University	Government	UG
	Medical University of the Americas	Private	UG/GR
	University of Belize	National	UG
	UWI Open Campus	Regional	UG
Dominica	Dominica State College	Government /National	UG
	Ross University School of Medicine	Private	UG/GR
	Institute of Tropical Marine Ecology	Private	UG
	UWI Open Campus	Regional	UG
Grenada	T.A. Marryshow Community College	Government	UG
	St. George's University	Private	UG/GR
	UWI Open Campus	Regional	UG
Jamaica	Mico Teachers' College	Public	UG/GR
	Clarendon College	Public	UG
	Portmore Community College	Public	UG
	Montego Bay Community College	Public	UG
	University College of the Caribbean	Private	UG/GR
	Northern Caribbean University	Private	UG/GR
	University of Technology	Public	UG/GR
	UWI, Mona Campus	Regional	UG/GR
St. Lucia	Sir Arthur Lewis Community College	Public	UG
	UWI Open Campus	Regional	UG/GR
Trinidad & Tobago	School of Accounting and Management	Private	UG/GR
	School of Business and Computer Studies	Private	UG/GR
	Cipriani College of Labour and Co-Operative Studies	Public	UG
	College of Science, Technology and Applied Arts of Trinidad and Tobago	Public	UG
	CTS College of Business and Computer Science Ltd	Private	UG/GR
	Trinidad and Tobago Hospitality and Tourism Institute	Public	UG
	University of Trinidad and Tobago	Public	UG/GR
	University of the Southern Caribbean	Private	UG/GR

Source: Adapted from Bhoendradatt Tewarie. 2010. Concept Paper for the Development of a CARICOM Strategic Plan for Tertiary Education Services in the CARICOM Single Market and Economy (CSME). 2010, 25-27.
Note: UG – Undergraduate; PG- Postgraduate

As a step towards national universities several Caribbean states adopted the community college model as in Antigua and Barbuda, Dominica, Grenada, St. Vincent and the Grenadines and Ja-

maica. This multiplicity of HEIs in the Caribbean has led to articulation agreements between some community colleges and the UWI in 2+2 arrangement (i.e. two years leading to an associate degree followed by another 2 years leading to a full degree). States in adopting these approaches towards rationalisation should proceed cautiously taking into consideration the basic criteria for the conversion of community colleges into universities or the linkages between universities and community colleges (Greene 2010, n.p.). Also, collaboration among HEIs should complement rather than duplicate offerings. The presence of numerous off-shore institutions originating in Canada, Europe and the United States providing access to tertiary education through fully online programmes or in partnerships with local institutions suggest particular attention should also be given to the role of offshore higher educational institutions and ensuring that their objectives are compatible with the national or regional vision (Greene 2010, n.p.). This led Tewarie (2010, 11) to observe that while the tertiary education sector is expanding in response to increasing demands for an ever-widening range of services and products, it continues to be characterised by fragmentation, insufficient resources, inadequate cooperation among its partners and several other factors that militate against its effectiveness. Ali (2007, 5-6) also identified the super challenge for the tertiary education sector as curriculum and pedagogical issues as well as governance, management and regulatory issues aimed at stimulating a productive, well-regulated self-sustaining and manageable tertiary education sector. Tewarie (2010, 16) therefore recommended that a policy framework be developed and implemented based on the following specific policy actions:

- Establish a legal framework to achieve coherence and build sustainability, including a regional accreditation and qualifications regime;
- Align policy with strategy to CSME framework and objectives;
- Determine minimum targets for the region;
- Establish a framework for sustainable funding for a regional tertiary sector;
- Establish a framework for education and training for teachers in the tertiary sector and for the administrative, managerial and leadership resources which are required to strengthen the sector, and build sustainable capacity and momentum;
- Determine key strategic actions over a specified timeframe to support developmental objectives of the sector.

The idea of a tertiary education system through strengthening the partnership between the UWI and other TLIs was articulated in the *UWI Strategic Plan, 1997-2002.* The *Plan* noted the University would do all that is necessary "to enable the TLIs to operate as effective functional links in a seamless education system in the Region" and also the "UWI is prepared to operate as the hub of the regional tertiary education system." (UWI Strategic Plan 1997-2002.15).

Regional cooperation in higher education is one of the features of the Anglophone Caribbean that can be strengthened by way of student and staff mobility[3], identifying equivalencies of degrees and titles, and establishing cooperation agreements, observatories of good practices and university research networks. In 2012, C@ribNet was established by CKLN connecting all CARICOM countries and which connected CARICOM countries to the world's research and education community, through AMPATH in North America, through GÉANT in Europe and Red-

CLARA in Latin America. Financed by the European Union (EU), Inter-American Development Bank (IADB) and World Bank, the UWI and the Commonwealth of Learning (COL) are among the institutional partners. Among the priority applications to be implemented is a regional digital library, a shared student information system for tertiary institutions along with other applications supporting issues such as climate change, disaster management, crime and security, telehealth, culture. National research and education networks (NRENs)[4] are in the process of being formed or are already established in Barbados, Belize, Jamaica Trinidad and Tobago and the Eastern Caribbean. The idea is to connect all post-secondary, tertiary level, research institutions and agencies and other stakeholders so they could access course materials, complex data sets and computing facilities for training and educational purposes.

BOX 3.6: INTERNET AND RESEARCH WORK CONNECTIVITY

During 2011/2012 the Cave Hill Campus signed an agreement with the Latin American Universities Research and Education Network (LAUREN) for provision of connectivity to the US research and education network, Internet2. The service also includes commodity Internet and an increase in the overall from 15 Mpbs in 2008 to 155 Mpbs. The LAUREN connection is supplemented by local Internet Services Providers with a total bandwidth of 56Mpbs.

(Source: *The University of the West Indies Cave Hill Annual Report to Council 2011/2012.* UWI.2013, 26)

There is need for a more structured and systematic approach that starts with the creation of a web of institutions held together by formal and informal rules and an overseeing body that offers policy guidance and assures accountability. To this end, the proposal for a coherent and structured regional tertiary education system was reiterated by the UWI in 2010. The regional system would be matched to some degree by similar national systems in countries with large and diverse tertiary sectors. Such a system would ideally:

- enable a more structured enunciation of the expectations of the tertiary education sector, provide policy guidance;
- ensure adherence to basic standards;
- enhance quality assurance; and
- facilitate greater coordination, harmonisation and rationalisation of structures and processes.

As the region continues to grapple with the idea of creating a formalised tertiary education system, Jamaica and Trinidad and Tobago have established Commissions on Tertiary Education.

The unique characteristics of small states in particular, their economic and social structures, suggest that serious consideration should be given to development of human capital linked to the needs of the domestic, regional and international labour market. In that regard, serious consideration will have to be given to the absorptive capacity of the domestic labour market and the migration rate which would require putting in place systems for the portability of qualifications. Further, the rapid expansion of the higher education sector also created an environment in which there was a plethora of qualifications and differences in standards which has im-

plications for student mobility as it does for labour mobility. As part of the regional cooperation thrust discussions are also underway about the development of a CARICOM Qualifications Framework (CQF) that would facilitate certificate recognition based on agreed standards to support mobility across and upwards in the tertiary education sector.

3.5. CONCLUSION

Across the Caribbean region, the expansion of HEIs has facilitated the development of human capital. HEIs are now operating in an environment of intense competition. Such profound changes invariably impacted on the dimensions of operations of HEIs and engendered a greater commitment to strategic planning. The ICT revolution also provided for increased access and can be a potential means for more effective and efficient management of resources. By 2008 with the onset of the financial crisis, HEIs had to function within a new normalised situation whereby funding was not at the levels it was previously, forcing countries to consider cost-sharing mechanisms.

In the region, the increasing calls for improved governance and financial viability of institutions suggest that the UWI will be forced to contend with issues of accountability, transparency, financial sustainability, a more public presence of the university in supporting national and regional aspirations and change in the nature of staff and students that will impact on teaching and learning. By that token, Caribbean HEIs are expected to demonstrate greater institutional autonomy, greater system differentiation, strengthened governance, and mechanisms for quality assurance. The Caribbean's higher education system not only has to effectively contribute to the training and retraining of citizens in a fast pace changing knowledge based society and economy but also to widening the social dimension and ensuring the work-readiness of the learner. They are thus expected to create a more flexible and responsive system of university teaching and research that will contribute increasingly to national and regional innovation capacities, productivity gains, and economic growth.

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[1] The 2014 HDI introduces a system of fixed cutoff points for the four categories of human development achievements. The cutoff points (COP) are obtained as the HDI values calculated using the quartiles of the distributions of component indicators. The resulting cutoff points for the country grouping are: Very high human development COP: 0.800; High human development COP: 0.700 and Medium human development COP: 0.550. Source: UNDP. *Human Development Report 2014Sustaining Human Progress Reducing Vulnerabilities and Building Resilience. Technical note 1. Human Development Index.* 2014.2. http://hdr.undp.org/sites/default/files/hdr14_technical_notes.pdf.

[2] Hilary Beckles (2005) identifies the number of commitments to liberalise the services made by CARICOM Member States (Antigua and Barbuda, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, St Kitts and Nevis, St Lucia, St Vincent and the Grenadines, Suriname, and Trinidad and Tobago) at the Uruguay Round. He notes that commitments were made in range of activities and at various levels. For instance, Antigua and Barbuda and Jamaica, for example, made commitments in such sectors as research and development services. Jamaica also made unconditional commitments in the areas of primary, secondary and higher education services. Furthermore, commitments were made by Trinidad and Tobago, and most other countries with respect to the professional services such as engineering, medical and dental services, accounting, architectural services and legal services (Beckles 2005). These commitments were within areas generally understood as falling within the overall remit of the UWI as the regional University (Beckles 2005). Carmen García-Guadilla (2002) further notes Jamaica and Trinidad and Tobago have included commitments to higher education under GATS. More specifically, Jamaica, made full commitments for cross-border supply of services (Mode 1), consumption abroad (Mode 2) and commercial presence (Mode 3).

[3] There is a cost associated with student and staff mobility and consideration has to be given to who bears the cost- is it the individual, the host or receiving institution or is it shared? Additionally, consideration may be given to how ICTs can contribute to reduced need for physical mobility and any associated cost benefits.

[4] As a high performance communications network owned and operated for and by the education community of a country National Research and Education Networks (NREN) should be seen as building blocks of research and education connectivity. In the context of the new paradigm for tertiary education delivery (increasing reach and quality whilst reducing costs) NRENs can (i) support community of interests working

together on related educational themes; (ii) education through e-learning and virtual classroom; (ii) collaboration between institutions at the national, regional and global levels; (iii) facilitate the creation of centres of excellence; (iv) facilitate the sharing expensive educational resources across institutions; (v) support collaborative research; (vi) present opportunities for innovation; (vii) support functional cooperation; and (viii) contribute to the overall cost reduction of provisioning education and research in a country. There are over 150 NRENs worldwide spread across Africa, Asia-Pacific, North America, Europe, Latin America and the Middle East and Arab states. See Ken Sylvester, The Caribbean's Regional Research and Education Network, Paper presented to the Twentieth-fourth meeting of COHSOD Guyana, May 2013.

CHAPTER FOUR: REGIONAL SOCIOECONOMIC HIGHLIGHTS

The impact of the financial crisis of 2008 was severe on the Caribbean. The "global economic recovery is still largely on track but significant vulnerabilities remain because of sovereign debt problems in Europe, an unfinished financial reform agenda and the disparities in growth between developed market economies and emerging and developing economies" (CCMF December 2011, 1). Global economic growth, as noted by the CCMF Report (December 2011, 1), "surged to 5.1 per cent in 2010 but this was due in large part to high growth in emerging and developing economies since growth in developed market economies was much slower." Further, in many developed market economies unemployment remains high and there are significant sovereign debt problems and banking sector weaknesses, especially in some European countries. As can be expected, these international economic and financial developments have deep effects on the Caribbean economies because of their highly open nature.

An ECLAC Report indicated that some Caribbean countries "were able to withstand the shock better than others and a few, such as, Guyana and Suriname benefited from the improved commodity prices, which helped to stimulate output, raise revenues and create better fiscal outcomes" (ECLAC 2011a, 5). Many others carried large balance of payments deficits which made any sustained fiscal stimuli impracticable. Further, the large public debt accumulated by many Caribbean countries reduced the fiscal space and dampened fiscal spending especially in the face of a recession. Antigua and Barbuda and Jamaica received inflows under the International Monetary Fund (IMF) agreements for stabilisation which were accompanied by fiscal consolidation packages (ECLAC 2011a, 7). The pursuit of fiscal consolidation strategies by packages by both Antigua and Barbuda and Jamaica would likely impact on spending and further affect contributions to regional institutions like the UWI. As Caribbean economies are strongly linked to North America, United Kingdom and Europe through a heavy concentration of trade, remittance flows and Foreign Direct Investment (FDI), the recession in these developed economies had a direct impact on the Caribbean especially through the decline in tourism receipts and capital inflows (ECLAC 2011a, 8). Consequently, "the recovery of the Caribbean will be slow, and will depend heavily in the medium term, on the recovery of the United States and Europe and the restructuring necessary to create greater resilience to external shocks" (ECLAC 2011, 8).

Economic slowdown has been rapidly transmitted through international trade in goods and services, tourism, international business, commodity and energy prices, capital flows (mainly from real estate development) and remittances. However, the extractive resource dependent economies of Trinidad and Tobago, Suriname, Guyana and Jamaica experienced mixed fortunes as a result of buoyant commodity prices (CCMF December 2011, 1). These economic uncertainties impacted not only on the public and private sector but also on households. As the authors of the UWI-12 Recruitment Report (UWI 2012, 7) noted the adverse economic trends have also impacted Caribbean societies by way of "complicating unfinished projects of empowerment, social justice, crime, violence, gender relations and poverty reduction and health risk reduction

of significant sections of the populations." As the recession continues, austerity measures are being introduced with reductions in social spending targeted for education and health which have also affected the UWI as a regional institution. This chapter summarises current global economic developments and explores the regional economic situation for 2011/2012 and 2012/2013 and provides a summary outlook for 2014.

4.1. GLOBAL ECONOMIC DEVELOPMENT

As noted in the CCMF Report (December 2012, 8), "the global economy continued to experience the post-crisis pattern of weak growth with a propensity for reversals in 2012." Global economic growth had deteriorated thereby leading the IMF to reverse global growth projections downward for many developed economies. To that end, global growth prospects was adjusted by the IMF to reflect setbacks in the global economic recovery - "forecasts for 2013 growth have been revised from 2.0 per cent down to 1.5 per cent for advanced economies, and from 6.0 per cent to 5.6 per cent for emerging and developing economies" (IMF October 2012, xv). The major causes of uncertain and restricted economic growth in 2012 included:

> *sovereign debt, fiscal and banking sector problems in Europe related in part to EMU [Economic Monetary Union] design flaws, an acrimonious debate on fiscal consolidation in the US which has served to increase uncertainty and increased volatility in financial markets and slowing growth in important emerging markets because of decreased demand from developed economies and capacity constraints (CCMF December 2012, 8-9).*

Global growth slowed from 5.1 per cent in 2010 to 3.0 per cent in 2013 as did growth in emerging and developing economies which averaged 6.2 per cent in 2011 but fell in 2013 to 4.7 per cent (CCMF December 2012, 10; and CCMF June 2014, 8). In both the advanced economies group and the emerging and developing countries group, growth rates also slowed between 2010 and 2013 (see Table 4.1). Overall, the "global growth prospects are expected to improve to 3.6 per cent in 2014 and to 3.9 per cent in 2015" (CCMF June 2014, 7).

Table 4.1: Global Economic Growth, 2010-2015

Year	World	Advanced Economies	United States	Euro Area	Japan	Emerging And Developing Economies	Latin America	Brazil	China	India
2010	5.1	3.0	2.4	2.0	4.5	7.4	6.2	7.5	10.4	10.1
2011	3.8	1.6	1.8	1.4	-0.8	6.2	4.5	2.7	9.2	6.8
2012	3.2	1.4	2.8	-0.7	1.4	5.0	3.1	1.0	7.7	4.7
2013	3.0	1.3	1.9	-0.5	1.5	4.7	2.7	2.3	7.7	4.4
2014 *	3.6	2.2	2.8	1.2	1.4	4.9	2.5	1.8	7.5	5.4
2015*	3.9	2.3	3.0	1.5	1.0	5.3	3.0	2.7	7.3	6.4

Source: *Caribbean Economic Performance Report*, CCMF, November 2012, 10. http://www.ccmf-uwi.org/files/publications/economic_report/cepr_2012-12.pdf, *Caribbean Economic Performance Report*, CCMF, June 2014, 8. http://www.ccmf-uwi.org/files/publications/economic_report/cepr_2014-06.pdf.
Note: * projected growth rates.

4.2. CARIBBEAN KEY ECONOMIC INDICATORS

The global economic downturn following the crisis that broke out in 2009 began to drag down economic activity in LAC in the second half of 2011 (ECLAC 2012, 12). As indicated in the Regional Outlook Western Hemisphere (IMF April 2012, 13) "the Caribbean region finally turned the corner in 2011 after a long recession, although high debt levels and tourism dependence continue to constrain the outlook".

4.2.1. Economic Growth

As a reflection of global economic uncertainties, data contained in the *Economic Survey of Latin America and the Caribbean* (ECLAC 2012, 12) showed that GDP growth in the region was muted (see Table 4.2). Overall, GDP growth for the Caribbean moved from 0.2 per cent in 2010 to 2.0 per cent in 2013. As was noted in the 2012 ECLAC Report (13) "countries, [that are] natural resource-dependent economies, like Suriname and Guyana, performed better than those that depend chiefly on tourism." Tourism dependent economies are generally dependent on developed countries as their principal export destination and can link their lower levels of economic growth to the weak economic performance of developed countries. Belize, like its South American counterparts – Guyana and Suriname, experienced modest growth. The Eastern Caribbean countries experienced negative, zero or low growth rates in 2010 and 2011 with modest recovery by 2013, while tourism-intensive countries such as Barbados and Jamaica showed lower GDP growth rates for the same period (see Table 4.2).

Table 4.2 Percentage Variation In Total Gross Domestic Product (% on the basis of dollars at constant 2005 prices), 2010-2013

Country	2010	2011	2012	2013
Antigua and Barbuda	-7.1	-2.8	2.3	2.4
The Bahamas	1.0	1.7	1.8	3.0
Barbados	0.2	0.6	0.2	0.7
Belize	3.9	2.3	5.3	2.7
Dominica	1.2	1.0	-1.5	1.4
Grenada	-0.4	1.0	-0.8	1.2
Guyana	4.4	5.4	4.8	4.8
Jamaica	-1.5	1.3	-0.3	0.5
Saint Kitts and Nevis	0.2	1.7	-1.1	2.5
Saint Lucia	0.2	1.4	-3.0	2.7
Saint Vincent and the Grenadines	-3.4	-0.7	1.5	1.1
Suriname	4.1	4.7	4.4	4.5
Trinidad and Tobago	0.2	-2.6	1.2	2.0
Caribbean	0.2	0.1	1.2	2.0

Source: Economic Commission for Latin America (ECLAC) *Economic Survey of Latin America and the Caribbean* 2013, 22. http://repositorio.cepal.org/bitstream/handle/11362/1086/S2013575_en.pdf?sequence=89.

The 2014 ECLAC (13) cautioned that while the "world economy is expect to expand slightly more in 2014", "the region will not match the growth rate of 2.5 per cent recorded in 2013." Further, the "English- and Dutch-speaking Caribbean economies will grow by 2.0% on average,

which —while a fairly low rate— reflects that growth is picking up slowly, continuing the trend of the past few years" (ECLAC 2014, 14).

4.2.2. Gross Public Debt

For small vulnerable states like the Caribbean gross public debt remains a challenge as it does for the advanced economies of the world where unprecedented government intervention has elevated public debt considerably. In the Caribbean, many countries have very high debt-to-GDP ratios and Jamaica and Saint Kitts and Nevis indebtedness still exceeds 100% of GDP (ECLAC 2013, 54, 147). The ECLAC Report (2013, 54) also noted that "the Caribbean countries (especially those that export raw materials, such as Belize, Guyana, Suriname and Trinidad and Tobago) have kept their fiscal deficit and public debt at sustainable levels.

A public debt ratio of over 90 per cent of GDP is considered exceptionally high and data from the *IMF World Economic Outlook Database* (October 2014, n.p.) revealed that four countries in the Caribbean hold exceptionally high public debt for the period 2007 to 2013: Antigua and Barbuda, Grenada, Jamaica, and St. Kitts and Nevis (see Table 4.3). Another seven countries have heightened debt vulnerabilities averaging in the range of 50 to 90 percent of GDP between 2007 and 2013: The Bahamas, Barbados, Belize, Dominica, Guyana, St. Lucia and St. Vincent and the Grenadines. Suriname and Trinidad and Tobago debt-to-GDP ratios was 30 per cent and below though it is to note it for Suriname public debt is increasing. The average debt burden of the thirteen Caribbean countries rose from 67.3 per cent in 2007 to 78.9 per cent in 2013.

Table 4.3: Gross Public debt % of GDP, 2007-2013

Country	2007	2009	2011	2012	2013
Antigua and Barbuda	79.2	102.5	92.4	87.1	94.3
The Bahamas	30.0	38.4	44.9	48.4	56.3
Barbados	51.8	63.2	76.5	86.2	97.2
Belize	86.0	83.7	79.4	75.1	75.8
Dominica	73.0	64.2	69.7	73.3	75.1
Grenada	89.5	91.7	100.9	103.1	109.8
Guyana	59.9	64.8	65.2	62.6	56.9
Jamaica	114.5	141.9	141.7	146.5	141.6
St. Kitts and Nevis	135.0	144.3	151.7	137.3	103.1
St. Lucia	56.8	59.8	67.0	74.1	79.6
St. Vincent and the Grenadines	55.5	63.4	67.7	72.2	74.0
Suriname	17.4	15.6	20.4	22.2	29.8
Trinidad and Tobago	26.1	30.6	33.4	37.2	30.7

Source: International Monetary Fund, World Economic Outlook Database, October 2014. http://www.imf.org/external/pubs/ft/weo/2014/02/weodata/weorept.aspx?sy=2007&ey=2014&sort=country&ds=.&br=0&pr1.x=90&pr1.y=4&c=311%2C336%2C313%2C316%2C343%2C339%2C361%2C321%2C362%2C364%2C366%2C369%2C328&s=GGXWDG_NGDP&grp=0&a=.
Note: shaded cells reflects IMF staff estimates.

In 2012, many Caribbean governments faced challenges in generating revenue to meet their internal and external requirements. Most of the countries reported increases in public domestic

debt and public external debt in 2012 (CCMF June 2013, 44). At the end of 2013, the "expansion of external debt was the main source of the overall debt increase" in Barbados, Belize, ECCU[1], and Jamaica while the ratio of domestic debt to GDP increased in The Bahamas, Barbados, Jamaica and Suriname (CCMF June 2014, 4, 54, 55).

4.2.3. Inflation

According to CCMF "inflation gradually slowed in the Caribbean during 2012" (June 2013, 23) but as "net importers of food and fuels, the ….Caribbean economies feel the impacts of rises or falls in international food and fuel prices on domestic prices more acutely than other countries" (ECLAC 2012, 27-28). The Report also noted that "falling world energy prices moderated the rate of inflation" (CCMF, June 2013, 6). Overall, inflationary pressures in the CARICOM economies eased slightly in the year 2012 and 2013. However, Trinidad and Tobago and Jamaica were the only economies to report an increase in inflationary pressure for 2012 (CCMF, June 2013, 6). Jamaica continued to experience inflationary pressure in 2013.

ECLAC (2013, 39) noted that "regional 12-month inflation to May 2013 stood at 6%, up from 5.5% in December 2012 and slightly higher than the 5.8% posted for the 12 months to May 2012." The CCMF Report (June 2014, 22) also noted that average inflation rates for 2013 subsided substantially which was due to falling world prices for food and energy (CCMF, June 2014, 3). Table 4.4 shows that for the period 2007 to 2013 inflation in the thirteen countries with the exception of Jamaica fell.

Table 4.4: Inflation % Change, 2007-2013

Country	2007	2009	2011	2012	2013
Antigua and Barbuda	1.4	-0.6	3.5	3.4	1.1
The Bahamas	2.5	1.9	3.2	2.0	0.4
Barbados	4.0	3.7	9.4	4.5	1.8
Belize	2.3	-1.1	1.7	1.2	0.5
Dominica	3.2	0.0	1.3	1.4	-0.1
Grenada	3.9	-0.3	3.0	2.4	0.0
Guyana	12.2	3.0	5.0	2.4	2.2
Jamaica	9.2	9.6	7.5	6.9	9.4
St. Kitts and Nevis	4.5	2.1	7.1	1.4	0.7
St. Lucia	2.8	-0.2	2.8	4.2	1.5
St. Vincent and the Grenadines	7.0	0.4	3.2	2.6	0.8
Suriname	6.6	0.0	17.7	5.0	1.9
Trinidad and Tobago	7.9	7.6	5.1	9.3	5.2

Source: International Monetary Fund, World Economic Outlook Database, October 2014. http://www.imf.org/external/pubs/ft/weo/2014/02/weodata/weorept.aspx?sy=2007&ey=2014&sort=country&ds=.&br=0&pr1.x=90&pr1.y=4&c=311%2C336%2C313%2C316%2C343%2C339%2C361%2C321%2C362%2C364%2C366%2C369%2C328&s=GGXWDG_NGDP&grp=0&a=.
Note: shaded cells reflects IMF staff estimates.

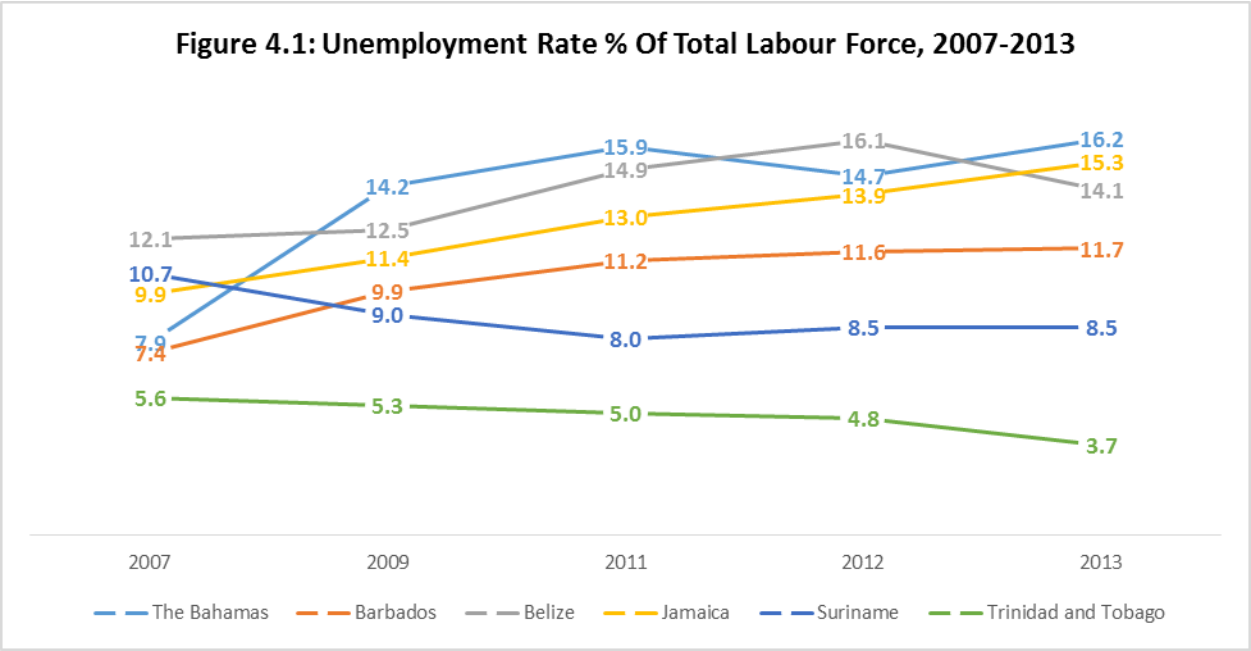
Although Trinidad and Tobago recorded a 9.3 per cent inflation in 2012, this, ECLAC (2012, 27-28) noted "reflected rapidly rising food prices, owing to the impact of poor climate conditions on local food production combined with rising international grain prices, which represent a sig-

nificant component of the country's food basket." Most of the declines in inflation rates reported by countries such as Barbados, Guyana, and St. Vincent and the Grenadines were modest. However, Suriname had the greatest decrease during the period, from 17.7 per cent in 2011 to 1.9 per cent in 2013, mainly as a result of lower price inflation for food and fuels.

4.2.4 Unemployment

From the data available from IMF, labour markets in most of the Caribbean economies continued to be characterised by high levels of unemployment. Available data showed that the unemployment rates for most countries were above ten per cent and between 2007 and 2013 unemployment rate slowly rose for Barbados, The Bahamas, Belize, and Jamaica while unemployment declined for Suriname and Trinidad and Tobago (see Figure 4.1).

Figure 4.1: Unemployment Rate % Of Total Labour Force, 2007-2013



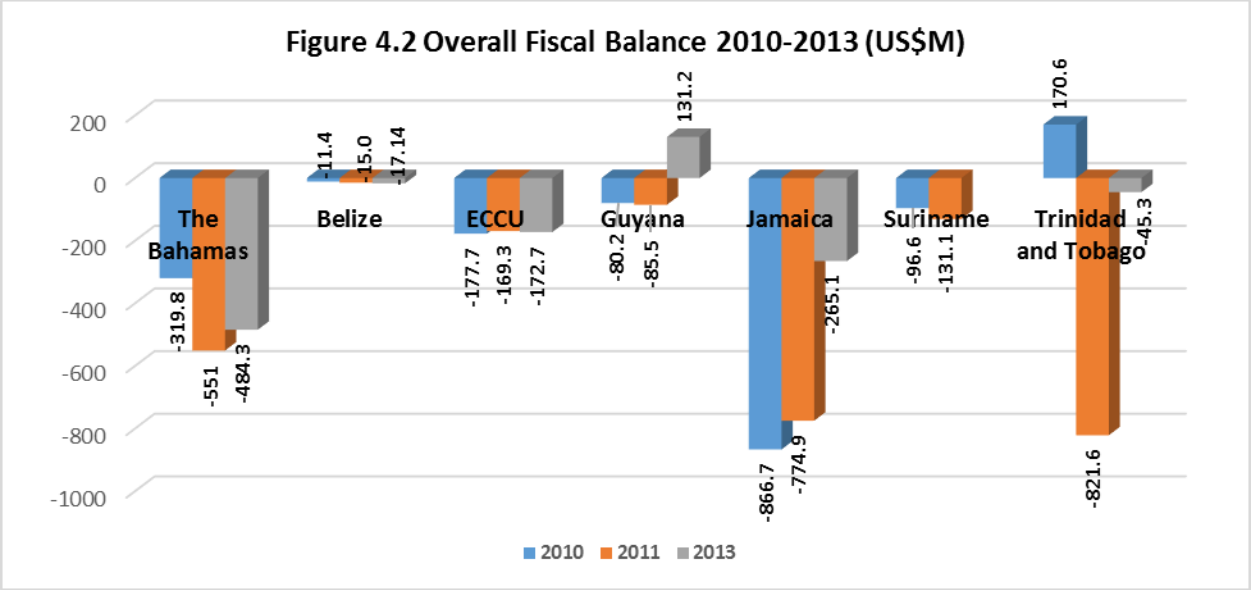
Source: International Monetary Fund, World Economic Outlook Database, October 2014. http://www.imf.org/external/pubs/ft/weo/2014/02/weodata/weorept.aspx?sy=2007&ey=2014&sort=country&ds=.&br=0&pr1.x=90&pr1.y=4&c=311%2C336%2C313%2C316%2C343%2C339%2C361%2C321%2C362%2C364%2C366%2C369%2C328&s=GGXWDG_NGDP&grp=0&a=.

The reasons for the relatively high unemployment rates relate to the "slow-paced growth reported in most economies is the primary reason for the continued high levels of unemployment in the CARICOM region" (CCMF June 2014, 26-27). For instance, the Bahamian domestic economy remains challenged and this has adversely affected the employment prospects for many Bahamian workers, while the "labour markets in Barbados are currently anxiety-filled since there is a mandate by the Barbados government to reduce its public sector wage bill by 2017" and thus, contributing to high level of uncertainty with respect to employment prospects in Barbados (CCMF June 2014, 27). In Jamaica, the increase in unemployment is related to an increase in the labour force not matched by employment opportunities with higher unemployment was reflected primarily in Manufacture, Financial Intermediation, Wholesale & Retail Trade and Hotels & Restaurants (CCMF June 2014, 28). For Trinidad and Tobago, there was a "steady increase in retrenchment notices during 2013" with "about one quarter of the notices

were filed by firms in the finance, insurance, real estate and business services sector" (CCMF June 2014, 28). Further, the Petroleum and Mining sector accounted for 16.1 per cent of the retrenchment notices, followed closely by the Distribution sector with 11.2 per cent" (CCMF June 2014, 28).

4.2.5 Fiscal Balance

Data from the June 2014 *Caribbean Economic Performance Report* indicated that at the end of December 2013 The Bahamas, Guyana, Jamaica and Trinidad and Tobago recorded an improvement in their overall fiscal balance while in Belize and the ECCU deficit worsened (CCMF June 2014, 35) (see Figure 4.6).



Source: CCMF. *Caribbean Economic Performance Report.* June 2014, 37. http://www.ccmf-uwi.org/files/publications/economic_report/cepr_2014-06.pdf.

The Bahamas reduced their fiscal deficit by 12.2 per cent or US$ 66.74 million which was "obtained in spite of a widening of the current account deficit between the comparable periods" (CCMF June 2014, 35). Jamaica narrowed their fiscal deficit by 65.8 per cent from US$774.9 million at end-December 2012 to US$265.09 at end-December 2013 (CCMF June 2014, 35). According to the June 2014 CCMF Report (36), Trinidad and Tobago recorded the largest improvement in the overall fiscal position which swung from a deficit of US$821.6 million (or -3.4 per cent of GDP) at end-December 2012 to a deficit of only US$45.3 million (or -0.2 per cent of GDP). This was due to a significant increase in the current account surplus and decreased capital expenditure. Conversely, the fiscal deficit in Guyana increased by 37.7 per cent (or US$35.7 million) and in the ECCU counties the deficit stood at US$172.7 million at end-December 2013; 2.0 per cent higher than the previous year (CCMF June 2014, 36). In Belize, the overall fiscal deficit in Belize expanded from US$12.6 million or 0.8 per cent of GDP at 2012 year end to US$17.14 million or 1.1 per cent of GDP at 2013 year end which was a result of an increase in capital expenditure due largely to infrastructure related expenditure (CCMF June 2014, 36).

4.3. ECONOMIC OUTLOOK FOR 2014

The IMF (October 2013, 66) noted that growth in LAC remained low, reflecting a less supportive external environment and, in some cases, domestic supply-side constraints and as such, growth rate is expected to be three per cent in 2014. Similarly, the CCMF (June 2014, 59) stated that the economic prospects for 2014 would be one of slow growth. Citing IMF projections, the CCMF Report (June 2014, 59) noted that eight of the thirteen countries in the region were likely to grow faster in 2014 compared to 2013, with highest growth in that group being 2.7 per cent (see Table 4.5). The growth projected for Guyana and Suriname was expected to remain in the region of four per cent with no change in economic growth rate projected for Trinidad and Tobago, and Barbados was projected to experience a 1.2 per cent decrease in real output (CCMF June 2014, 59). ELCAC (2014, 54) estimated that economic growth in LAC will slow from 2.5 per cent in 2013 to 2.2 per cent in 2014. Growth in the Caribbean would pick-up from 1.2 per cent tin 2013 to 2.0 per cent in 2014 (ECLAC 2014, 54). Noting that gradual improvement in some of the world's major economies was expected to reverse the slowdown of growth in LAC, the IMF Report (October 2013, 67) noted that tourism flows was likely to remain subdued and construction activity would contract. Further, "high debt levels, weak competitiveness, and rising financial vulnerabilities continue to constrain fiscal policy and growth prospect" (IMF October 2013, 85). The ECLAC 2014 Report (54) pointed out that the "flow of remittances and tourism revenue has already begun to recover, and global goods trade is expected to rally slightly by the second half of the year."

Table 4.5: Projected Outcomes in 2014 vs 2013

	Real Output Growth		Inflation Rate	External Current Account Balance	Public Sector Primary Balance	Public Sector Debt/GDP
	2013	2014				
Antigua and Barbuda	0.5	1.6	C	I	D	H
The Bahamas	1.9	2.3	F	I	I	H
Barbados	-0.1	-1.2	S	I	I	H
Belize	1.5	2.3	F	D	D	H
Dominica	0.8	1.7	F	D	D	H
Grenada	1.5	1.1	F	I	I	H
Guyana	4.8	4.3	F	D	I	H
Jamaica	0.5	1.3	S	I	C	L
St Kitts and Nevis	1.7	2.7	F	D	D	L
St Lucia	-1.5	0.3	F	I	I	H
St Vincent and the Grenadines	2.1	2.3	F	D	I	H
Suriname	4.7	4.0	F	I	I	H
Trinidad and Tobago	2.2	2.2	S	C	D	H

Source: CCMF. *Caribbean Economic Performance Report.* June 2014, 37. http://www.ccmf-uwi.org/files/publications/economic_report/cepr_2014-06.pdf.

Notes: C = constant; F = faster; S = slower; I = improve; D = deteriorate; H = higher; L = lower.

There will be an accelerated inflation in most countries except Antigua and Barbuda with a constant rate of inflation and Barbados, Jamaica and Trinidad and Tobago where inflation is expected to abate. The external current account balance is projected to improve in seven of the countries (Antigua and Barbuda, The Bahamas, Barbados, Grenada, Jamaica, St Lucia, and Surname) and to deteriorate in five while being unchanged in one. Based upon reported data, public sector primary balances was expected to deteriorate in five countries (Antigua and Barbuda,

Belize, Dominica, St Kitts and Nevis, and Trinidad and Tobago) and public sector debt was projected to increase (see Table 4.5). The 2014 ECLAC Report (56) noted that fiscal and external balances are deteriorating – the current account deficit is ten per cent of GDP and fiscal deficit is five per cent of GDP. The IMF (October 2013, 68) noted that with labor participation already high unemployment rates will remain low.

Over a decade ago N.V. Varghese (2001, 55) writing on the impact of the economic crisis on higher education in Asia noted that:

> *Education can be used as a good mechanism to fight crisis. … [I]n the context of the globalization process, competitiveness depends on the quantity and quality of higher education provided by the system. The role of higher education in sustaining competitiveness in the globalized economy can be emphasized in the strategies to combat the crisis. Investing in higher education can be adopted as a common strategy to overcome crisis …. In other words, investing in education helps households to overcome their difficulties and investing in higher levels of education helps improve the competitiveness of the economy.*

The importance of higher education as a social tool which contributes to the "creation of a knowledge-based society, with democratic, tolerant and active citizens" was underscored by Beckles (2005, 19). Due consideration, therefore, should now be given to further investing in higher education seeing it as a strategic industry to support the region's insertion into the global knowledge economy. In this regard, there should be commitment to increasing per student recurrent expenditure and enhancing research and innovation capacity.

The economic outlook suggests that the Caribbean region would be constrained in their ability to finance higher education. Governments have three options: reduce funding, increase funding or maintain the status quo. As has been noted in the UNESCO (2012, 3) there has been the introduction of a number of core 'neo-conservative' principles in higher education. These include shifting the costs from the state to individual, imposition of a customer-provider model and introduction of programmes that are more market related. The crisis stimulated patterns of financial autonomy of universities or diversification of their funding base by introducing cost-saving measures, income-generating and fund-raising initiatives. Other initiatives advanced in situations of crisis include tighter eligibility for student support[2], caps on enrolment or even for the number of funded places at institutions and cost sharing (tuition and other fees)[3], cost-recovery (different types of student loans). Higher education is therefore set to become more expensive and selective.

4.4. CONCLUSION

Real income growth and real returns in financial markets are key factors to reducing the challenges the higher education sector is facing with a decrease in public sector allocation (Hill February 18 2013, n.p.). Such reductions have led to increased cost-sharing mechanisms in the United Kingdom and North America and recommendations for adjustments to the academic labour market practices without impacting on quality and containment of the cost of student services. Some of these issues will be explored in the context of the UWI in later chapter.

The region needs to move from macroeconomic policies for stability to macroeconomic policies for development, while simultaneously increasing its competitiveness based on productivity improvements, innovation, social inclusion and environmental sustainability. In this regard, fiscal consolidation must continue, in order to reduce the debt burden and excessive public spending. In addition, windfall revenues could be saved in stabilisation funds, as a means of providing a fiscal stimulus in the face of external shocks. Consequently, the region should devise the policy frameworks to strengthen its external and internal position by way of incentive schemes for and FDI private-public sector partnerships, generate public sector savings in order to recover the policy space used up during the crisis, creation of a market- and product diversification strategy along with more targeted social programmes.

[1] EECU or Eastern Caribbean Currency Union is a development of the Organization of Eastern Caribbean States. The ECCU comprises Antigua and Barbuda, Dominica, Grenada, St. Kitts and Nevis, St. Lucia, and St. Vincent and the Grenadines.

[2] In Trinidad and Tobago's 2013 budget, the government proposed to reduce the abuse of free tuition – GATE – by funding undergraduate programmes based on their socio-economic priority.

[3] Recently, in Barbados there have been discussions on a cost-sharing model that can be adopted whereby governments would cover 85 per cent of the academic cost of the programme while students would cover 5per cent and the private sector would contribute the remaining 10per cent. Barbados Government Information Services, July 13 2012. .http://www.gisbarbados.gov.bb/index.php?categoryid=13&p2_articleid=8683.

CHAPTER FIVE: TRENDS IN DEMAND FOR PLACES, ENROLMENT, OUTPUT AND ACHIEVEMENT UWI

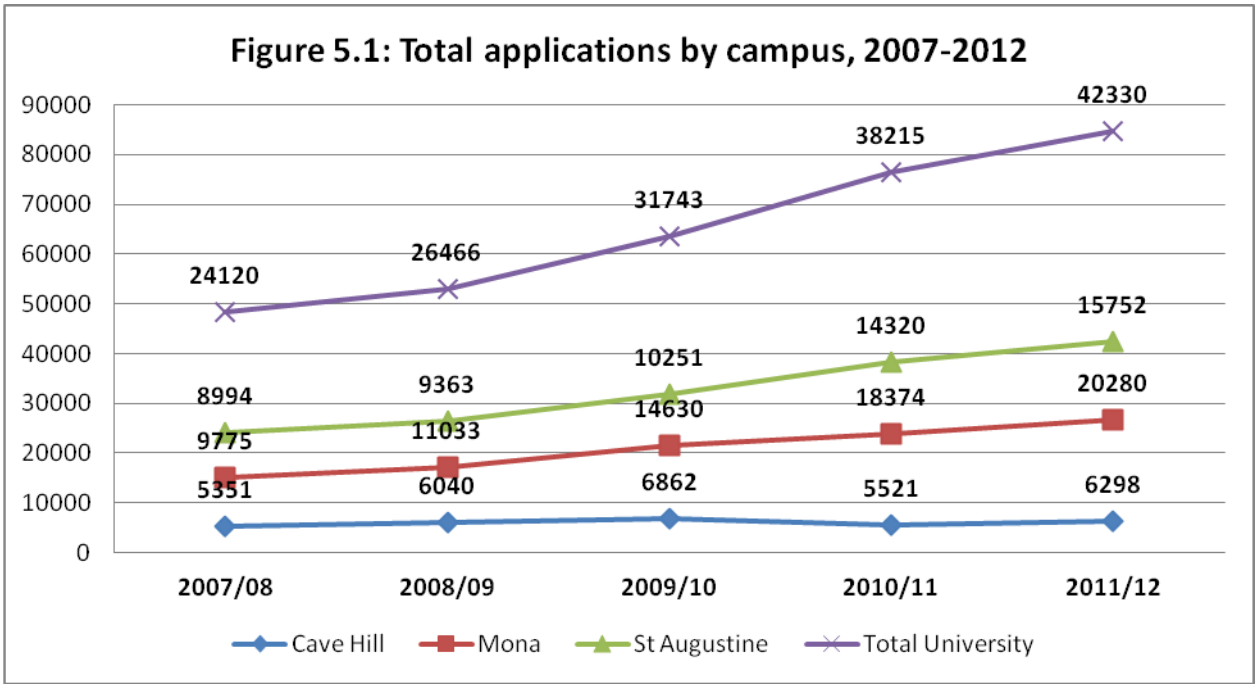
Demand for places at the University of the West Indies may be seen as a demand for access for higher education. Based upon a student meeting the matriculation criteria, an offer of admission to the UWI is made, the prospective student then accepts the offer and is admitted to the programme and thus, enrolled at the UWI. Globally, HEIs have not been able to effectively respond to students' demand for university education. In other words, demand for and supply of university places have not worked in synchrony. This chapter examines the data in context of demand, participation and achievement is analysed by campus, faculty, programme level and type.

5.1. DEMAND FOR UWI PLACES: - APPLICATIONS

The number of applications a university receives can be used as a proxy for demand for the type of education offered by that institution, while the number of new students admitted can be used as a proxy for supply of university places. The admissions ratio (percentage of applicants who are offered a place at the university) represents a measure of university selectivity which can be used for policy formulation and strategic planning purposes and in particular, identifying ways to increase participation and attainment levels in higher education.

Based upon available data, Figure 5.1 shows that for the period, 2007/2008 to 2011/2012, demand for places at the UWI as measured by the number of total applicants was substantial. The increase growth of applicants was driven by the Mona and St. Augustine campuses with Cave Hill experiencing a more modest growth. The applicant figures show demand increasing from 2009 with the level of demand for university places in 2010/2011 being the highest on record for Mona and St. Augustine. Cave Hill experienced a decline in applications in 2010/2011 but recovered in 2011/2012.

When the data for total applications is disaggregated by level, that is undergraduate and postgraduate, a different trend emerges. The number of undergraduate student applications increased significantly for the university as a whole by 80.5 per cent for 2007/2008 to 2011/2012 period. When examined at the campus level, St. Augustine increased by 109.5 per cent, Mona by 73.6 per cent and Cave Hill by 10.5 per cent over the period (Table 5.1). Postgraduate applications increased for all campuses between 2007/2008 and 2011/2012. The total postgraduate enrolment (at Cave Hill, Mona and St. Augustine) rose by 71.9 per cent with Cave Hill increasing by 61.1 per cent, Mona by 118.6 per cent and St. Augustine 39.0 per cent (Table 5.2).



Source :UWI. Business Intelligence Dashboard, Office of the University CIO.

Table 5.1: Number of Undergraduate Applications, 2007-2012					
	2007/2008	**2008/2009**	**2009/2010**	**2010/2011**	**2011/2012**
Cave Hill	4533	5069	5743	4371	5012
Mona	6954	6667	6742	11164	12076
St Augustine	7292	9146	10926	13871	15820
University	18779	20882	23421	29406	32908

Source: UWI. Business Intelligence Dashboard, Office of the University CIO.

Note: Figures represent unique counts to each level and faculty i.e. persons with applications to multiple programmes within the same level and faculty, are counted only *once*. Please note that campus totals for **Applied**, **Applicant Acceptance** and **Institution Acceptance** in any given year cannot be derived by tallying the individual faculty counts. This is because applicants apply to multiple faculties, so summing the individual faculty counts will result in counting the same person multiple times, therefore inflating the derived campus total.

Table 5.2: Number of Postgraduate Applications, 2007-2012					
	2007/2008	**2008/2009**	**2009/2010**	**2010/2011**	**2011/2012**
Cave Hill	798	971	1119	1150	1286
Mona	2040	1887	3499	4503	4460
St Augustine	2643	2726	3704	3156	3676
University	5481	5584	8322	8809	9422

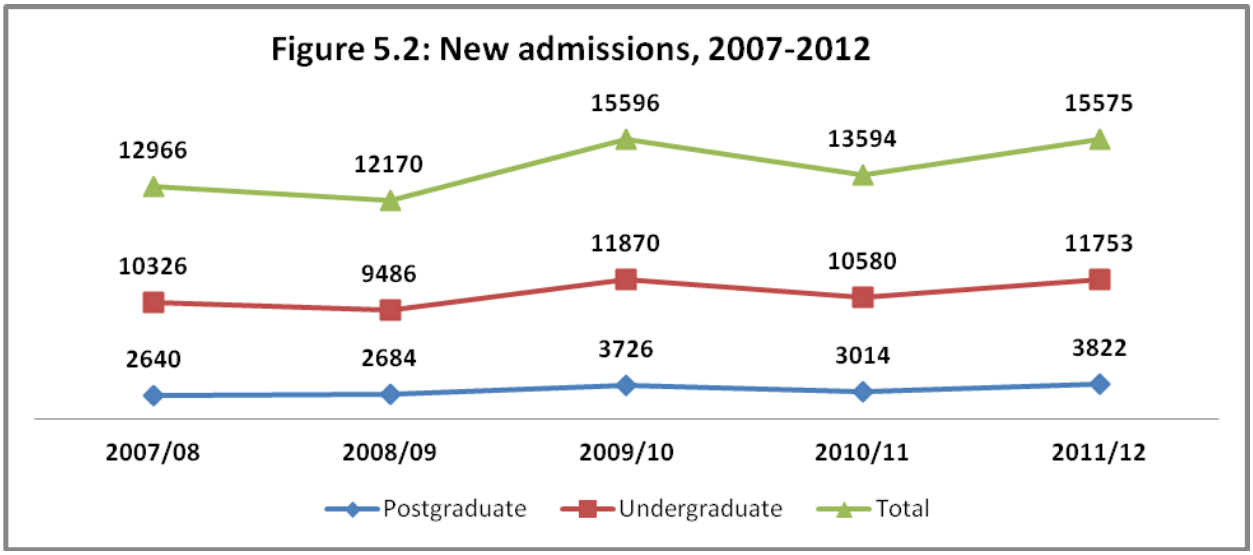
Source: UWI. Business Intelligence Dashboard, Office of the University CIO.

Note: Figures represent unique counts to each level and faculty i.e. persons with applications to multiple programmes within the same level and faculty, are counted only *once*. Please note that campus totals for **Applied**, **Applicant Acceptance** and **Institution Acceptance** in any given year cannot be derived by tallying the individual faculty counts. This is because applicants apply to multiple faculties, so summing the individual faculty counts will result in counting the same person multiple times, therefore inflating the derived campus total.

The findings of the 2009 *Speak Your Mind Survey (SYM)*[1] in which the question was asked of survey respondents was the UWI their first choice is particularly insightful. Approximately 84 per cent of respondents (4,800 students) indicated that the UWI was their first choice university while 15 per cent (859 students) of the respondents indicated that the UWI was not their first choice (UOPD 2010c, 8).

5.2. NEW ADMISSIONS

Undergraduate and postgraduates new admissions increased for the university as a whole over the five year period from 12,966 in 2007/2008 to 15,575 in 2011/2012, an increase of 20.1 per cent (Figure 5.2). While it may be posited that the UWI is very selective in admitting students to programmes based upon number of applications and admissions, the quality of applicants could also be affecting the admissions rate as well as self-selection by the applicant following the offer from the UWI.



Source: Business Intelligence Dashboard, Office of the University CIO.

If one sees the admissions ratio as an indicator of university selectivity, then it becomes clearer that demand (applicants) outstrips supply (new admissions) significantly. Table 5.3 shows that there was twice the number of applications to admissions for both undergraduate and postgraduate students.

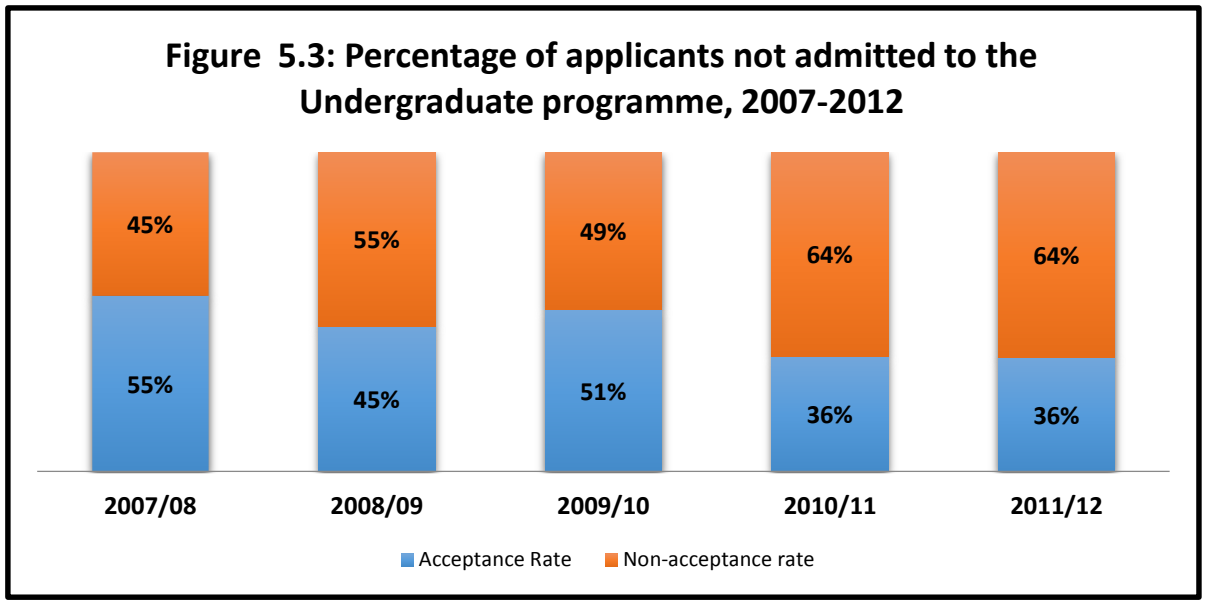
Table 5.3: ADMISSIONS RATIO, 2007-2012

	Undergraduate	Postgraduate
2007/2008	1.8:1	2.0:1
2009/2010	1.9:1	2.2:1
2011/2012	2.7:1	2.4:1

Source: Calculated based on data from Business Intelligence Dashboard, Office of the University CIO.

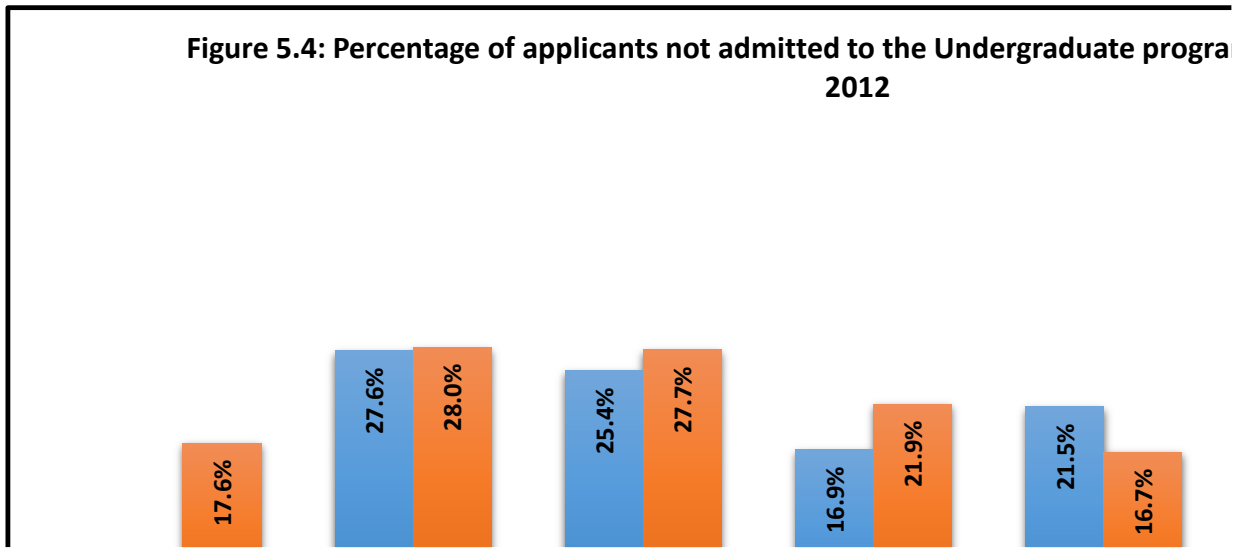
Figure 5.3 shows the percentage of students not admitted to the UWI at the undergraduate level. The number of students not admitted to the university rose from 45 per cent in 2007/2008 to 64 per cent in 2011/2012 for the university suggesting that demand for higher education was on the rise. The ability of institutions to respond to demand means that they will have to grapple with infrastructure and human resources both linked to funding. HEIs will also have to consider not only the sustainability of growth but also engage in long-term planning, invest in leadership and ensure the maintenance of quality as they respond to the demand of

qualified applicants.[2] However, there will still be a cost constraint which will have to be offset by increasing the cost to students or the public through taxation.



Source: Based upon data from Business Intelligence Dashboard, Office of the University CIO.

At the faculty level, (see Figure 5.4) there are high levels of unsatisfied demand or non-acceptance rates in all faculties with the greatest demand (non-acceptance) being in Law and Medical Sciences.



Source: Based upon data from Business Intelligence Dashboard, Office of the University CIO.

A further look at the postgraduate applications and admissions by Faculty for the period 2007 to 2012 also reveals that there is an unsatisfied demand (see Table 5.4). Equally important, postgraduate applications across the university show a clear demand for programmes offered in Social Sciences followed by Humanities and Education, Medical Sciences, Engineering and

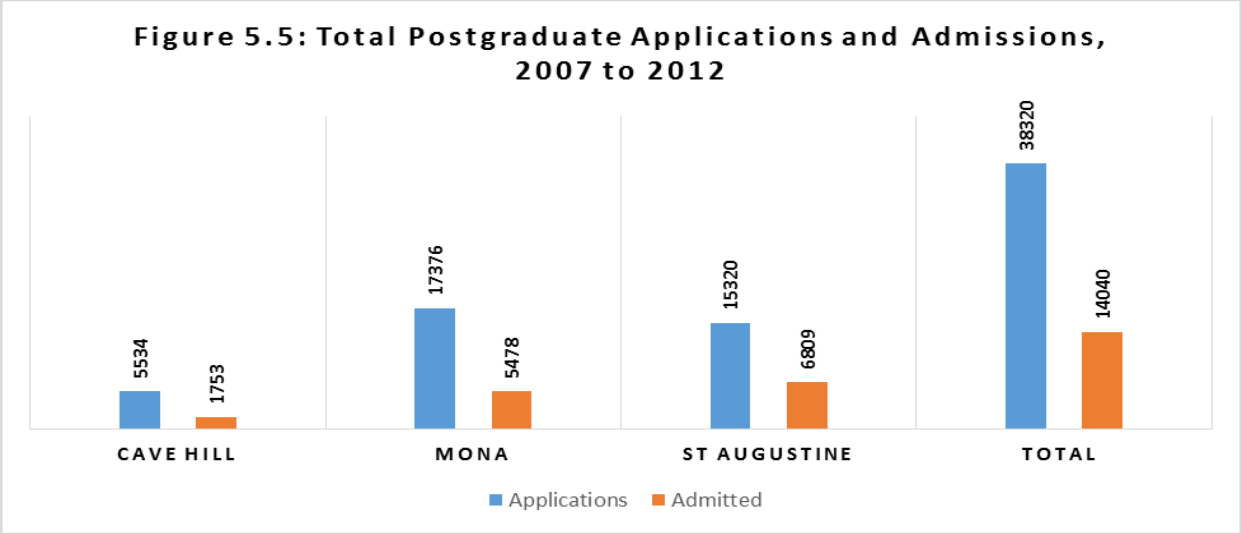
Pure and Applied Science/Science and Agriculture. Overall, the gap between demand and supply is 2.7:1 with the largest unsatisfied demand from Medical Sciences followed by Law, Social Sciences, Humanities and Education, Pure and Applied Science/Science and Agriculture, Gender and Development Studies and lastly, Engineering.

Table 5.4: Total number of Postgraduate Applications and Admittants by Faculty, 2007-2012

	APPLICATIONS				ADMISSIONS			
	St. Augustine	**Mona**	**Cave Hill**	**Total**	**St. Augustine**	**Mona**	**Cave Hill**	**Total**
Engineering	3274			**3274**	1524			**1524**
Gender and Development Studies	53	114	41	**208**	30	43	15	**88**
Humanities and Education	4065	5309	875	**10249**	1811	1613	312	**3736**
Law			434	**434**			146	**146**
Medical Sciences	1177	2809	421	**4407**	451	890	92	**1433**
Pure and Applied Science/Science and Agriculture	1407	1161	520	**3088**	628	496	172	**1296**
Social Sciences	5344	7983	3243	**16570**	2365	2436	1016	**5817**
TOTAL	15320	17376	5534	**38230**	6809	5478	1753	**14040**

Source: UWI. Business Intelligence Dashboard, Office of the University CIO.
Note: Figures represent unique counts to each level and faculty i.e. persons with applications to multiple programmes within the same level and faculty, are counted only *once*. Please note that campus totals for **Applied**, **Applicant Acceptance** and **Institution Acceptance** in any given year cannot be derived by tallying the individual faculty counts. This is because applicants apply to multiple faculties, so summing the individual faculty counts will result in counting the same person multiple times, therefore inflating the derived campus total.

Based upon data available, the difference between applications to the UWI and admittance was significant (see Figure 5.5). The gap between demand and supply ranged from 68.4 per cent at Mona, 68.3 per cent at Cave Hill and 55.5 per cent at St. Augustine. The average difference between applications and admissions was 63.2 per cent overall for the Cave Hill, Mona and St. Augustine campuses combined for which data was available.



Source: UWI. Business Intelligence Dashboard, Office of the University CIO.

5.2. UWI ENROLMENT TRENDS

The importance of higher education cannot be overemphasised (see Chapter 2). Higher education contributes to developing the CARICOM region's competitive position in a global knowledge economy. University graduates, therefore, have the potential to develop skills that are not only required in the current marketplace but also to innovate and create future enterprises in the fields of business, science, arts and culture (i.e. to become entrepreneurial). To this end, an understanding of the enrolment trends is among the critical factors to defining the institution's goals and priorities as well as resource capacity.

5.2.1. Participation and Enrolment

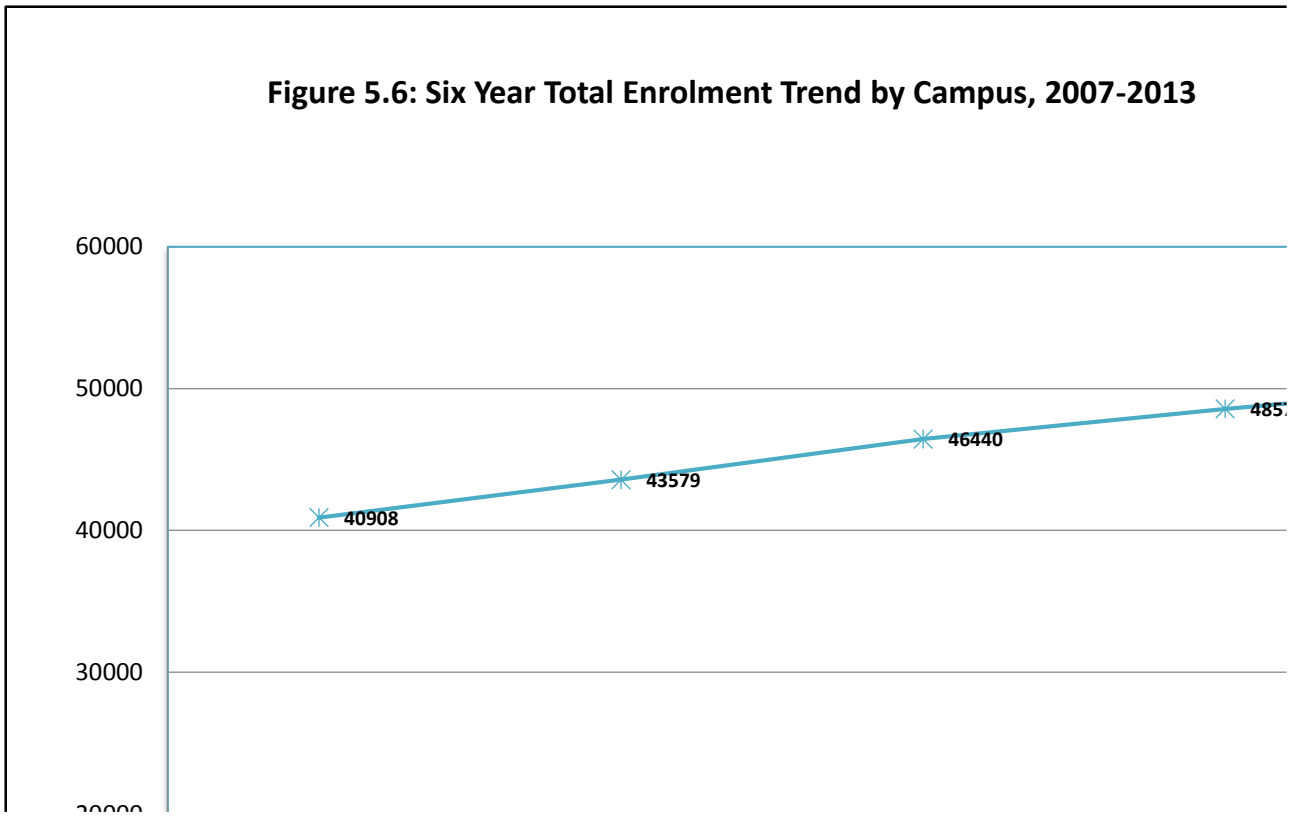
Total UWI student enrolment reached a significant landmark of 51,208 in 2012/2013, an overall increase of 25.2 per cent over the period 2007/2008 to 2012/2013. The average annual percentage growth in enrolment was 4.6 per cent over the six year period (see Table 5.5). Projections made by the UOPD in consultation with campuses suggest that growth in enrolment is expected to be slower in the period 2012-2017 as compared to the last planning cycle, 2007-2012. The average annual percentage growth for the next five years is projected to be 3.8 per cent this projection is based on an average of 3.3 per cent growth in enrolment in first degrees and an average of 5.7 per cent growth in higher degree enrolment (UOPD 2012, 15).

Table 5.5: UWI Enrolment Trends, 2007-2013

UWI enrolment (on and off campus	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13*	Cumulative increase (2007/8 – 2012/13)	Ave. annual increase
Cave Hill	7438 (18.1%)	8203 (18.8%)	8657 (18.6%)	9155 (18.8%)	9364 (18.6%)	8997 (17.6%)	21.0%	4.0%
Mona	14346 (35.1%)	14414 (33.1%)	15481 (33.3%)	15392 (31.7%)	15897 (31.5%)	16165 (31.6%)	12.7%	2.5%
St Augustine	15209 (37.2%)	15890 (36.5%)	16978 (36.6%)	17881 (36.8%)	18841 (37.4%)	19823 (38.7%)	30.3%	5.4%
Open Campus	3915 (9.6%)	5072 (11.6%)	5324 (11.5%)	6147 (12.7%)	6337 (12.5%)	6223 (12.1%)	59.0%	10.3%
University	40908 (100%)	43579 (100%)	46440 (100%)	48575 (1005)	50439 (100%)	51208 (100%)	25.2%	4.6%

Source: UWI Annual Statistical Digest, 2007/2008, 2008/2009, 2011/2012 and UWI. *Vice Chancellor's Presentation to UF&GPC, February 6th 2015.

An analysis of the six-year (2007/2008 to 2012/2013) enrolment trends by campus showed that enrolment grew annually at an average of 10.3 per cent at Open Campus, 4 per cent at Cave Hill, 5.4 per cent at St. Augustine and by 2.5 per cent at Mona (see Figure 5.6). However, Mona's minimal growth may be a result of not only the impact of the global economic and financial crisis but also "the decline of students from Contributing Caribbean Countries at the campus between 2008/2009 and 2010/2011" (UWI Mona Annual Report 2010/2011, 9). For Trinidad and Tobago, the increase in enrolment may be explained by the availability of GATE (Government Assistance for Tuition Expenses) (see Box 5. 1). The UWI has thus seen increases in enrolment despite a recession and continued government cutbacks.



Source: UWI Annual Statistical Digest, 2007/2008, 2008/2009, 2011/2012 and *Vice Chancellor's presentation to UF&GPC, February 6th 2015.

BOX 5.1: WHAT IS GATE?

GATE is available to all citizens of Trinidad and Tobago pursuing approved programmes, including Distance Learning programmes, at local and regional public Tertiary Level Institutions (TLIs) as well as approved local private TLIs. GATE is applicable for tuition fees only. Students who have been accepted to pursue undergraduate programmes of study at either approved local and regional public TLIs or approved local private TLIs would be eligible to access funding for 100% of their tuition fees. Students who have been accepted to pursue approved postgraduate programmes of study at local and regional public TLIs would be eligible to access grants to cover a of fifty percent (50%) of their tuition fees or at approved private TLIs would be eligible to access grants to cover up to fifty percent (50%) of their tuition fees to a maximum of $10,000.00; and to a maximum of $5,000.00 for approved Distance Learning programmes. Students accessing GATE will be required to sign a Student Agreement as part of the application. The Government of the Republic of Trinidad and Tobago has set a minimum requirement of a GPA of 1.0 to 2.0 for returning tertiary-level students to continue to accessing GATE.

(Source: Shaliza Hassanali and Rhonda Rambally "GATE closed for delinquent students *Trinidad Guardian* 9:09:2012, n.p. http://guardian.co.tt/news/2012-09-09/gate-closed-delinquent-students).

One of the strategic objectives of the UWI's *Strategic Plan 2007-2012* (32) was to "create an Open Campus to expand the scope, enhance the appeal and improve the efficiency of its service to the individuals, communities and countries which it serves." In 2008, the UWI Open Campus was opened, offering distance and continuing education and online programmes especially for (but not restricted to) persons in the UWI-12 countries. Since then its enrolment has

grown from 3,915 students in 2007/2008 to 6,223 in 2012/2013. In other words, Open Campus saw a 59 per cent increase in enrolment over the six years (2007/2008 to 2012/2013). Generally, "distance education enrolments represented between 5-15 per cent of the total enrolments at institutions in industrialised countries and between 10-20 per cent in developing nations in 2007" (Woodall 2011, 11). At the UWI, Open Campus enrolment as a percentage of total university enrolment is between 10 per cent and 13 per cent, well within the boundaries for developing countries as identified by Woodall (2011). This does not include the distance education programmes available elsewhere in the university which ranged between 1 to 2.4 per cent (see Table 5.6).

Table 5.6: Distribution of UWI Enrolment - Face To Face And Distance – 2007/2008 To 2011/2012

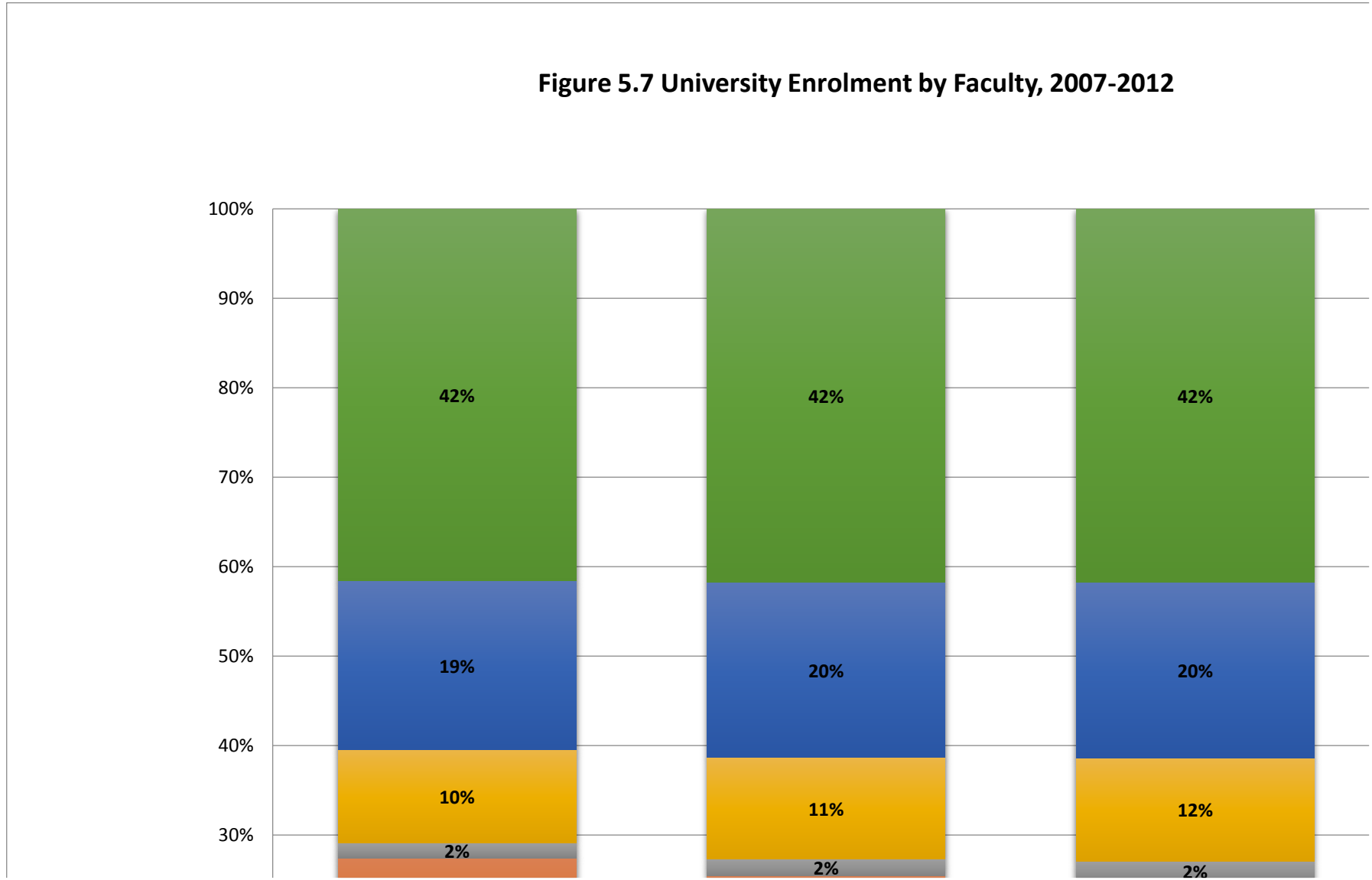
Enrolment Type	2007/08	2008/09	2009/10	2010/11	2011/12
Campus Enrolment(Face to Face)	35,770	37,642	40,241	41,817	43,640
Distance (Open Campus)	3,915	5072	5320	**6,147**	**6,337**
Distance(Other Campuses)	988	872	875	611	462
Total Enrolment	40,673	43,586	46,436	48,575	50,439

Source: UWI Annual Statistical Digest, 2007/2008, 2008/2009, 2011/2012.

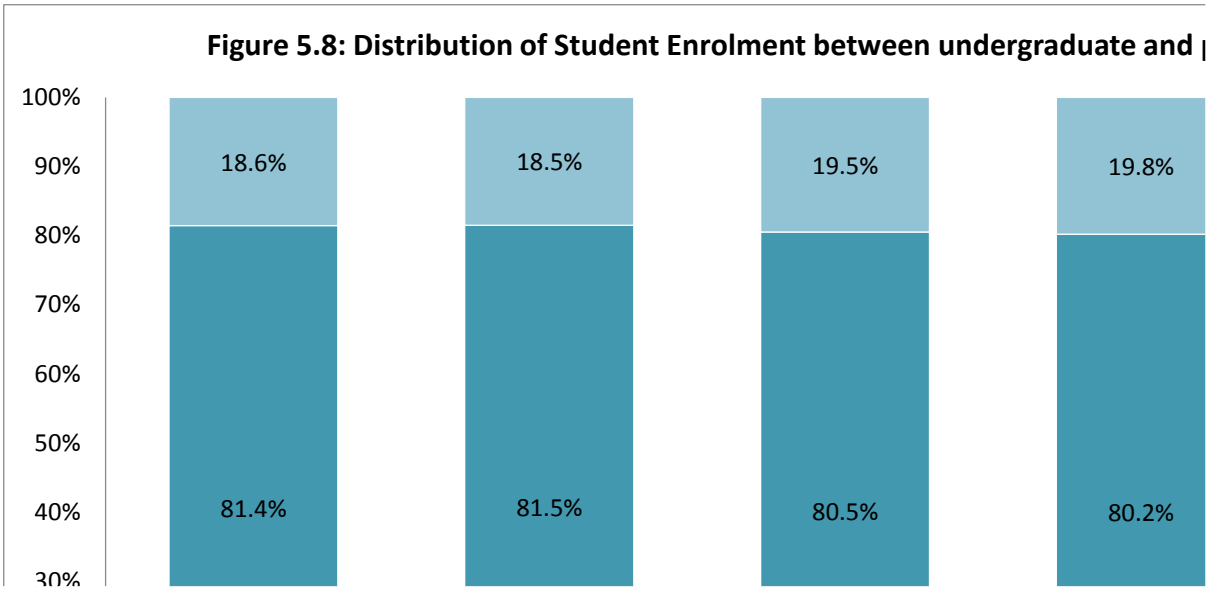
An examination of Faculty enrolment at the level of the university as a whole showed that Social Sciences dominated university enrolment (see Figure 5.7). Overall, average enrolment for the period was as follows: Social Sciences (41.6 per cent), Engineering (19.8 per cent), Humanities and Education (18.8 per cent), Medical Sciences (11.6 per cent), Pure and Applied Sciences/Science and Agriculture (6.2 per cent) and Law (6.2 per cent).

An examination of the distribution of student enrolment between undergraduate and postgraduate programmes shows that overall postgraduate enrolment is about 20 per cent of the university's total enrolment (see Figure 5.8). For 2006/2007 the ratio of undergraduate to postgraduate was 4.05:1 while for 2012/2013 the ratio was 3.6:1.

Figure 5.7 University Enrolment by Faculty, 2007-2012

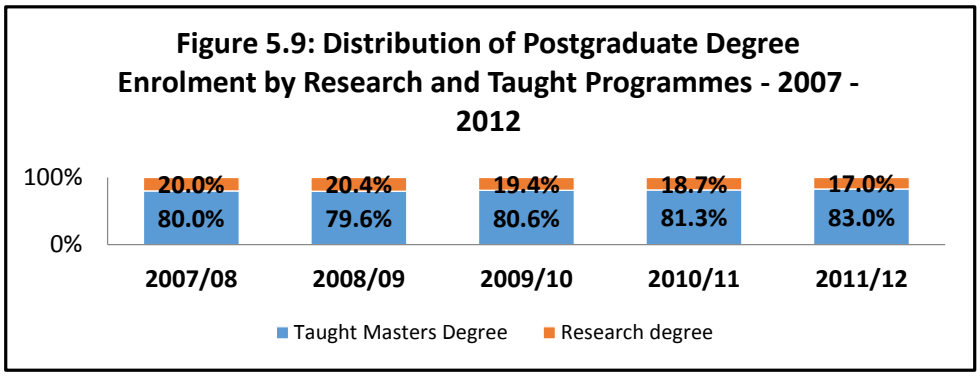


Source: UWI Annual Statistical Digest, 2007/2008, 2008/2009, 2011/2012.



Source: UWI Annual Statistical Digest, 2007/2008, 2008/2009, 2011/2012. * Statistical Review 2009/2010 to 2013/2014.

Enrolment trends within the taught and research postgraduate programmes should be of concern in that it is often presumed that research can enable innovation that would move a country to a higher step in the knowledge economy. The *2007-2012 Strategic Plan* recognised the importance of graduate studies to development and as such, identified the "output of higher degree graduates who are at the cutting edge of contemporary scholarship, professional development and expertise" as part of their strategic aim of Graduate Studies (UWI SP 2007-2012, 20). Taught and professional graduate qualifications provide individuals with a high level of skills that can facilitate them to advance in their careers. As can be seen in Figure 5.9 enrolment in postgraduate research programmes declined by 3 percentage points between 2007/2008 and 2011/2012, while in taught programmes there was a corresponding 3 percentage point increase for the same period.

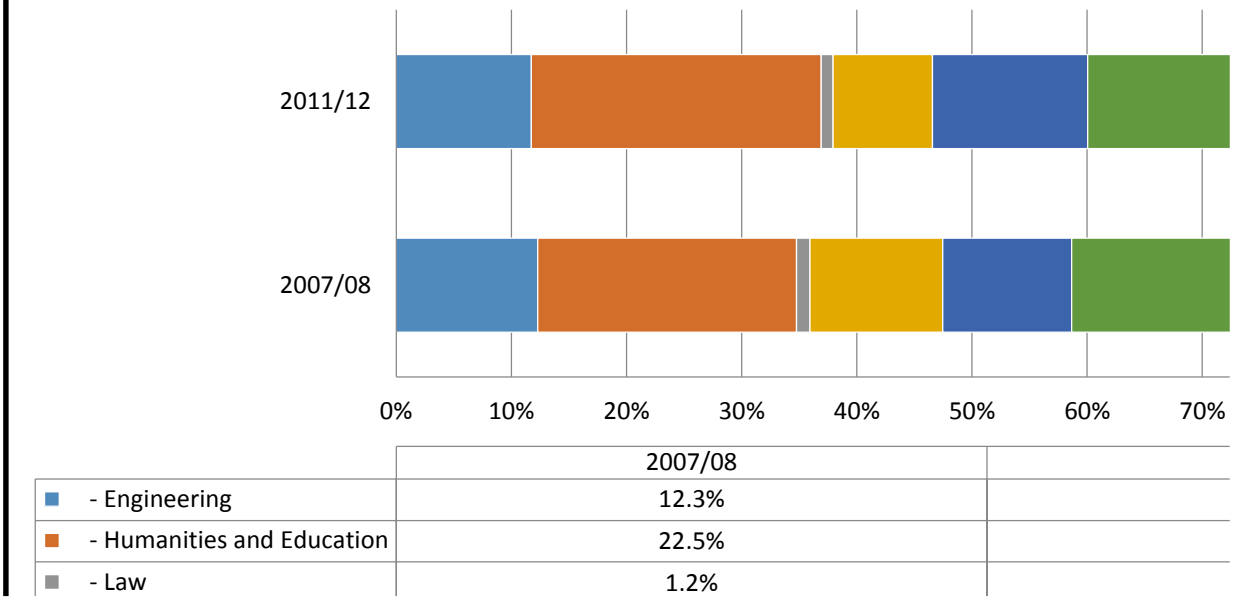


Source: UWI Annual Statistical Digest, 2007/2008, 2008/2009, 2011/2012.

There was a slight shift in postgraduate enrolment in Faculty during the five year period as seen in Figure 5.10. The percentage share of Humanities and Education and Sciences/Agriculture increased, while the percentage share of Engineering, Medical Sciences and Social Sciences decreased between 2007/2008 and 2011/2012.

Postgraduate enrolment at Mona and St. Augustine campuses was significantly higher than at Cave Hill. Doctoral candidates represented 7.8 per cent of the total postgraduate enrolment in 2011/2012. For the period 2011/2012, university enrolment in the taught Masters programmes was 79 per cent, while enrolment in research masters degrees 8.9 per cent (see Table 5.7).

Figure 5.10: Distribution of University Postgraduate Enrolment by Faculty, 20



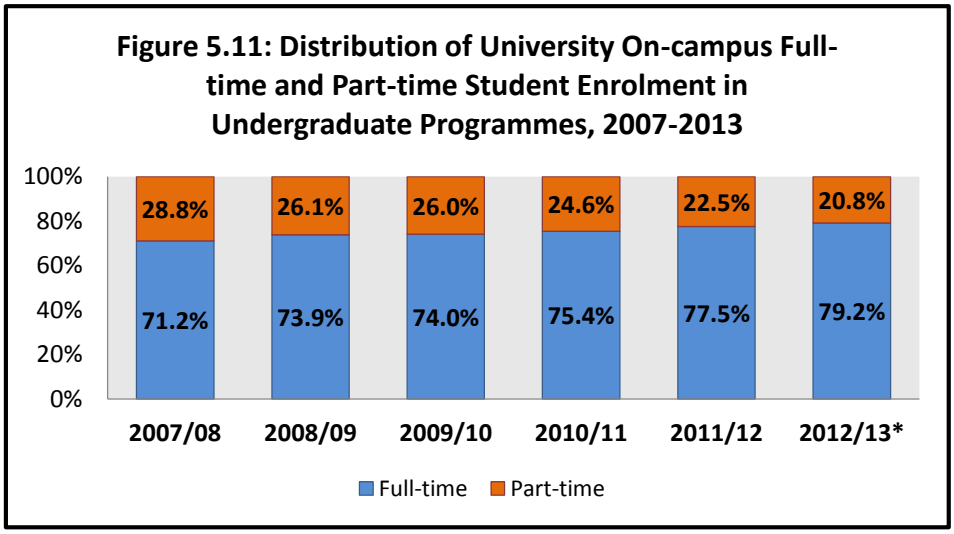
Source: UWI Annual Statistical Digest, 2007/2008, 2008/2009, 2011/2012.

Table 5.7: Distribution of Postgraduate Enrolment By Type Of Programme and Campus, 2011/2012

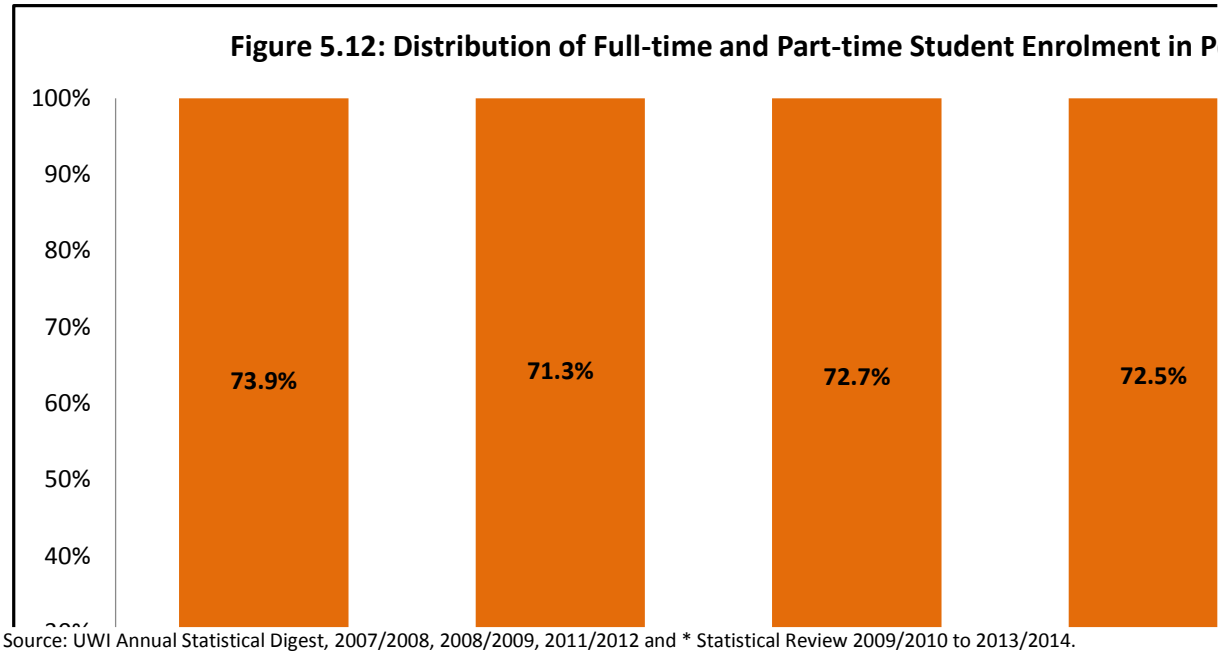
TYPE OF POSTGRADUATE PROGRAMME	CAVE HILL	MONA	ST AUGUSTINE	OPEN CAMPUS	TOTAL
Taught Masters	858	2471	4327	226	7882
As % of Total	77.6%	80.7%	78.2%	83.4%	79.0%
Research Masters	106	267	512	0	885
As % of Total	9.6%	8.7%	9.3%	0.0%	8.9%
Doctorate	127	266	383	0	776
As % of Total	11.5%	8.7%	6.9%	0.0%	7.8%
Postgraduate Diploma	15	58	312	45	430
As % of Total	1.4%	1.9%	5.6%	16.6%	4.3%
Total	**1106**	**3062**	**5534**	**271**	**9973**

Source: UWI Annual Statistical Digest, 2007/2008, 2008/2009, 2011/2012.

Overall, the percentage of full-time undergraduate on-campus students was 71.2 per cent in 2007/2008 and this increased to 79.2 per cent in 2012/2013, indicating that there was a relative increase in full-time students. Full-time enrolment increased by 8 percentage points over the period while there was a corresponding decline of 8 percentage points in part-time enrolment (see Figure 5.11). The distribution of postgraduate full-time students remained fairly consistent at around 26 per cent over the six year period (see Figure 5.12).

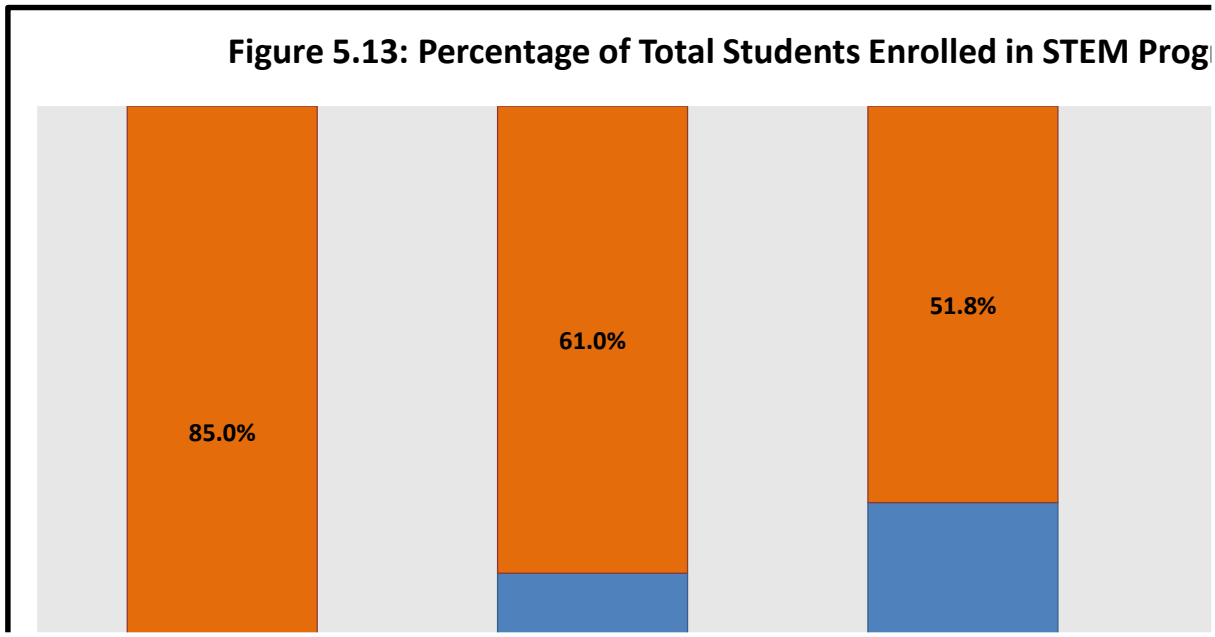


Source: UWI Annual Statistical Digest, 2007/2008, 2008/2009, 2011/2012 and * Statistical Review 2009/2010 to 2013/2014.



Source: UWI Annual Statistical Digest, 2007/2008, 2008/2009, 2011/2012 and * Statistical Review 2009/2010 to 2013/2014.

Increasing attention is being paid to the participation and performance of students in the science and technology streams as the means to drive innovation and thus stimulate economic growth. Overall, within the UWI about one-third of its student population was enrolled in STEM programmes (Science & Technology, Pure & Applied Sciences, Engineering and Medical Sciences) in 2011/2012 (see Figure 5.13). On a campus basis, St Augustine enrolled the largest share of science and technology students with 48.2 per cent while the Open Campus did not have any students enrolled in STEM programmes.

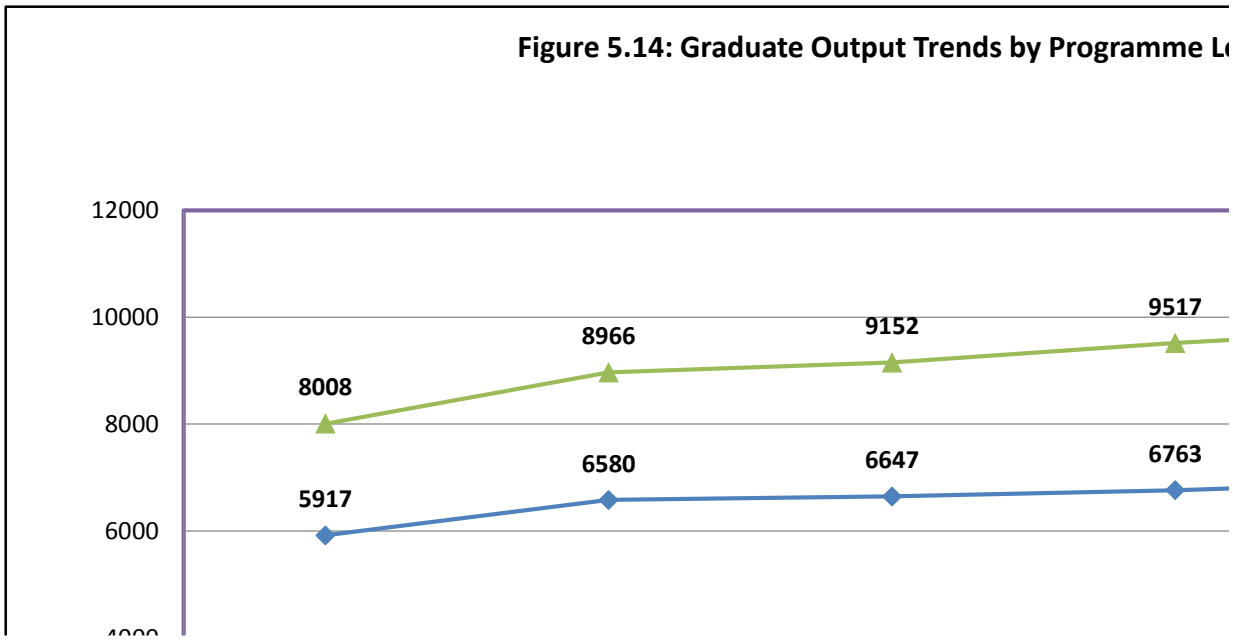


Source: UWI Annual Statistical Digest, 2007/2008, 2008/2009, 2011/2012 and * Statistical Review 2009/2010 to 2013/2014.

5.3. GRADUATION OUTPUTS

Graduate outputs are important for any system of education as it measures the impact of teaching and learning. It provides institutions with the measures to target their efforts on areas where attainment is below expectations and also highlight successes.

The total number of UWI graduates increased from 8,008 in 2008 to 10,158 in 2013, a cumulative increase of 26.8 per cent. While the overall graduate output by first degrees increased by 21.2 per cent, the graduate outputs for higher degrees increased by 42 per cent over the six years (see Figure 5.14).

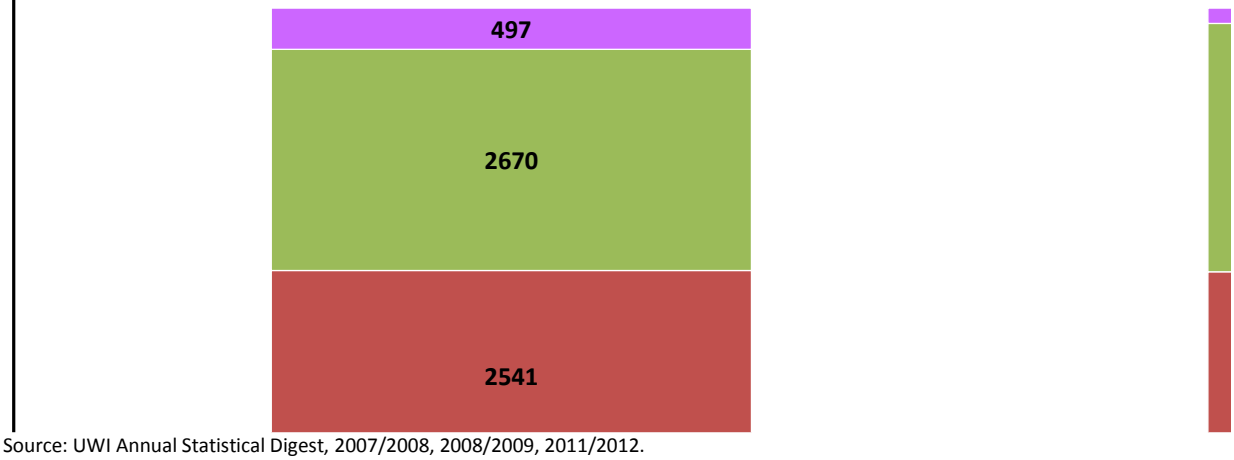


Source: UWI Annual Statistical Digest, 2007/2008, 2008/2009, 2011/2012 and *2009/2010-2013/2014.

Of the four campuses, the St. Augustine Campus had the largest proportion of higher degree graduates, while the Open Campus had the lowest in 2013. The same was true when looking at the actual numbers – St. Augustine had 845 higher degree graduates, while the Open Campus had 53 (see Figure 5.15). Overall, university graduation output has shown an upward trend for the six years for both undergraduates and postgraduates in line with increased enrolment. The breakdown of output by Faculties as shown in Figure 5.16a and Figure 5.16b show that university-wide Social Sciences had the largest proportion of both undergraduate and postgraduate graduate output followed by Humanities and Education, Pure and Applied Sciences/Science and Agriculture, Medical Sciences, Engineering, Law, and Gender and Development Studies.

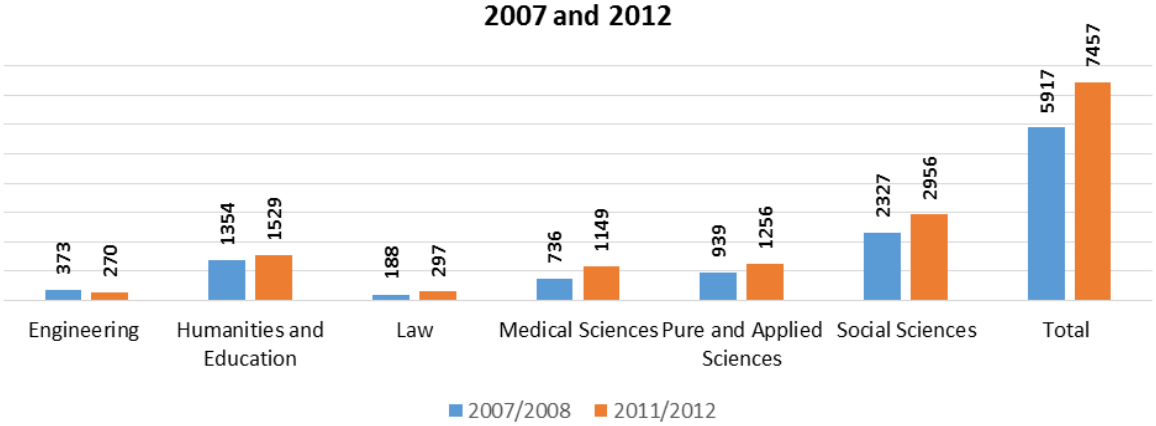
When data is examined for the distribution of STEM to non-STEM graduates for 2011/2012, there are more non-STEM graduates at both the undergraduate (58.5 per cent) and postgraduate (74.5 per cent) levels (see Figure 5.17).

Figure 5.15: University Graduation Output by Camp



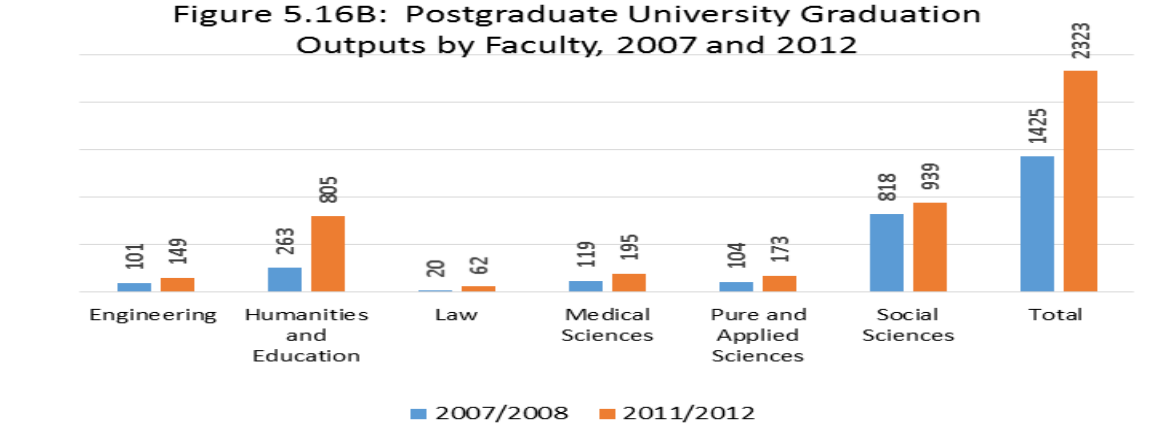
Source: UWI Annual Statistical Digest, 2007/2008, 2008/2009, 2011/2012.

Figure 5.16A: Undergraduate University Graduation Outputs by Faculty, 2007 and 2012



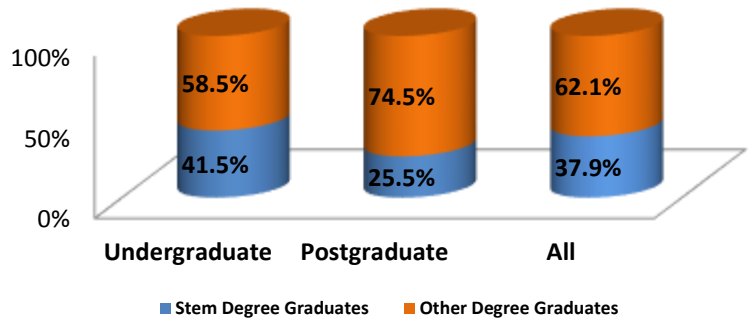
Source: UWI Annual Statistical Digest, 2007/2008, 2008/2009, 2011/2012.

Figure 5.16B: Postgraduate University Graduation Outputs by Faculty, 2007 and 2012



Source: UWI Annual Statistical Digest, 2007/2008, 2008/2009, 2011/2012.

Figure 5.17: Distribution of STEM Graduates/Non-STEM Graduates, 2011/2012



Source: UWI Annual Statistical Digest, 2007/2008, 2008/2009, 2011/2012.

An examination of research degree (M.Phil, PhD.) graduates as a percentage of total higher degree graduates for the period 2007/2008 to 2011/2012 show that there was a marginal increase from 6.5 per cent in 2007/2008 to 6.6 per cent in 2012/2013 (see Table 5.8).

TABLE 5.8: RESEARCH DEGREE GRADUATES AS PERCENTAGE OF TOTAL HIGHER DEGREE GRADUATES FOR PERIOD, 2007 to 2013

HIGHER DEGREES/CAMPUS	HIGHER DEGREES GRADUATES BY YEAR					
	2007/08	2008/09	2009/10	2010/11*	2011/12*	2012/13*
MONA	662	835	844	899	746	793
Of which: Research Degrees	31	66	41	79	45	55
% Research Degrees	4.7%	7.9%	4.9%	8.8%	6.0%	6.9%
CAVE HILL	270	232	207	282	302	333
Of which: Research Degrees	23	17	14	18	22	25
% Research Degrees	8.5%	7.3%	6.8%	6.4%	7.3%	7.5%
ST AUGUSTINE	494	658	629	578	794	845
Of which: Research Degrees	39	44	61	47	40	54
% Research Degrees	7.9%	6.7%	9.7%	8.1%	5.0%	6.4%
OPEN CAMPUS	0	0	0	23	54	53
Of which: Research Degrees	0	0	0	0	0	0
% Research Degrees	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
TOTAL	1426	1725	1680	1782	1896	2024
Of which: Research Degrees	93	127	116	144	107	134
% Research Degrees	6.5%	7.4%	6.9%	8.1%	5.6%	6.6%

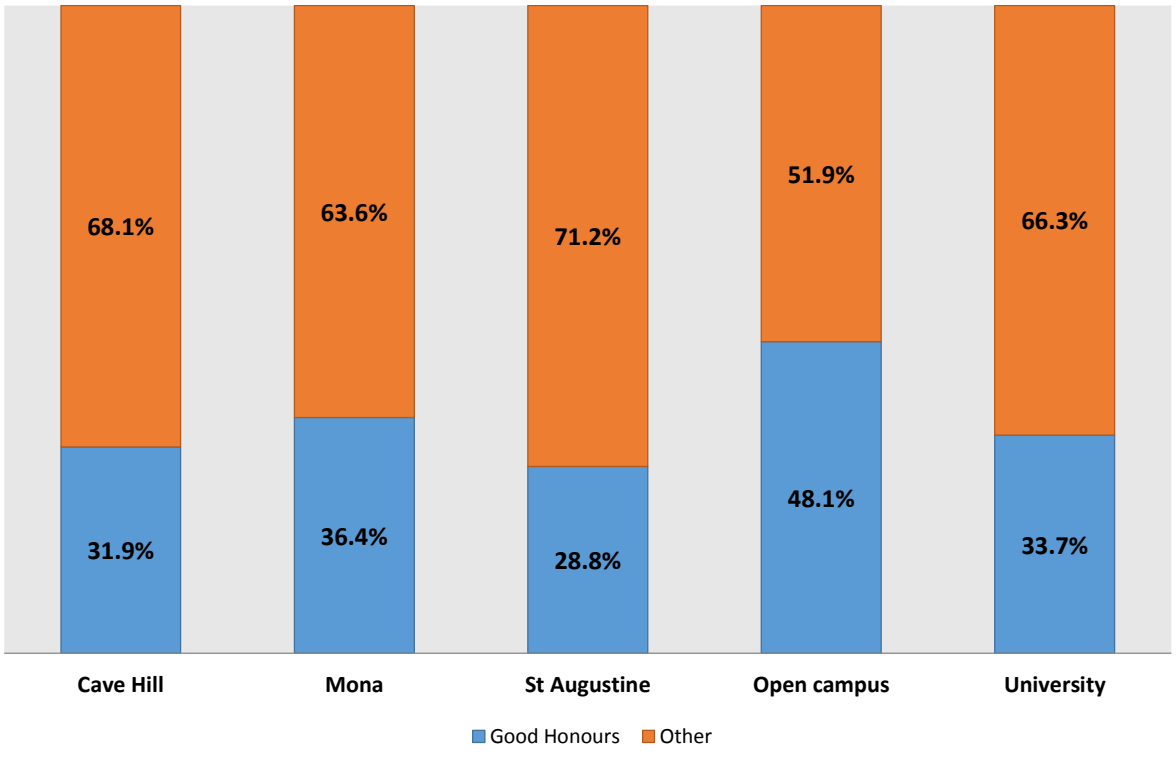
Source: UWI Annual Statistical Review: 2007/2008, 2008/2009 and 2009/2010. *Statistical Review 2009/10 to 2013/14

5.4. GOOD HONOURS

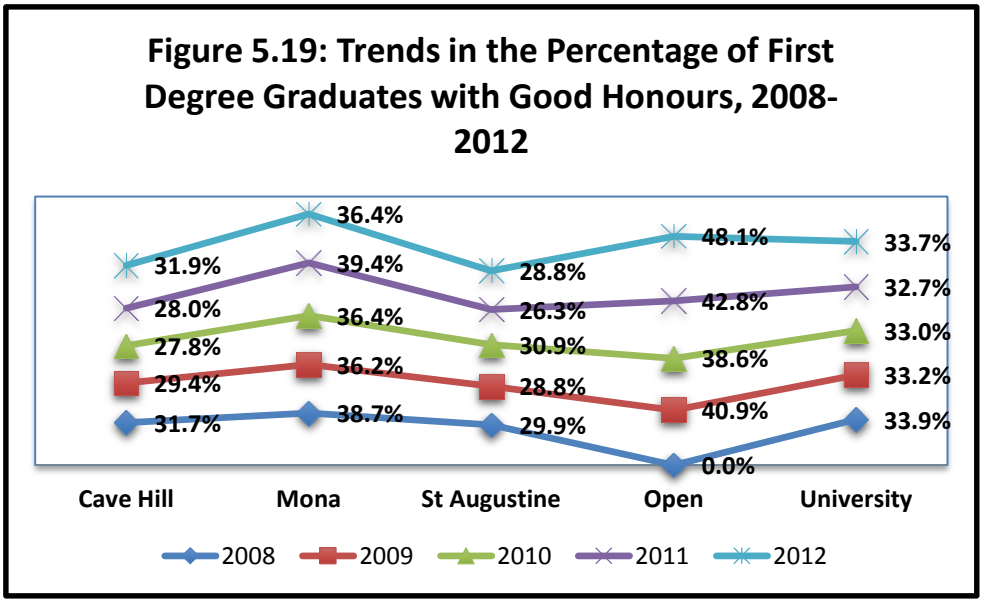
One indicator for assessing the quality of the graduate that an institution produces is the attainment of 'good honours'. This is determined by the classification of the class of the degree that an undergraduate is awarded. A 'good honour' is classified as a qualification earned with distinction, first class honours and upper second class honours. The data show the percentage of 'good honours degrees' awarded by the university has been on a steady decline since 2006 from 38.2 per cent in 2006/2007 to 32.7 per cent in 2010/2011 (UOPD 2011, 14).

Of the four campuses, the Mona and Open Campus demonstrated a higher proportion of 'good honours' compared to Cave Hill and St. Augustine (see Figure 5.18). From 2008 to 2012 the percentage of 'good honours' degrees awarded remained fairly consistent at around 33 per cent for the university as a whole. However, the Open Campus and Mona consistently awarded a higher percentage of 'good honour' when compared to the Cave Hill and St. Augustine campuses (see Figure 5.19). The decline of 'good honour' degrees awarded may be related to the reduced admission scores of students entering the university. An alternative explanation may be that the grading standards in the university may have increased (UOPD 2011, 25).

Figure 5.18: Percentage of First Degree Graduates with Good Honours by Campus, 2012

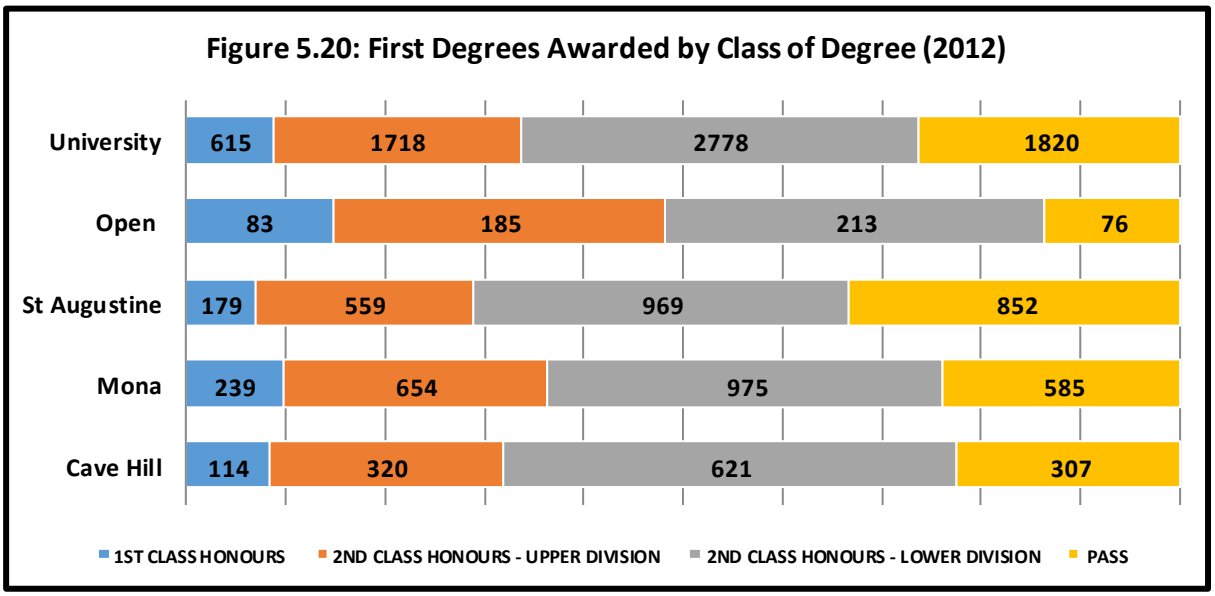


Source: UWI Annual Statistical Review. 20072008, 2008/2009, 2009/2010, 2011/2012



Source: UWI Annual Statistical Review. 20072008, 2008/2009, 2009/2010, 2011/2012.

Across all the campuses, the majority of the 2012 first degree graduates received Second Class Honours – Lower Division followed by Pass (see Figure 5.20).



Source: UWI Annual Statistical Review. 20072008, 2008/2009, 2009/2010, 2011/2012.

5.5. CONCLUSION

This chapter discussed interconnected issues, demand for the UWI education, enrolment and graduation. It charted the demand for places and the response by the UWI to that demand thus, highlighting that demand outstripped supply for both undergraduate and postgraduate programmes and as such, strategies have to be identified so that demand and supply of university places work in synchrony. Demand for undergraduate education at Mona and St. Augustine is higher compared to Cave Hill. Given the increasing competition in the labour market, postgraduate qualifications were clearly in demand for all campus territories. Despite the unsatisfied high demand for undergraduate and postgraduate education there was an overall increase in admissions.

Flowing from demand for higher education and admittance to the university, the UWI saw total student enrolment reaching a significant landmark of 51,208 in 2012/2013, an overall increase of 25.2 per cent over the period 2007/2008 to 2012/2013. The Faculty of Social Sciences dominates in enrolment trends by Faculty. Enrolment in STEM programmes was just about one-third of total university enrolment. Postgraduate enrolment is about 20 per cent of total university enrolment, however, enrolment in taught postgraduate programmes is higher than research postgraduate programmes. During the period, there has been a decline in part-time undergraduate students and an increase in full-time postgraduate students.

As part of its output, the total number of UWI graduates increased from 8,008 in 2008 to 10,158 in 2013, a cumulative increase of 26.8 per cent. The majority of the number of first degree graduates received Second Class Honours (Lower Division). The proportion of students graduating with good honours was generally about one-third of all first degree graduates. Non-STEM graduates dominate graduation output at both at the undergraduate and postgraduate levels of the university.

It can be posited that the consistent growth in demand, enrolment and graduation outputs reaffirms the perceived and real value of a University degree and that these trends are worth reviewing in the context of assessing the adequacy, efficiency and equity of higher education.

****

[1] The Speak Your Mind (SYM 2010), was conducted on the St. Augustine, Mona and Cave Hill campuses of the University in February 2010. This survey was conducted to measure the undergraduate experience of students based on both academic and non-academic criteria and consisted of six sections and covers sixty-five questions relating to the main aspects of student experience and the delivery of education services, specifically: Student Demographics, Student Orientation and Administrative Services, Academic Support Services, Non-Academic Support Services, Degree Programme and Overall Experience and Satisfaction.

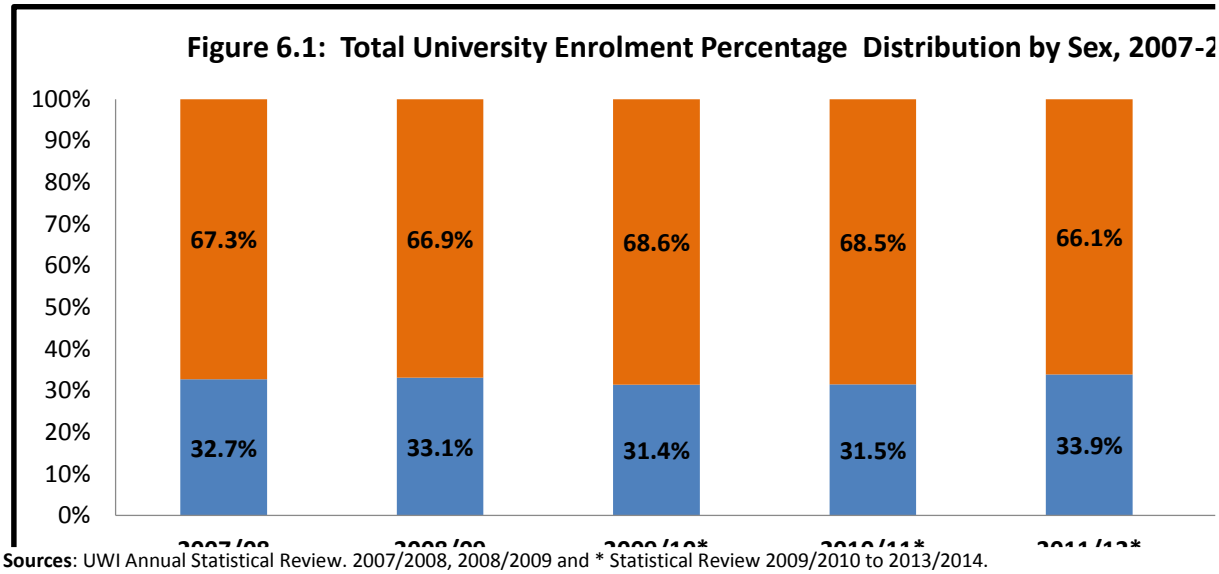
[2] The *HESR2013* did not probe into the reasons for the declining acceptance rates. It could be a result of an increase in the number of applicants and a decrease in average entrance scores. Hence, the decline in acceptance rates may not necessarily be due to infrastructural limitations. Another alternative which this *Review* did not explore is look at demand through the lens acceptance rates of qualified applicants

CHAPTER SIX: INCREASING THE DIVERSITY AND HETEROGENEITY IN STUDENT BODY

The twenty-first century is just over a decade old and TEIs are dealing with forces that impact on how faculty teach and students learn. This chapter explores the trends and anticipated changes in enrolment and student demographics. As such, issues of age, sex and nationality are addressed. Changes will occur in policies relating to access to higher education aimed at reducing inequalities and there will be concern with real student attainment. Student participation will continue to expand and will in most cases be evident from growth in the size of higher education systems. Females will continue to be the majority among the student population although they may be disproportionately represented in some disciplines. Institutions including the UWI may need to adjust their infrastructure, their policies, admissions practices and requirements to better attract and serve the changing student profile.

6.1. ENROLMENT DISTRIBUTION BY SEX

In keeping with international trends the UWI data show that females are a majority of the campus population. Since the 1980s there has been a steady percentage decline in male enrolment, but overall, the gender differential ratio of University enrolment was approximately 2:1 in favour of females across the three residential campuses. Over the six year period, 2007/2008 to 2012/2013, the average ratio of females to males remained constant at about 2:1 (see Figure 6.1).

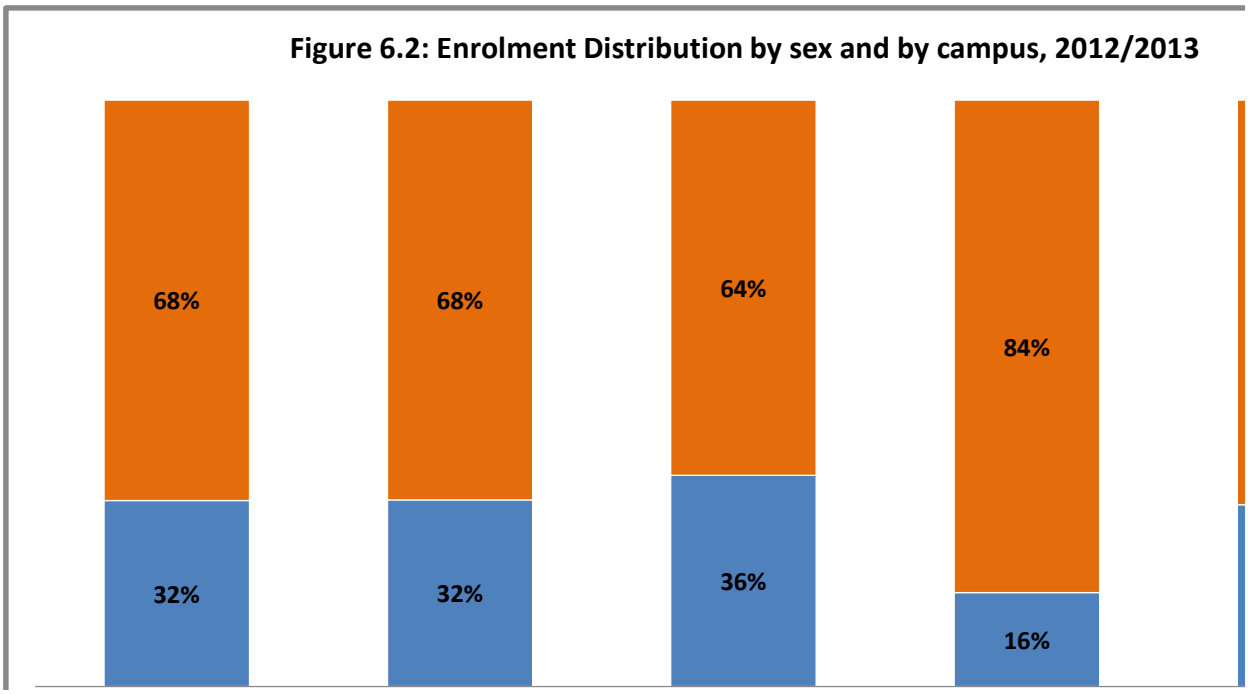


Sources: UWI Annual Statistical Review. 2007/2008, 2008/2009 and * Statistical Review 2009/2010 to 2013/2014.

Overall, the percentage of males was 31.3 per cent in 2012/2013 indicating a marginal decrease in the male population at the university from 32.7 per cent in 2007/2008. In other words, the ratios for female to male remain relatively unchanged for the period (2:1 in 2007/2008 and 1.9:1 in 2010/2011). The largest female population for 2012/2013 was enrolled at the Open

Campus with 84 per cent while the largest male population was at St Augustine with 36 per cent (see Figure 6.2).

Figure 6.2: Enrolment Distribution by sex and by campus, 2012/2013



Source: Statistical Review 2009/10 to 2013/14.

Given the declining participation of males in higher education initiatives were introduced at Cave Hill and Mona to encourage males into higher education which, according to Reports, are bearing fruit (see Box 6.1).

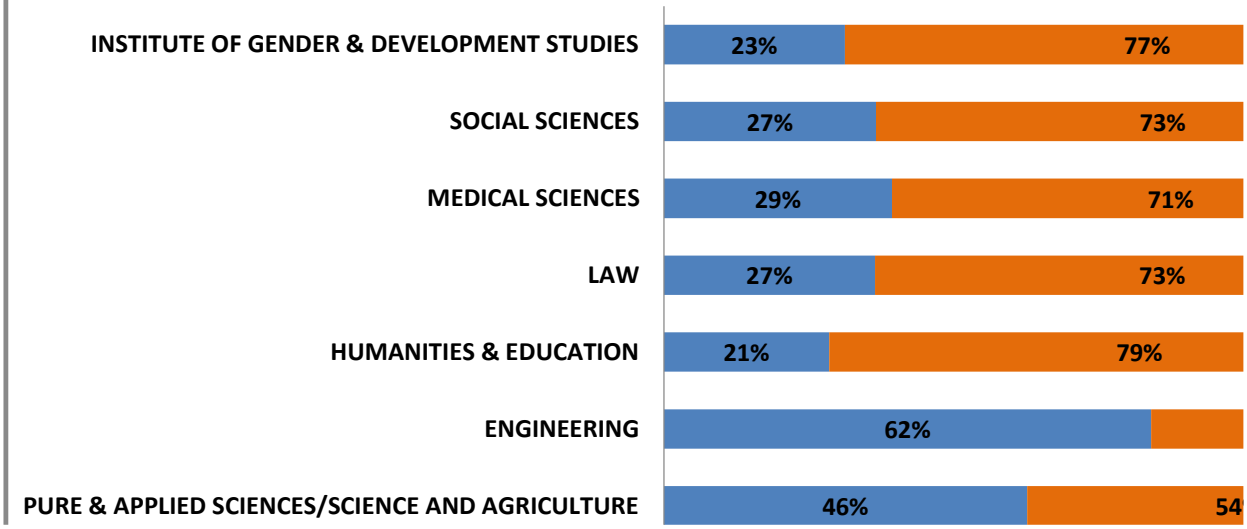
BOX 6.1: INITIATIVES TO ADDRESS MALE APPLICANTS (MONA AND CAVE HILL)

There is a pressing need to review policies on educational equality between the sexes by paying attention to the achievement of boys. At Mona campus, initiatives and targeted programming were developed that appealed to young men, while care was taken not to compromise female participation and performance. New programmes were introduced in the Sciences, Cultural Studies and Management Studies, with the hope in part being to attract more male applicants. A modest gain of 2% in male student registrations were realized between 2008/2009 and 2010/2011, bringing the male to female distribution to 30% versus 70%.
(Source: UWI. Annual 2010-2011 Report *Regionally Responsive, Globally Engaged.* UWI, Mona 2012.)

The Cave Hill campus introduced the MatCH (Men at Cave Hill) to address the gender imbalance at the University. The programme involved going out and approaching males in the communities, in the schools and trying to encourage them to pursue education. Within two years enrolment moved from 28 per cent male enrolment to 38 per cent male enrolment. The newspaper report further noted males were not necessarily shying away from education, but prefer those disciplines which will yield high income and status on graduation. As such, they are focusing on medicine, on engineering, on law, and in some of the sciences.
(Source: Barbados Advocate. "Males seeking 'high income, high status' jobs." *Barbados Advocate.* 5:01:2009, n.p. http://www.barbadosadvocate.com/admini/Newsview.asp?NewsID=3361.)

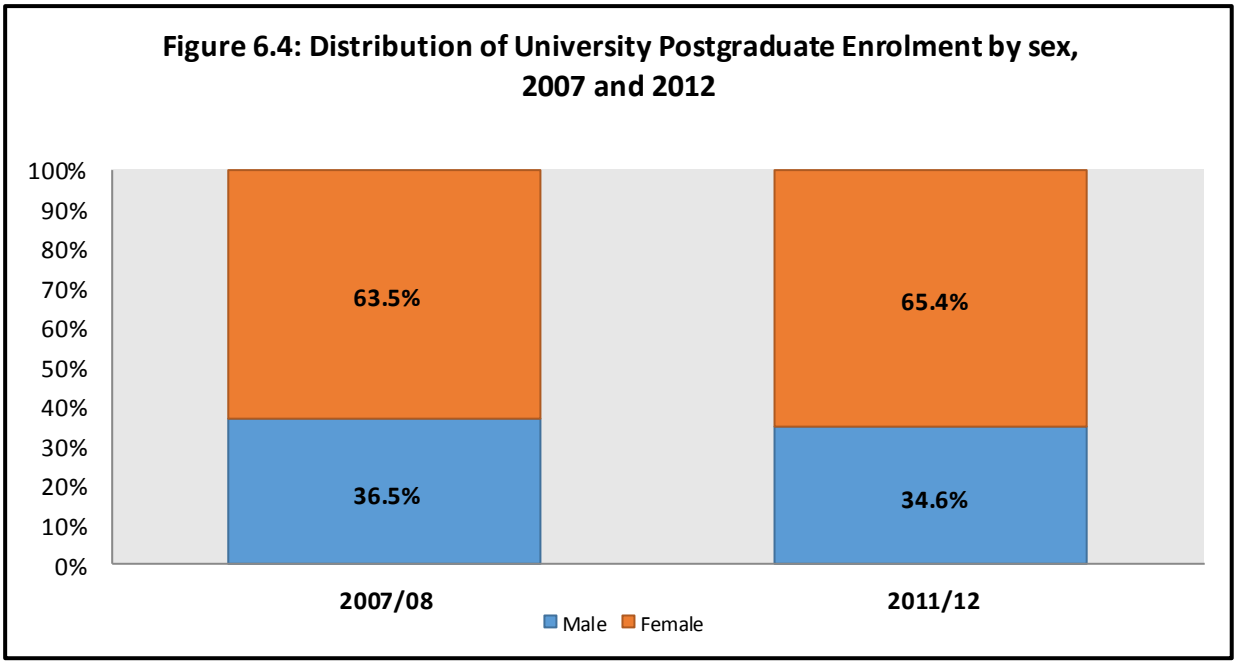
Females were a majority in all Faculties except Engineering where the ratio of males: females were 1.7:1 indicating that males still dominated in that Faculty (*see Figure 6.3).* Within the Gender and Development Studies programme, 23 per cent of the students enrolled were males.

Figure 6.3: Faculty Enrolment by sex all campuses combined, 2012/2013



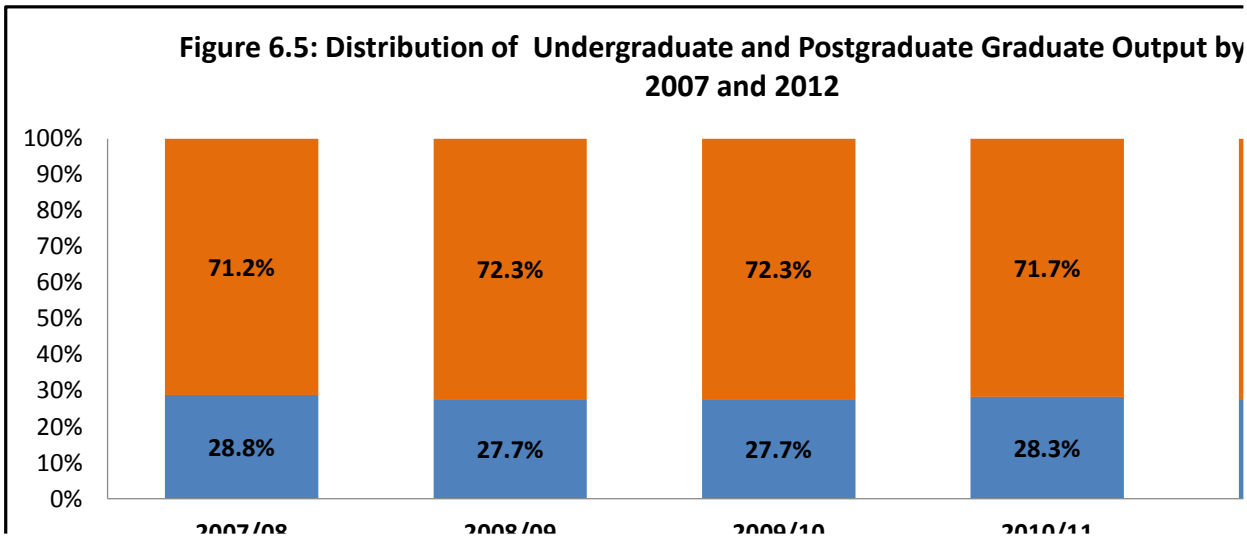
Postgraduate enrolment by sex also showed slight shifts between 2007/2008 and 2011/2012 with the percentage share of females increased slightly from 63.5 per cent to 65.4 per cent in 2011/2012 (see Figure 6.4).

Figure 6.4: Distribution of University Postgraduate Enrolment by sex, 2007 and 2012



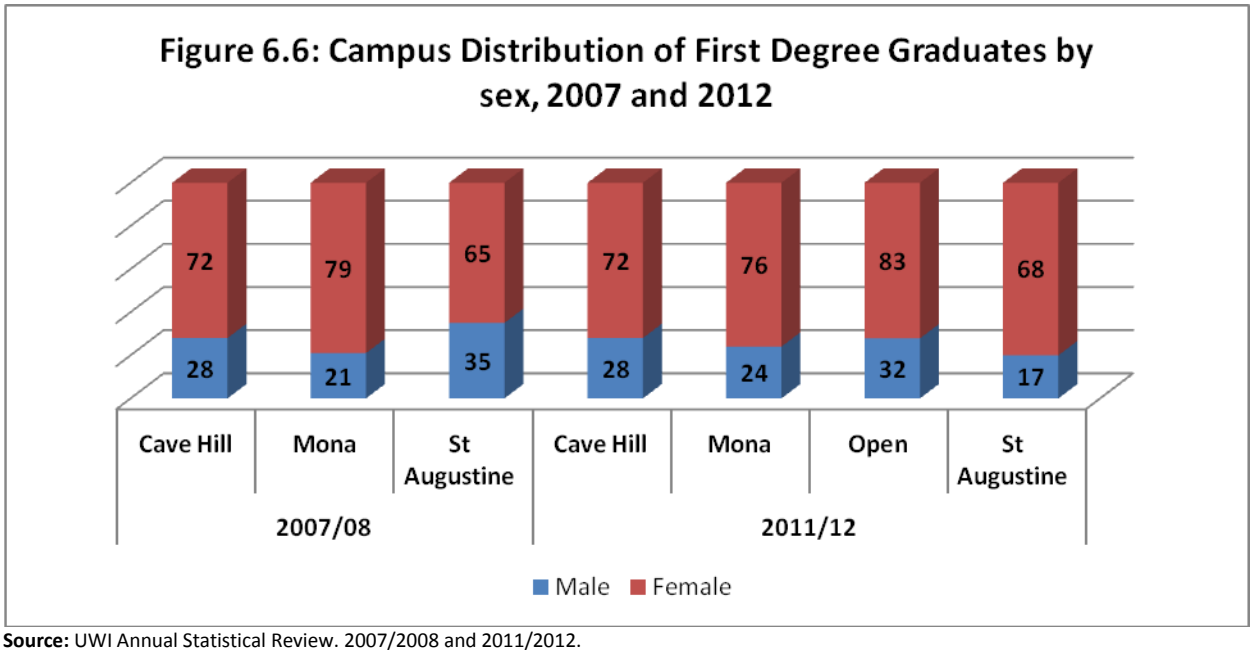
Source: UWI Annual Statistical Review. 2007/2008, and 2011/2012.

In keeping with enrolment trends, the proportion of female graduates remained fairly constant at about 72 per cent over the period 2007 to 2011 or 2.5 females for every male graduate (see Figure 6.5).



Source: UWI Annual Statistical Review. 20072008, and 2010-2012

Over the five year period, 2007/2008 to 2011/2012, sex ratios for Cave Hill remained constant, while at St. Augustine there was a decline of male graduates commensurate with an increase of female graduates. Mona, however, showed an increase of male graduates and a corresponding decline of female graduates for the same period. Open Campus had the largest proportion of female first degree graduates (83 per cent) (see Figure 6.6).



Source: UWI Annual Statistical Review. 2007/2008 and 2011/2012.

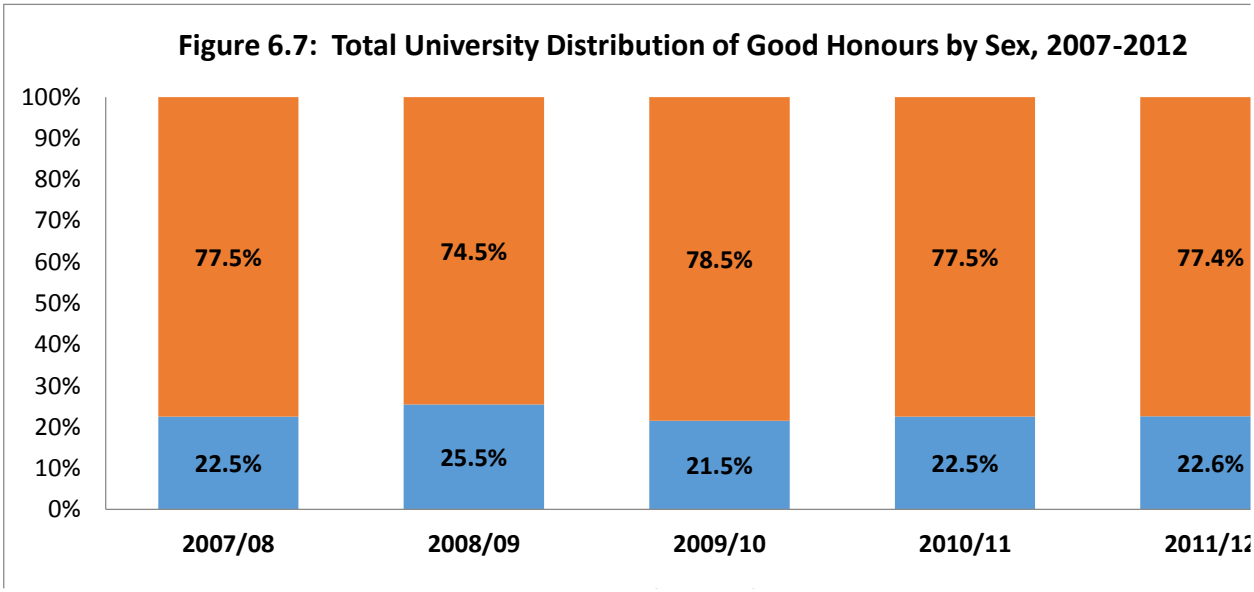
For the period, 2007/2008 to 2011/2012, the distribution of first degree graduates by Faculty and sex showed that females dominated in all Faculties except Engineering. This is reflective of the enrolment trends over the previous years, where females dominated among the graduates except Engineering (see Table 6.1).

Table 6.1: Female: Male Ratios For First Degree Graduates By Faculty And Sex, 2007 – 2012

	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012
FACULTY/SCHOOL					
Science & Agriculture/Pure & Applied Science	2 : 1	2 : 1	2 : 1	2 : 1	2 : 1
Engineering	1 : 3	1 : 3	1 : 3	1 : 3	1 : 2
Humanities & Education	4 : 1	3 : 1	3 : 1	4 : 1	4 : 1
Law	4 : 1	3 : 1	3 : 1	3 : 1	3 : 1
Medical Sciences	3 : 1	3 : 1	3 : 1	3 : 1	3 : 1
Social Sciences	4 : 1	3 : 1	3 : 1	3 : 1	3 : 1

Source: Calculated based data from UWI Annual Statistical Review. 2007/2008, 2008/2009, 2011/2012.

The receipt of 'good honours' were approximately 3 females for every male on average (see Figure 6.7) and again, this ration is reflective of general enrolment trends.



Source: UWI Annual Statistical Review. 2007/2008, 2008/2009, 2009/2010 and 2010-2012 Campus Planning Offices.

Males were more likely to graduate in science-based areas but this is due to their higher enrolment in those Faculties. In the Humanities and Social Sciences females dominated the graduation outputs but this again is related to the bias in enrolment (see Table 6.2).

Table 6.2: Percentage Distribution Of Higher Degree Graduates By Faculty And Sex, 2007/2008 – 2011/2012 (%)									
FACULTY/SCHOOL	2007/2008			2009/2010			2011/2012		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Science & Agriculture/Pure & Applied Science	12%	5%	7%	13%	6%	8%	15%	6%	9%
Engineering	11%	5%	7%	15%	6%	9%	14%	4%	7%
Humanities & Education	13%	22%	18%	13%	22%	19%	14%	31%	26%
Law	0%	2%	1%	1%	1%	1%	2%	3%	3%
Medical Sciences	7%	9%	8%	8%	11%	10%	8%	9%	9%
Social Sciences	57%	57%	57%	50%	53%	52%	47%	46%	46%
Gender Studies	0%	0%	0%	0%	1%	0%	0%	1%	1%
TOTAL	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: **Source**: UWI Annual Statistical Review. 20072008, 2009/2010, 2011/2012.

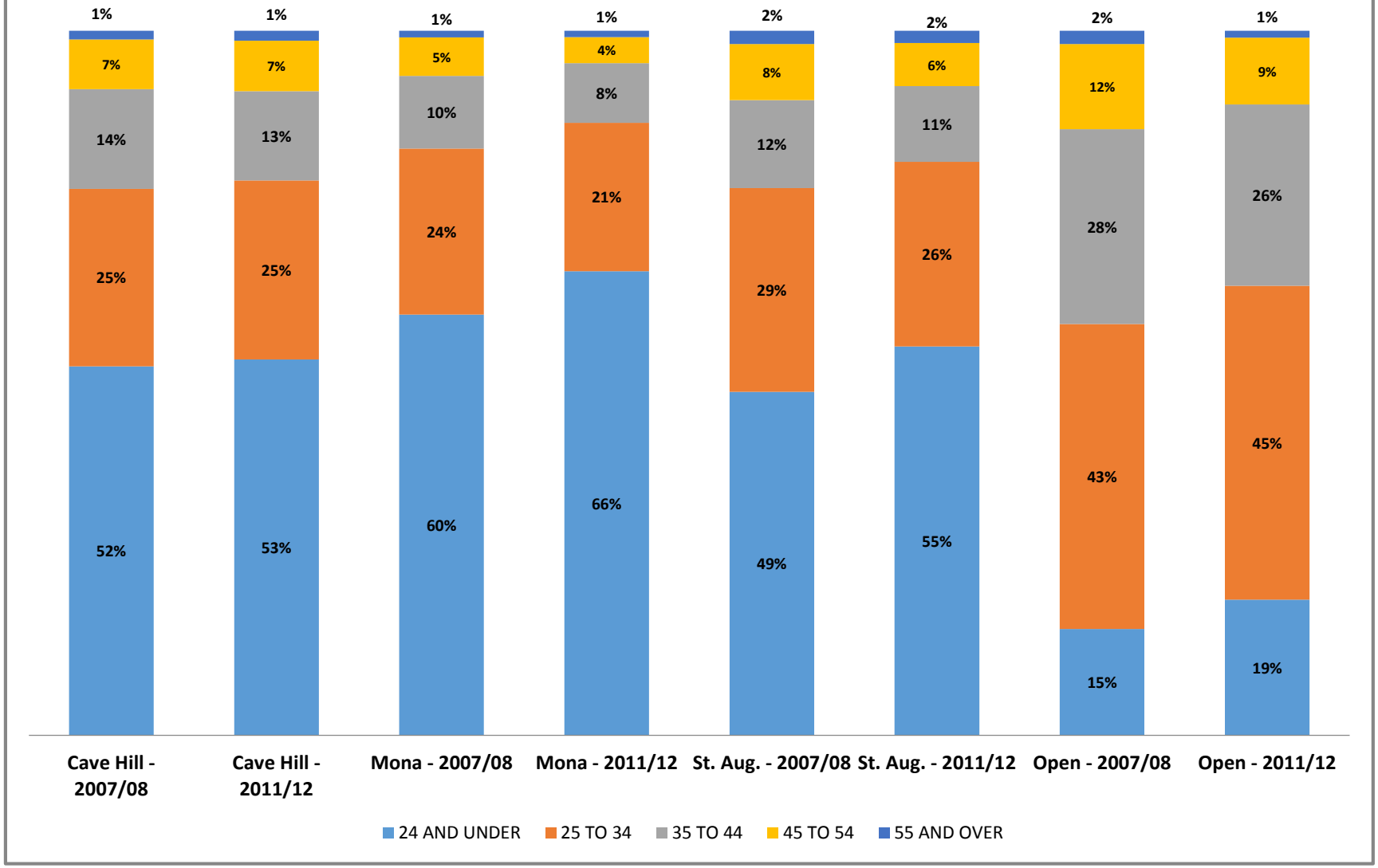
6.2. ENROLMENT DISTRIBUTION BY AGE

Overall, within the university for the period 2007/2008 to 2011/2012, the 25 and under population hovered between 49 per cent and 53 per cent of the total enrolment and the 25-34 population remaining fairly stable for the period at around 27 to 28 per cent. The student population distributed at the age segments, 35-44 (13-14 per cent) and 45 and over (8-9 per cent) remained stable.

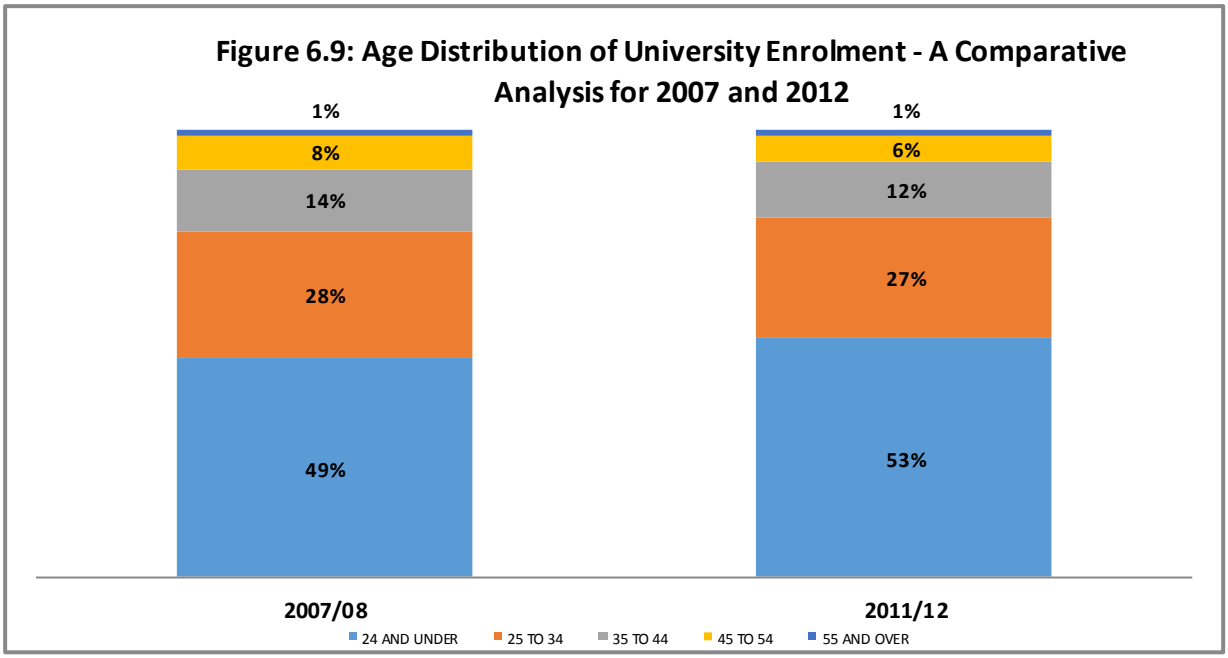
When the data are disaggregated by campus for 2011/2012 it shows that the age group 24 and under drove growth on the Cave Hill, Mona and St. Augustine campuses, whereas with the Open Campus the 25-34 age group dominated. Students in the 25-34 age group represented almost one-quarter of the total enrolment on the Cave Hill, Mona and St. Augustine campuses. Hence, the UWI student population is generally young especially at the three physical campuses. By and large, the 45 and above group – a group that is commonly still part of the labour force – accounts for just about 7 per cent of total enrolment (see Figure 6.8).

With regards to the on-campus population between 2007/2008 and 2011/2012 the percentage share of the 24 and under age group increased from 49 per cent to 53 per cent, while the 25-34, 35- 44, 45-54 age groups declined marginally (see Figure 6.9).

Figure 6.8: Age Distribution of University Enrolment by Campus, 2007 and 2012

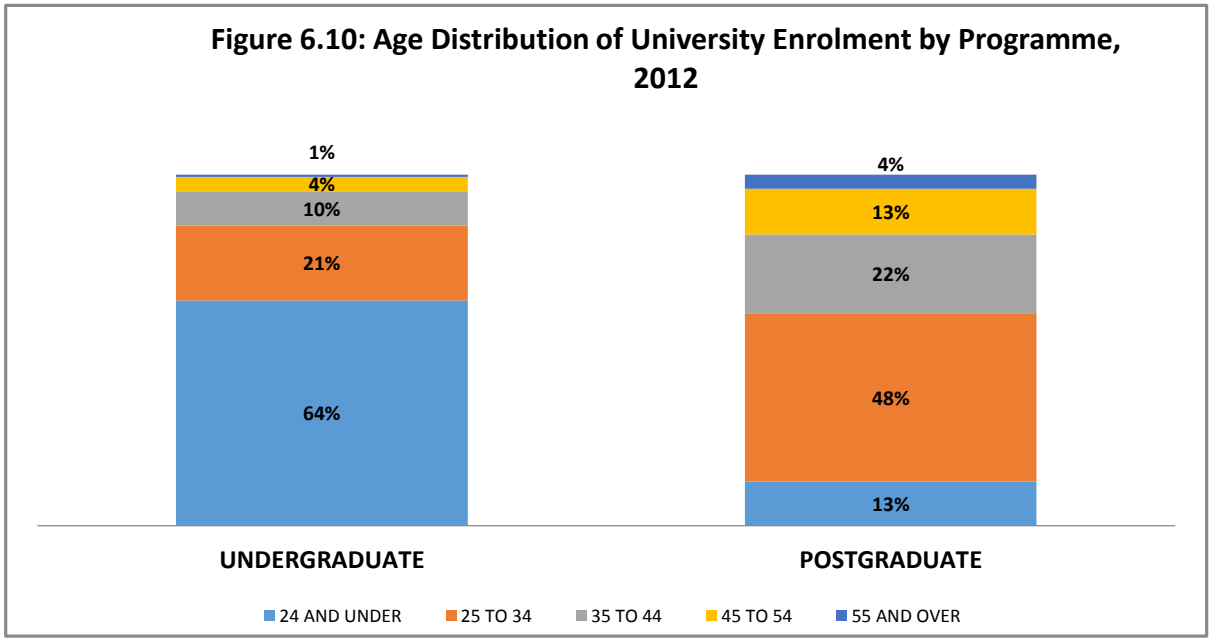


Source: UWI Annual Statistical Review. 20072008, 2008/2009, 2009/2010, 2011/2012.



Source: UWI Annual Statistical Review. 2007/2008, 2011-2012.

While the 24 and under age group drove undergraduate enrolment (64 per cent), the 25 to 34 age group (48.0 per cent) dominated the postgraduate enrolment in the university. The 25 to 34 age group accounted for just over 20 per cent of the undergraduate population and the 35 to 44 accounted for 22 per cent of those enrolled at the postgraduate level. Again, the 45 and older account for just about 5 per cent of the total undergraduate enrolment whereas at the postgraduate level the group accounts for just about 17 per cent of the **enrolment *(see Figure 6.10).***



Source: UWI Annual Statistical Review. 2011-2012.

6.3. ENROLMENT DISTRIBUTION BY COUNTRY OF ORIGIN

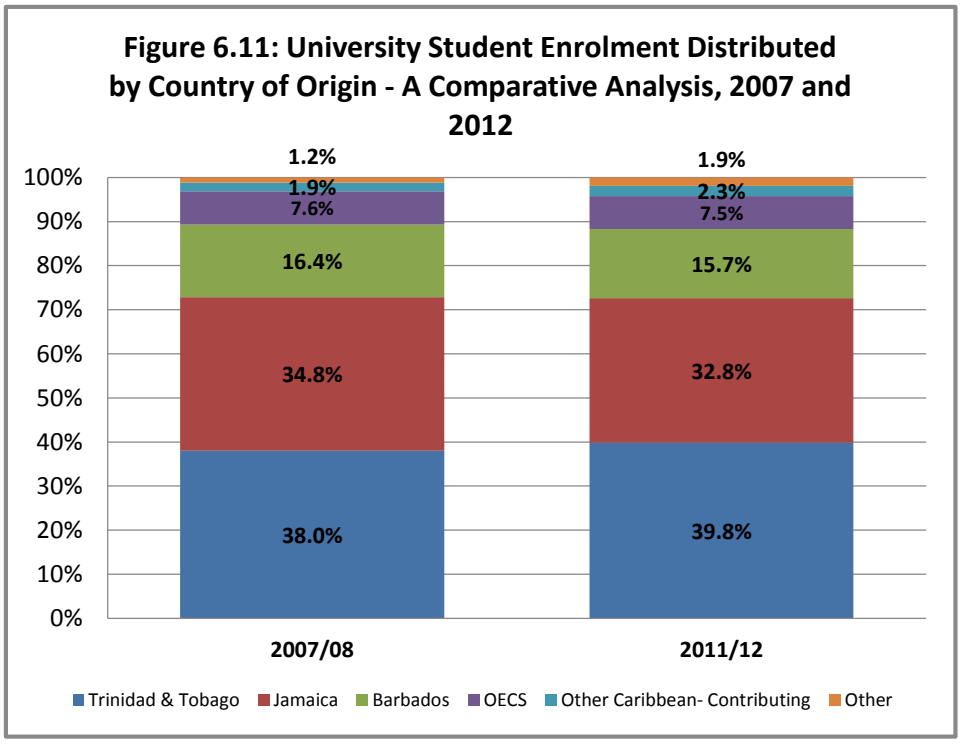
As a regional university, the UWI enrols students of predominantly Caribbean origin. An overwhelming majority (98%) of the total student population for 2007/2008 and 2011/2012 were nationals of the UWI contributing countries, of which 40 per cent were from Trinidad and Tobago, 33 per cent per cent were from Jamaica, 16 per cent from Barbados, 7 per cent from the OECS countries and 2 per cent from other Caribbean contributing countries. Approximately two per cent of the total number of students' enrolled was from non-contributing countries. The residential campuses primarily service the national populations though there is some reach to the OECS and other Caribbean territories mainly through the Open Campus. During the period 2007/2008 to 2011/2012 there were no significant changes in the geographical distribution of the student population (see Table 6.3).

Table 6.3: Student Enrolment Distribution By Campus And Country Of Origin - 2011/2012

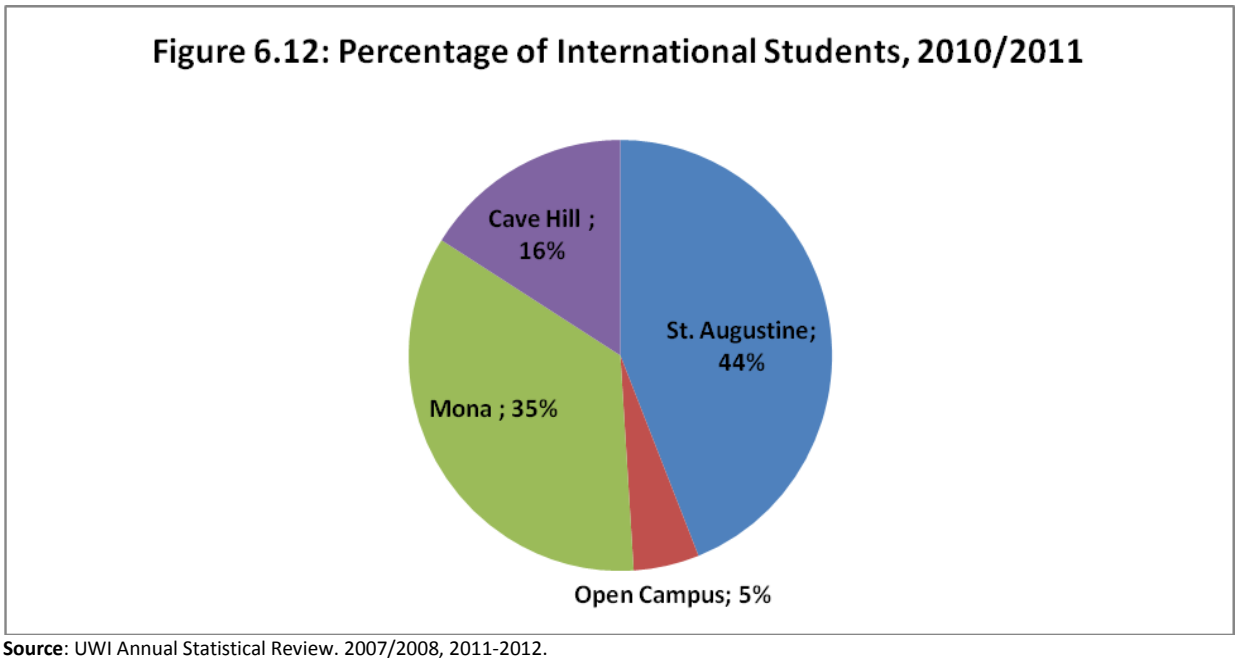
Territory	On-Campus			Open Campus	Off Campus	Total University	% of Total
	Cave Hill - On	Mona	St. Augustine				
Anguilla	7	0	2	52	1	62	0.1%
Antigua & Barbuda	110	20	15	166	117	428	0.8%
Bahamas	36	123	94	43	72	368	0.7%
Barbados	7170	161	202	155	233	7921	15.7%
Belize	82	31	21	153	22	309	0.6%
Bermuda	2	4	2	3	0	11	0.0%
British Virgin Islands	11	8	15	18	20	72	0.1%
Cayman Islands	1	9	0	10	0	20	0.0%
Dominica	81	23	41	392	19	556	1.1%
Grenada	72	11	64	353	9	509	1.0%
Guyana	48	28	123	75	101	375	0.7%
Jamaica	212	13387	214	1680	1045	16538	32.8%
Montserrat	7	3	2	58	1	71	0.1%
St Kitts/Nevis	54	37	22	185	3	301	0.6%
St Lucia	132	37	123	606	81	979	1.9%
St Vincent & The Grenadines	238	53	155	290	126	862	1.7%
Trinidad & Tobago	456	487	17081	2017	36	20077	39.8%
Turks & Caicos Islands	2	7	1	3	0	13	0.0%
Others	120	220	529	78	20	967	1.9%
All Countries	8841	14649	18706	6337	1906	50439	100.0%

Source: UWI Annual Statistical Review. 2011-2012.

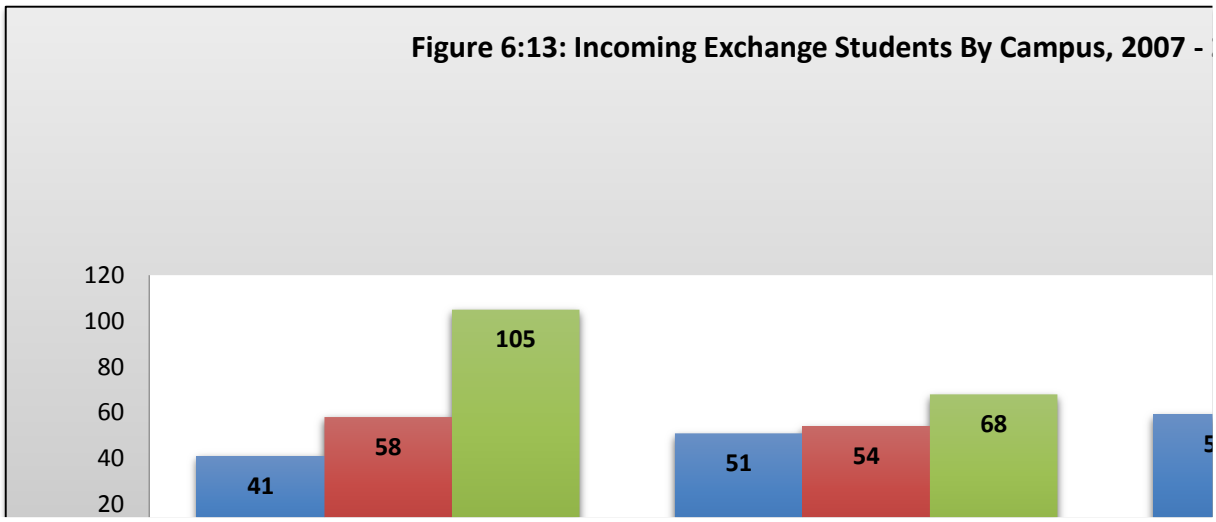
Figure 6.11 gives a comparative analysis of the enrolment distribution by nationality between 2007/2008 and 2011/2012. It shows that nationals of Trinidad and Tobago and Jamaica accounted for over 30 per cent of university enrolment in 2007/2008 and 2011/2012. For 2010/2011, the highest enrolment of international students (i.e. students outside of the contributing and non-contributing Caribbean countries) was at St. Augustine (44%) followed by Mona (35%), Cave Hill (16%) and Open Campus (5%) (see Figure 6.12). Incoming international exchange students increased by 46 per cent between 2007/2008 and 2011/2012 (see Figure 6.13) with Cave Hill accounting for the highest intake of exchange students in 2011/2012.



Source: **Source**: UWI Annual Statistical Review. 2007/2008, 2011-2012.



Source: UWI Annual Statistical Review. 2007/2008, 2011-2012.



Source: UWI An **Source**: UWI Annual Statistical Review. 2007/2008, 2011-2012.

6.4. STUDENTS WITH DISABILITIES (SWD)

The UWI provides facilities for students with special needs which is in keeping with university's mandate to advance opportunities for persons with visual, hearing or physical impairment. There is the recognition of a wide array of temporary and permanent disabilities (see Box 6.1). For instance, at the Mona campus, the Lions Club Centre for Students with Special Needs is equipped with technologies such as a Kurzweil Reader, available at the library for use by blind students, Electronic Braille Embosser, Perkins Braillers, Braille and Speak Machines, Type and Speak Machines and computers equipped with Jaws Speech Programme. Further, all new buildings are designed with provisions for wheelchair users. At St. Augustine and Cave Hill campus, there is the provision of aids and devices such as laptops, USB drives, tape recorders and special software – which can be located at the Ground Floor of the Alma Jordan Main Library. Special arrangements are also made for examinations such as extra time, scribe/reader in the case of St. Augustine and soundproof exam booths at Mona.

Based upon their definitions of differently-abled students the Academic Advising/Disabilities Laison Unit (AADLU) at St. Augustine registered approximately 150 students from the St. Augustine Campus, Arthur Lok Jack Graduate School of Business, UWI Open Campus and the University of the Southern Caribbean in 2010-2011. Cave Hill for 2011/2012 recorded 915 students as differently-abled based upon their categories of differently-abled (ADSLU). A look at the data for Cave Hill, Mona and St. Augustine using a narrow definition of differently-abled suggest that enrolment of SWDs is less than 1 per cent of the total on-campus enrolment.

BOX 6.2: CLASSIFICATION OF DIFFERENTLY-ABLED AT CAVE HILL AND ST. AUGUSTINE CAMPUSES

Recognition of mental or physical disabilities or impairments by campuses:
Cave Hill: Asthma and chronic asthma, bipolar disorders, diabetic insulin users, dyslexia, epileptic, hearing impaired, heart conditions, mobility impaired, mute, paraplegic, partial paralysis, prosthetic limb, repetitive stress injury, visually impaired.
St. Augustine: Arthritis, Attention Deficit Disorder, Blindness/Low Vision, Cerebral palsy, Communication disorder, deafness/hearing impairment, Dyslexia, Emotional/Psychological disorder, Epilepsy, Multiple Sclerosis, Medical Disorders, Specific Learning Disabilities, Spinal Cord Injuries, Temporary Disabilities, Traumatic Brain Injuries, Other Health Impairments. (Source: UWI St. Augustine Student Disability Policy, 2007,9)

To this end the University will, within available resources:-

- Encourage individuals with disabilities to apply to the University;
- Offer additional provision to ensure that disabled people are not disadvantaged in comparison with others at the application stage;
- Encourage provision of information in suitably accessible forms;
- Work towards the earliest possible identification of strategy aids and assessment of needs;
- Work towards a curriculum accessible to all students;
- Provide adapted examination arrangements for eligible students;
- Provide educational support services for eligible students;
- Remain committed to encouraging departments to be active in supporting students with disabilities by providing reasonable adjustments and alternative arrangements;
- Work with staff and faculty to make improvements to the physical and learning environment so that students with disabilities will be able to play a full part in the University;
- Continue to increase the provision for disabled students in the University's residential accommodation;
- Take steps to encourage students with progressive conditions, or who become disabled during their time at the University, to continue in their course of study;
- Provide the appropriate level of disability awareness to foster an inclusive community and endeavour to ensure appropriate training for those working directly with disabled students;
- Ensure that health and safety procedures are inclusive.

Table 6.4: Enrolment of Students with Disabilities, 2010-2012

CAMPUS	2010/2011			2011/2012		
	Male	Female	Total	Male	Female	Total
Cave Hill						25
Mona (on-campus)	15	22	37	22	26	48
St. Augustine*	6	2	8	5	4	9
Total	31	24	45	27	30	57

Source: Campus Planning Offices.
Note: *For St Augustine, data for SWDs include two hearing impaired, four visually impaired and one vertically challenged for 2010/2011 and one person each with asthma, bipolar disorder and mobility impairment, four hearing impaired, two visually impaired in 2011/2012.

6.5. CONCLUSION

The chapter has highlighted that the sex enrolment ratios remained fairly constant at 2:1 and the proportion of female graduates remained stable at 72 per cent. Females also received the majority of 'good honour' degrees and dominated graduation outputs for all Faculties except Engineering and Pure and Applied Sciences/Science and Agriculture. The overall age group driv-

ing undergraduate university enrolment growth is 24 and under, whereas with the Open Campus the 25-34 age groups dominate before final examination. Conversely, the 25 to 34 dominated postgraduate enrolment. International students at the university accounts for 2 per cent of total enrolment, while the UWI contributing countries account for almost 96 per cent of total enrolment thus, reaffirming the Caribbean character and reach of the UWI.

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CHAPTER SEVEN: TECHNOLOGICAL DEVELOPMENT

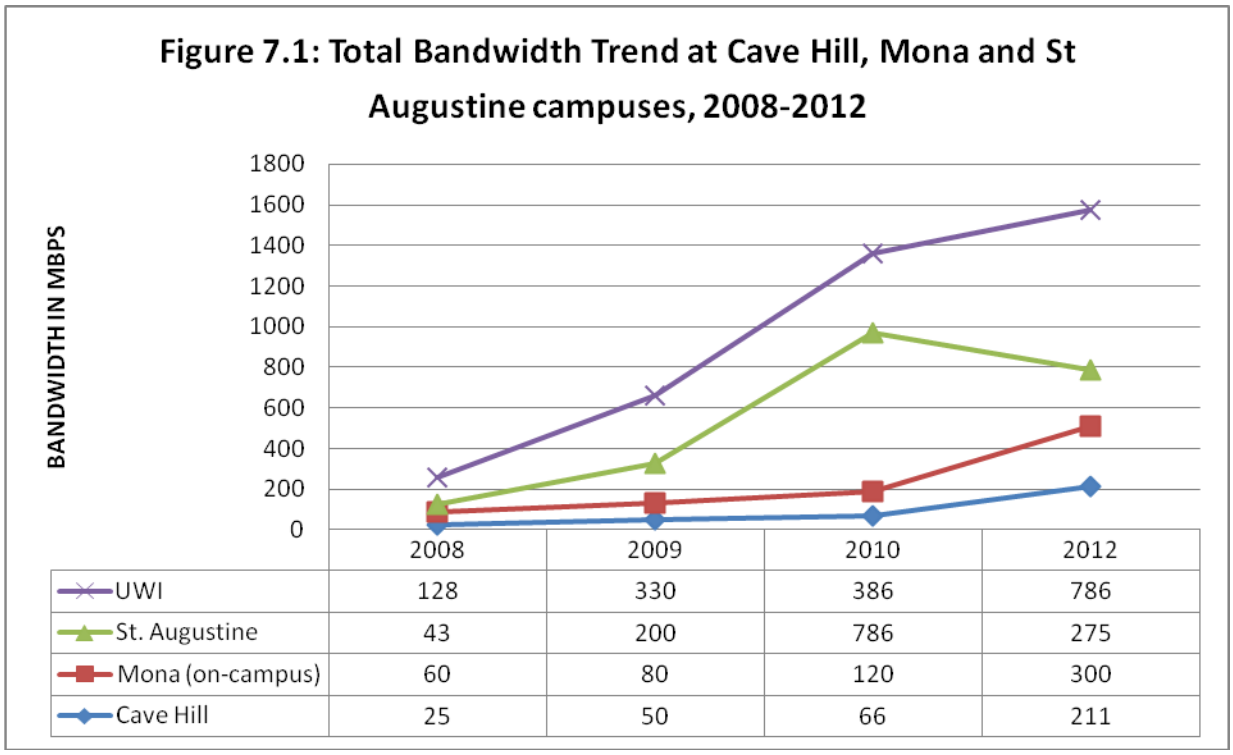
Higher education institutions have to rethink almost everything they do in today's highly-connected and competitive digital age to ensure they remain relevant, while advancing the opportunities for individuals by providing a productive, efficient learning environment. They also need to be current with technology so that they can save time, energy and effort on a scale that is efficient and effective. From processing admissions to managing financial aid to the learning environment, technology is being used to help institutions work more efficiently. ICTs have also altered the way in which students learn and individuals access higher education. This chapter briefly explores facets of the use of ICT within the university and aspects which have been used to enhance the teaching and learning environments, thus making the university competitive. It, in no way seeks, to provide a panoramic view of the use and application of ICT across the university in all its various domains and multiple dimensions.

The World Bank (2013) noted that internet penetration among the Caribbean small states in 2011 was 41.7 per cent above the world average of 32.8 per cent. According to the *Internet Usage and Population Statistics* report at June 30 2014 (Miniwatts Marketing Group 2015, n.p.), the Caribbean ranked slightly below the world average with 41.1 per cent compared to 42.3 per cent globally. According to the same source, Facebook penetration rate was 115.3 per cent at March 31 2012 slightly above the world average of 12.1 per cent. Furthermore, mobile phone penetration in the region is high. CARICOM (2014, 540) noted the region's mobile penetration rated was 80.9 per cent and that the growth of mobile subscription in the region was 8.6 per cent.

7.1. ICT CONNECTIVITY TREND AT UWI

As acknowledged above, technology is ubiquitous. As part of the upgraded information technology (IT) infrastructure, there was a significant expansion of wireless network across the campuses and a consolidation of hardware with server virtualization as well as new and upgraded data centres at the Mona and Cave Hill campuses. The foundation for ICT services is access to the Internet which increasingly demands reliable and adequate bandwidth. At the UWI, the current bandwidth exceeds the optimum bandwidth. Experience has shown that the demand for bandwidth is actually doubling every eighteen months to two years.

From 2008, the UWI experienced a growth in ICT infrastructure and services that led to improved student services, a growth that was necessary due to increasing student enrolment (see figure 5.6). The graphical representation of the bandwidth trend from 2008 to 2012 is shown in Figure 7.1. Total bandwidth across the UWI (excluding the Open Campus) moved from 128Mb in 2008 to 786Mb in 2012; an increase of almost six times over the five year period. The trend demonstrates that bandwidth capacity has increased significantly over the period. At St Augustine and Cave Hill campuses this increase was due to an additional 155 Mbps of commodity Internet with direct access to Internet2. Additionally, at St Augustine campus an additional 495 Mbs is currently being commissioned.



Source: Office of the University CIO.
Note: 155 Mbps of commodity internet with direct access to Internet2.

As part of being relevant in an intensely competitive higher education market and responding to the technological developments, the UWI established the Open Campus which offers continuing and professional education, undergraduate, and postgraduate programmes. Between 2008 and 2012 there was an upgrade of Open Campus sites. Given the characteristics and form of Open Campus with its multiple sites in several countries, Table 7.1 below shows the estimates of total internet bandwidth available in the Open Campus over the years 2008 - 2012.

Table 7.1: Estimates Of Distribution Of Total Internet Bandwidth (Mbps) In Open Campus Countries

Location	2008	2009	2010	2011	2012
STA	5	5	5	5	20
Mona	40	40	40	40	40
CH	10	10	10	10	10
OCCS*	95	100	110	120	150
Total	**150**	**155**	**165**	**175**	**220**

Source: Open Campus Computer and Technical Services
Note: *OCCS - Open Campus Country Sites. Non Dedicated Internet Bandwidth (DSL, Cable Modem, etc).

Cave Hill has also expanded its wireless capabilities from 50 access points in 2009 to 200 points with an average of 2000 users connected concurrently on a daily basis (UWI Cave Hill Annual Campus Report 2011/2012, 26). Mona campus also benefitted from an upgrade of wireless access.

Student services were also improved via technology-enabled spaces. There was a significant increase in online courses using Moodle (A learning management system) and web-based synchronous tools (Elluminate through the Open Campus). The Learning Exchange was upgraded from Moodle 1.8 to Moodle 2.0 and Elluminate Live version 10 was upgraded to Blackboard Collaborate version 11. These allowed for a user-friendlier interface.

During the four year period (2008-2012), there was the introduction of an integrated student portal (my.edu.uwi) where students can check their class schedule, access their grades, check email and connect with friends. The university also provides educational solutions which enables students to access all the online resources they need from one single space. To that end, student email on the cloud based Microsoft Live@Edu which already existed at Cave Hill was launched at Mona and St. Augustine in August 2011. At the point of launch (August 2011), 15,000 new live@edu student emails were created at Mona and 18,000 email accounts at St. Augustine.

Jones et al (2005, 1) indicated that plagiarism, and other forms of academic impropriety are on the increase among university students.[1] The Internet has made plagiarism easier; by copying and pasting sentences or sections of electronic sources or by accessing free websites that allow students to copy essays. Hongyan Ma et al (2008, 199) noted that digital cheating and plagiarism is a problem among college students.[2] This is attributed to a disconnect between intellectual property, ownership and originality resulting from the growth of digital media (Gabriel 2010, n.p.). The UWI adopted, in April 2010, an Undergraduate Student Anti-Plagarism Policy and implemented in October 2010 a Policy on Graduate Student Plagiarism. To that end, the institution has introduced the anti-plagiarism detention software, Turnitin, which is accessible to both undergraduate and postgraduate students.

Recognising the growing importance and prevalence of technology in supporting and enhancing teaching and learning, the Educational Media Services Unit (Cave Hill Campus) in February 2011 conducted a survey on Cave Hill Campus to assess students' access to a range of technologies and attitudes to the use of technology in teaching and learning. Of the 378 responses received, 86.7 per cent reported that their primary source of access was a personal laptop computer (69.1 per cent) or a personal desktop computer (17.6 per cent). The survey also found that 9.1 per cent primarily used computers in the labs on campus and 4.3 per cent a computer at their workplace. Just over 82 per cent had high-speed Internet access at home. The survey also found that 49.5 per cent of the respondents owned a mobile device (e.g. Tablet, iPhone, Blackberry). These devices were primarily used for sending instant messages 81.8 per cent and email (80.2 per cent) or for accessing social networking sites such as Facebook (72.2 per cent). Use for course-related activities was lower, that is, visiting websites relevant to their courses (38.0 per cent), downloading or reading materials from the campus e-learning system (29.4 per cent). Approximately 96.5 per cent of the respondents reported that they used the campus e-learning system in at least one course. One-third (65.7 per cent) felt that use of e-learning in their courses improved learning (25.9 per cent were neutral). More specifically, 83.9 per cent felt that use of e-learning helped them to stay on track with their studies.[3]

As at December 2012, all campuses had a Facebook and Flickr account with Cave Hill, Mona and St Augustine also holding Twitter and YouTube accounts. In relation to the number of Facebook fans, St Augustine Campus had 40,000+ fans (account active for five years), Mona Campus had a fan base of 3900+ (account active for three years) and Cave Hill Campus and Open Campus had 2700+ and 1900+ fans, respectively (both accounts were active for two years) (UWI. Annual Report 2011/2012, 81). Similarly, Faculties and Centre or units have pages on Facebook (see Box 7.1).

BOX 7.1. UWI ST. AUGUSTINE's ENGAGEMENT WITH SOCIAL MEDIA

- Between 1 September and 22 November 2012 there were 10,611 views of UWI St. Augustine on YouTube with an estimated 15,332 minutes watches. There were 28 likes, 2 dislikes, 5 comments, 11 shares, 2 favourites added during period. The top playback locations were YouTube watch page (53.4%). Embedded player on other websites (31.3%), mobile devices (10.8%), YouTube channel page (4.4%) while the top traffic sources were mobile apps and direct traffic (48.2%), view referral from YouTube (39.4%) and view referral from outside YouTube (12.4%).
- For the same period, 1 September and 22 November 2012, there were 3646 tweets/retweets for the UWI-St. Augustine Twitter account with the top five refers being facebook.com, Direct Click, twitter.com, hootsuite.com, and google.com. 36.7% tweets about UWI St. Augustine came from Trinidad and Tobago with 2.4% from a mix of Caribbean countries (Barbados, Jamaica and Antigua and Barbuda) and 60.9% from the rest of the world.
- The UWI St Augustine Campus has been making use of social media officially since August 2009. The Campus now has a Facebook Page, Twitter Profile, Flickr and a YouTube Channel. All of the channels are integrated on the Facebook Page, the main Social Media vehicle for the Campus. Within a year, by August 2010, UWISTA's Facebook Page garnered 25,098 fans, steadily increasing to 32,396 fans by August 2011.
- For the UWI St. Augustine Facebook page there were 40,426 likes, 4,776,300 friends of fans, 616 persons talking about the page with a weekly reach of 20,669 over the period September to November 2012. The majority of users were females (61%) of which 30.4% of females were 18-24 years and 15.7% were between 25 and 34 years. Among the 38.3% male users the age group 18-24 years accounted 20.3% and the 25 to 34 years 9.3%. Again, the majority of persons were from Trinidad and Tobago (84.6%) with 4.2% from other Caribbean countries (Jamaica, Barbados, St. Lucia, Grenada, St. Vincent and the Grenadines, The Bahamas, Dominica and Belize) with 11.2% from other countries. With regards to location of users in Trinidad and Tobago the majority were from Port of Spain (71.4%) with 7.0% and 6.4% from San Fernando and Chaguanas respectively. The rest, 14.3% from the south, central and east Trinidad and 0.9% from Tobago.

(Source: Office of the University CIO)

To capitalise on the growing cachet of the tech industry, colleges in the United States such as Stanford, the University of Washington and the University of Southern California, have recently revamped their curricula to incorporate the use of e-books. At the UWI, that trend became operational in 2012 within the Faculty of Medicine at Mona; and is likely to continue within other faculties and campuses. Pilot projects using response systems (Turning Technologies Responseware, etc) that allow students to actively participate using response devices or mobile devices and computers to respond to interactive polling questions or assessment questions are presented during a class or meeting presentation is being piloted in various Faculties throughout the University. As such, there is likely to be increased mobile usage in accessing online learning management systems (e.g.OurVLE/Moodle Platform).

As noted earlier, the UWI Open Campus which offers multi-mode teaching and learning services through virtual and physical site locations across the Caribbean region has 102 courses that utilise web-based video conferencing. Across the other campuses (Cave Hill, Mona and St. Augustine) blended learning is increasingly being used facilitated by myeLearning, an online LMS. Among the more exciting initiatives during 2011/2012 academic year were:

- the development of a blended learning policy for the St. Augustine campus.
- an examination pilot project was conducted where students taking the Caribbean Civilisation course were allowed to write the exam from any computer without having to attend a specific venue.
- the Faculty of Social Sciences, St. Augustine Campus in collaboration with the Open Campus, St Kitts and Nevis offered two courses in the "Summer" programme via live streaming of lectures.

With the aim of improving alignment and integration among and within various academic and administrative divisions and departments the Open Campus initiated the Enterprise Resource Planning project (ERP) aimed at providing effective, efficient and timely delivery of services to students and other stakeholders. It will enhance critical services which include but are not restricted to laddered programming; Prior Learning Assessment (PLA); rolling applications and counseling and advisory student services (UWI Open Campus Annual Report 2011/2012, 12, 17). By 2013, a PLA Unit was established a pilot programme identified for five undergraduate degree programmes - Accounting, Banking and Finance, Early Childhood Development and Family Studies, Management Studies, and Youth Development Work (UWI Open Campus Annual Report 2012/2013, 24-25). The Campus will also facilitate the shift from manual to automated services, where possible, in key functional areas such as the Registry, Human Resources, the Academic Programming and delivery division, the Open Campus Country Sites (OCCS), Marketing and the Library (UWI Open Campus Annual Report 2011/2012, 17).

With the development of digital technologies Libraries are also forced to adapt to the changing environment. Technology has made information easily accessible and there is both open and subscribed access to databases, books and journals. The UWI in responding to the digital age have implemented UWI*linC* or UWI Libraries' Information Connexion. This single user interface allows the user to access the catalogues of all four campuses of the UWI and UWI's subscribed databases, e-journals, and e-books as well as instant delivery of resources to the user's desktop. UWI information resources from across the English-speaking Caribbean in all formats including UWI's intellectual output, subscribed resources (electronic journals, databases, electronic books) and the catalogues for all four UWI campuses can be accessed via this medium, UWI*linC*.

Along with the growth in the ICT infrastructure and services from 2008 to 2012 there has also been the implementation of ICT policies such as a Social Media Policy and Procedures. ICT and in particular, the Voice Inter-campus connectivity was introduced to facilitate reliable and robust communications among the campuses.

Given the University's dispersed physical environment, the Single Virtual University Space project (SVUS) was created to amalgamate the distributed ICT operations of the University. The SVUS project aims to create "a common cyber-platform that consolidates and integrates the distributed technology and eLearning resources, assets, investments and elements of UWI to facilitate and enhance the seamless communication, management, exchange and flow of knowledge and information residing at or shared by the different nodes throughout the university's disseminated physical environment"(Bernard & Alladin, 2011, 6). Successful implementation of this project will facilitate delivery of a large number of joint offerings, programmes and services through an all-encompassing cyber-platform. Thereby leading to expanded regional enrolment and delivery capacity.

7.2. CONCLUSION

With rapid changes in the technology environment the universities are expected to respond to these new products, services and apps such as mobile internet, social networking, and online video. As noted earlier, MOCCs embody a convergence of technology and culture that is expanding e-learning. It can either be viewed as a threat to traditional universities because of its cost (none or low) and its accessibility or as an opportunity for further outreach to extend the UWI brand and perhaps, a source of revenue to drive down costs while opening access to learning in the medium-to-long term. A deeper and more fundamental question needs be considered as universities embrace the technology trends in its operations: what kind of learning environment it wants to provide to students and how does it fit into their teaching/learning portfolio?

****

[1] Karl O Jones et al (2005, 1, 3) indicate that estimates of the proportion of university students who self-report engaging in inappropriate academic activities varies in the literature, however, estimates are higher than many academics might expect on the basis of their personal experience. Citing the C. Park's (2003) study the authors note that between 63% and 87% (depending on academic discipline) admitted having cheated during their college career while Franklyn-Stokes and Newstead (1995) study indicated self- reported rates of academic impropriety varied from 54% of students admitting having made up references to 72% admitting to having copied coursework. In their own study of self reported experience of inappropriate academic activities among a sample of 91 students from a range of Engineering programmes and 80 students from a range of Psychology programmes they found that 38% made-up some data for a research project, 36.8% failed to cite references you have consulted; 34.5% copied some sentences out of a text book into an assignment without crediting the source; 25.7% cited references they did not consult; 21.7% made up references to make an assignment look more impressive; 21.6% copied from a friend's coursework assignment; 19.9% cut and pasted material from a website into an assignment without crediting the source; 16.4% copied some sentences out of a journal article into an assignment without crediting the source and 14.7% cut and pasted material from an electronic journal into an assignment without crediting the source.

[2] Hongyan Ma et al (2008, 199) noted that digital cheating and plagiarism is a problem among college students. Citing the national study done by the Center for Academic Integrity (2005) in which 50, 000 undergraduates in 60 universities were surveyed Ma et al (2007) indicated that 77% of the students thought that cutting and pasting one or two sentences from online sources without appropriate citations was not a serious issue. The authors noted three reasons why young students chose to cheat: (i) cheating is easy with technology such as the Internet, (ii) the odds of being caught are low (10%) and (iii) those who are caught do not receive severe punishment (p. 1). Lathrop and Foss (2000) gave examples of how technology makes cheating easy.

[3] This information was provided by Education Media Services, Cave Hill Campus, UWI.

CHAPTER EIGHT: A PROFILE OF UWI STAFF

A university is shaped not only by its history and the current economic environment in which it operates or by the student body but also by its employees. The UWI has three categories of staff: academic (teaching and research) staff, senior administrative and professional staff and administrative, technical and support (ATS) staff which includes secretaries, clerical assistants, library assistants, technicians, plumbers and electricians. This chapter provides a demographic profile of faculty, senior administrative and professional staff at the UWI highlighting level of appointment, qualifications and sex. The chapter will also examine the distribution of ATS staff by campus and by sex. Trends and issues relating to the Open Campus are explored separately in this chapter.

8.1. THE CHARACTERISTICS OF THE UWI ACADEMIC STAFF

The UWI employs academic staff who are mainly involved in teaching and research. Full-time academic staff at Cave Hill campus increased by 32.3 per cent and St. Augustine campus by 1.3 per cent between 2007 and 2011. Mona campus showed an increase of 74.5 per cent increase in academic staff for the same period. Overall, there was a 3.5 per cent increase in academic staff between 2007/2008 and 2011/2012 (see Table 8.1).

Table 8.1: Full-Time Academic Staff, 2007 and 2011

	2007/2008	**2011/2012**	**Percentage Change**
Cave Hill	167	221	32.3%
Mona	282	492	74.5%
St. Augustine	541	548	1.3%
Total	**990**	**1261**	**3.5%**

Source: UWI Annual Statistical Review, 2007/2008; 2008/2009; and 2011/2012.

Academic staff comprises mainly Lecturers, Research Fellows, Senior Lecturers, Professors and Assistant Lecturers. Overall, between 2007/2008 and 2011/2012 the posts of Lecturer increased by 10.1 per cent while the posts of Professor declined by 11.5 per cent across three campuses. The posts of Senior Lecturer and Assistant Lecturer also declined for the same by period by 0.8 per cent and 11.7 per cent, respectively. The total academic population grew by 3.5 per cent between 2007/2008 and 2011/2012 (see Table 8.2).

Table 8.2: Academic Staff By Levels Of Appointment at Cave Hill, Mona and St. Augustine, 2007-2011

	2007/2008	2011/2012	Percentage Change
Professorial	148	131	-11.5%
Senior Lecturer	260	258	-0.8%
Lecturer	664	731	10.1%
Assistant Lecturer	103	91	-11.7%
Other	43	50	16.3%
TOTAL	**1218**	**1261**	**3.5%**

Source: UWI Annual Statistical Review, 2007/2008 and 2011/2012.

Note: Staff count inclusive of Research Fellows under Lecturers and Senior Research Fellows under Senior lecturers.

While there was a 22.1 per cent increase among academic staff holding PhDs there was a corresponding decrease in the number of staff holding Master's degrees (17.4 per cent) and Bachelor's degrees only (37.1 per cent) between 2007/2008 and 2011/2012 (see Table 8.3).

Table 8.3: Full Time Academic Staff By Level Of Academic Qualification at UWI, 2007/2008 And 2011/2012

	2007/2008	% Distribution	2011/2012	% Distribution	Percentage change
Ph.D.	707	58.0%	863	68.4%	22.1%
Masters	322	26.4%	266	21.1%	-17.4%
Bachelors	170	14.0%	107	8.5%	-37.1%
Other	19	1.6%	25	2.0%	31.6%
Total	1218	100.0%	1261	100.0%	3.5%

Source: UWI Annual Statistical Review, 2007/2008 and 2011/2012.

During the review period, 2007/2008 to 2011/2012, the percentage of academic staff holding PhDs relative to other degrees and qualifications increased with Cave Hill Campus registering the highest percentage of staff with PhDs (see Table 8.4). Consequently, the increase in qualifications of academic staff should ideally translate to improved learning outcomes for students thus adding to the scholarly development of the university.

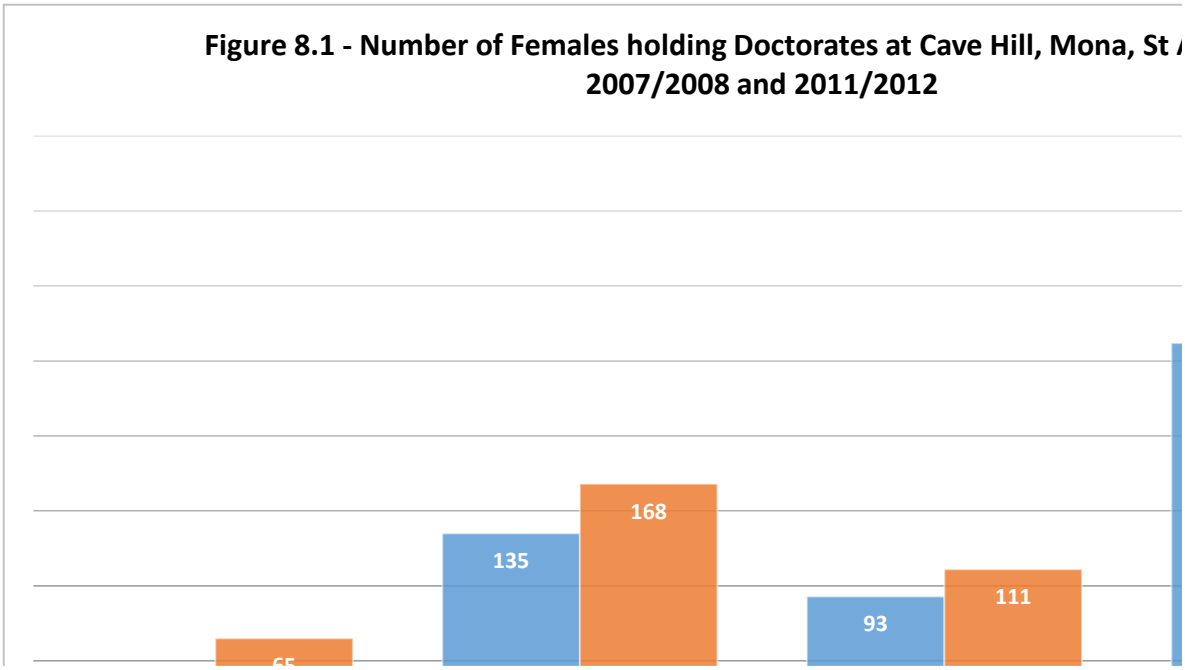
Table 8.4: Distribution Of Full Time Academic Staff By Level Of Academic Qualifications By Campus, 2007/2008 and 2011/2012

QUALIFICATIONS	Mo	CH	StA	Mo	CH	StA
	2007/2008			2011/2012		
Ph.D.	59.4%	65.9%	54.3%	73.2%	76.5%	61.9%
Masters	22.9%	31.1%	28.3%	19.3%	19.0%	23.9%
Bachelors	16.9%	2.4%	14.8%	6.5%	4.5%	12.0%
Other	0.8%	0.6%	2.6%	1.0%	0.0%	2.2%

Source: UWI Annual Statistical Review, 2007/2008; 2008/2009; and 2011/2012.
Note: Mo= Mona, CH=Cave Hill, StA=St. Augustine.

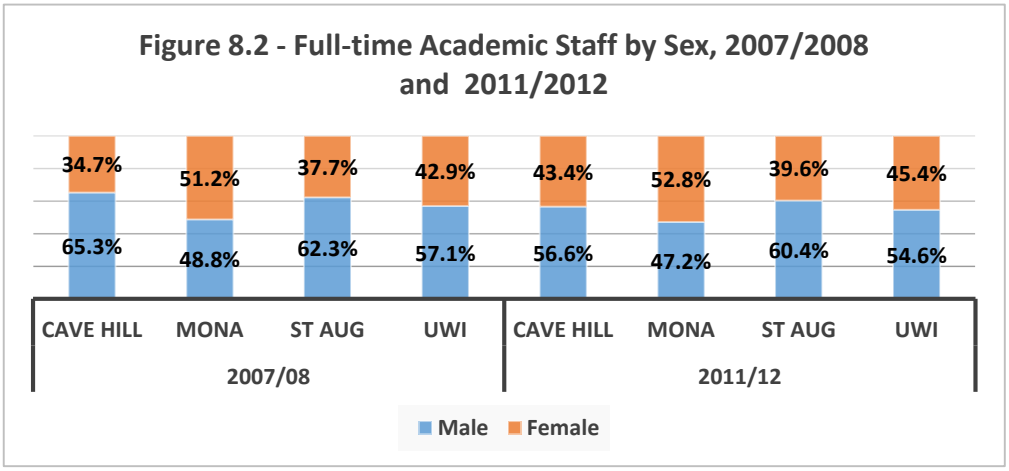
The high levels of PhDs at the UWI is in contrast to global trends in the UNESCO Report (2009.xv) which noted that "it is possible that up to half of the world's university teachers have only earned a bachelor's degree (in China only 9 per cent of the academic profession has doctorates while it is 35 per cent in India)." Further, "many university teachers in developing countries have only a bachelor's degree" (UNESCO Report 2009.xv).

Between 2007/2008 and 2011/2012 the overall number of females holding doctorates increased by 31.3 per cent. The Mona campus had the highest number of females holding PhDs in 2007/2008 and 2011/2012. The number of females at St Augustine campus grew by 19.4 per cent while Cave Hill increased the number of females holding doctorates grew by 91.1 per cent (see Figure 8.1).



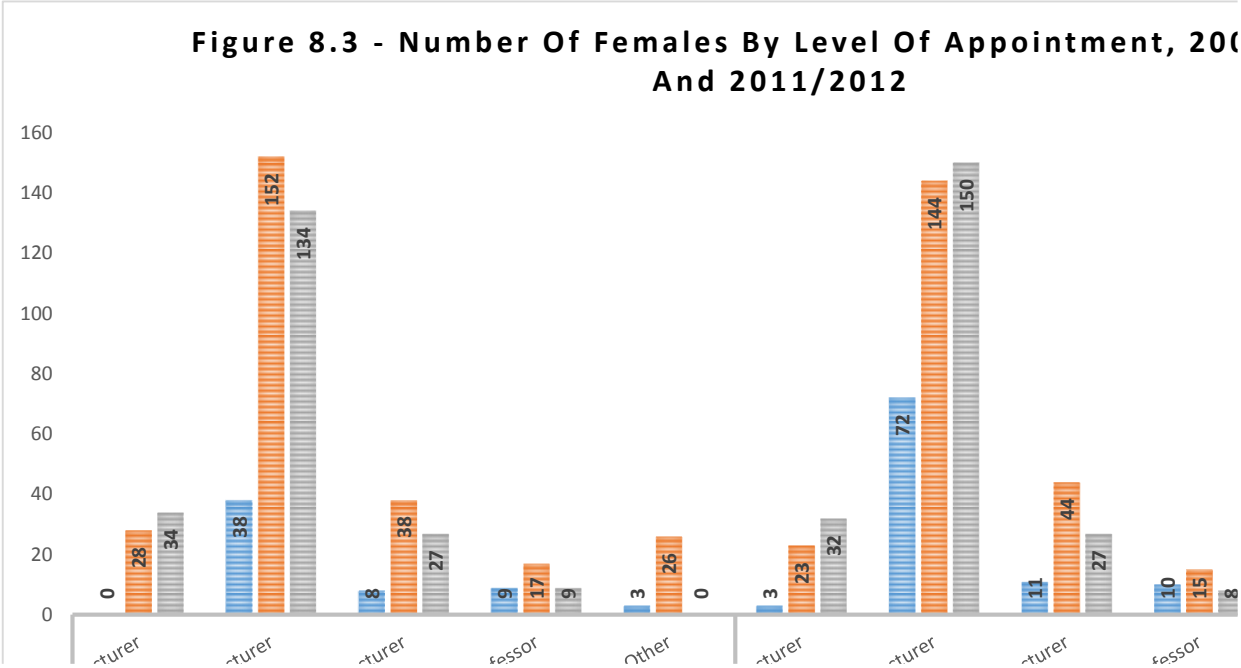
Source: UWI Annual Statistical Review, 2007/2008 and 2011/2012.

Generally, a disproportionate difference between males and females in regard to attainment persists in universities. While there have been improvements in the rank of female academics, women are disproportionately clustered in the junior positions. An examination of academic staff by sex showed that female full time academic staff exceeded males by 14.2 percentage points in 2007/2008 and 9.6 percentage points in 2011/2012 thus, suggesting the gap between males and females is narrowing (see Figure 8.2).



Source: UWI Annual Statistical Review, 2007/2008 and 2011/2012.

Individuals are either appointed or promoted to the various academic ranks. Between 2007/2008 and 2011/2012 the overall number of females holding Assistant Lecturer posts declined by 6.5 per cent while there was an increase in the percentage of females at the Lecturer and Senior Lecturer levels by 13 per cent and 12.1 per cent, respectively. At the level of Professor there was a decrease of 5.7 per cent between 2007/2008 and 2011/2012. Based upon the data, it can be stated that females predominantly hold the posts of Lecturer and Senior Lecturer but not so at the level of Professor at Cave Hill, Mona and St. Augustine campuses (see Figure 8.3).



Source: UWI Annual Statistical Review, 2007/2008 and 2011/2012.

8.2. THE CHARACTERISTICS OF THE UWI SENIOR ADMINISTRATIVE AND PROFESSIONAL STAFF

Data for Senior Administrative and Professional category of staff suggested that between 2007/2008 and 2011/2012 there was an increase of 8.1 per cent in staff. While at St. Augustine and Cave Hill staff increased by 16.1 and 21.9 per cent, respectively, at Mona there was a decline (-11.2 per cent) for the period (see Table 8.5)

Table 8.5: Full-Time Senior Administrative And Professional Staff , 2007/2008 and 2011/2012

	2007/08	2011/12	Percentage Change
Cave Hill	73	89	21.9%
Mona	178	158	-11.2%
St. Augustine	155	180	16.1%
Total	406	439	8.1%

Source: UWI Annual Statistical Review, 2007/2008; and 2011/2012.

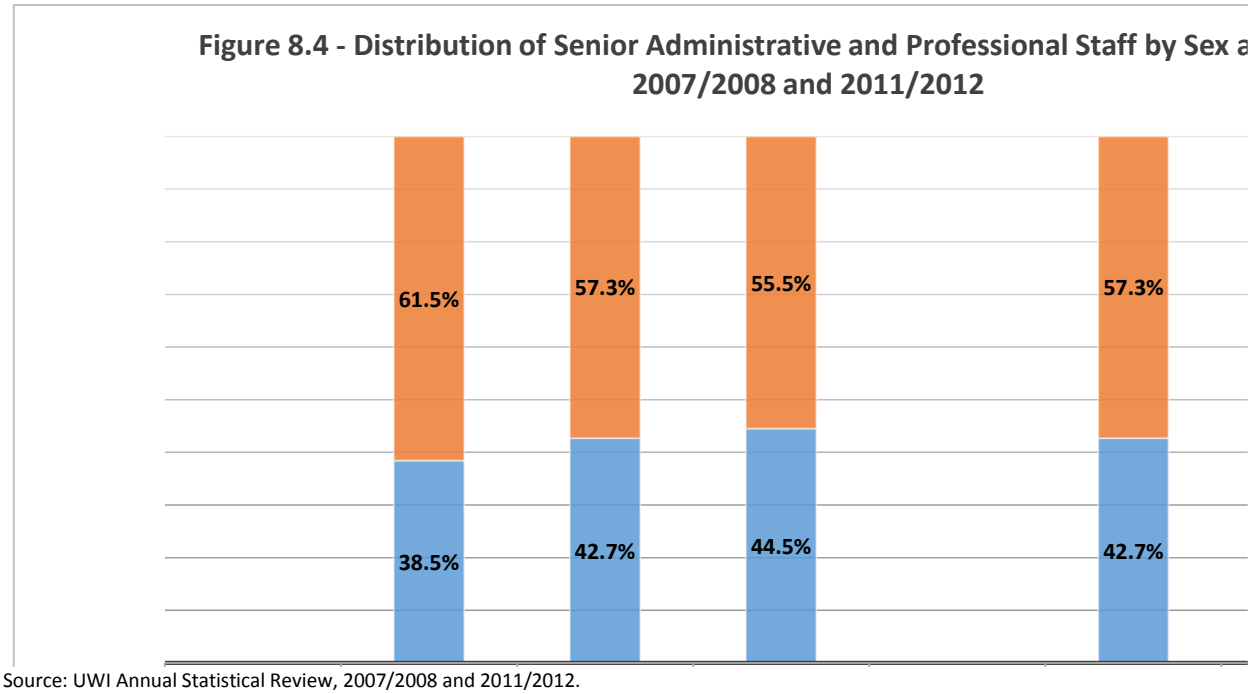
The Senior Administrative and Professional category of staff are appointed at least at the level of Assistant Lecturer, or equivalent, or above for the purposes of salary scales. An examination of the distribution of full-time Senior Administrative and Professional staff by campus and level of appointment showed that there was a general increase in the number of Lecturer level and Senior Lecturer level appointments at the St. Augustine campus and an increase in the number of Lecturer level positions at the Cave Hill campus between 2007/2008 and 2011/2012 (see Table 8.6). There was a decrease in the number of Senior Lecturer level and Professorial level positions at the Mona campus during the corresponding period.

Table 8.6: Full Time Senior Administrative and Professional Staff by Level and by Campus, 2007/2008 and 2011/2012 (%)

Campus	Year	Assistant Lecturer	Lecturer level	Senior Lecturer	Professorial level	Other level
St. Augustine	**2007/2008**	16.8%	59.4%	14.2%	7.1%	2.6%
	2011/2012	15.6%	64.4%	15.6%	4.4%	0.0%
Mona	**2007/2008**	9.0%	33.1%	27.0%	10.1%	20.8%
	2011/2012	15.2%	35.4%	19.6%	0.6%	29.1%
Cave Hill	**2007/2008**	11.0%	63.0%	15.1%	11.0%	0.0%
	2011/2012	3.3%	71.1%	13.3%	12.2%	0.0%

Source: UWI Annual Statistical Review, 2007/2008 and 2011/2012.

Overall, females dominate among administrative and professional staff. However, between 2007/2008 and 2011/2012 there was a marginal decline in the percentage of females in Senior Administrative and Professional posts at the campuses and a corresponding increase in males in Senior Administrative and Professional posts (see Figure 8.4).



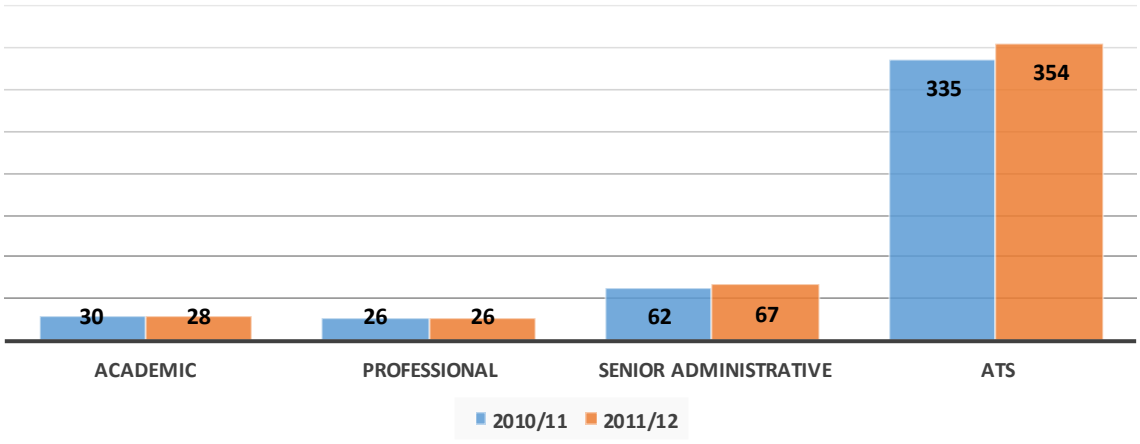
Source: UWI Annual Statistical Review, 2007/2008 and 2011/2012.

The distribution of academic and senior administrative professional staff is important to the operations of a university. An examination of the ratios of academic to senior administrative professional staff for the Cave Hill, Mona and St. Augustine showed for 2007/2008 that there was 3 academic staff for every senior administrative professional staff and 2.8 academic staff for every senior administrative professional in 2011/2012, a slight decrease for the period (see Table 8.1 and Table 8.5).

8.3. STAFF AT THE OPEN CAMPUS

Data for 2010/2011 and 2011/2012 from Open Campus indicated that Senior Administrative Staff is in the majority (see Figure 8.5). As such, there were 2.8 professional and administrative staff for one academic staff.

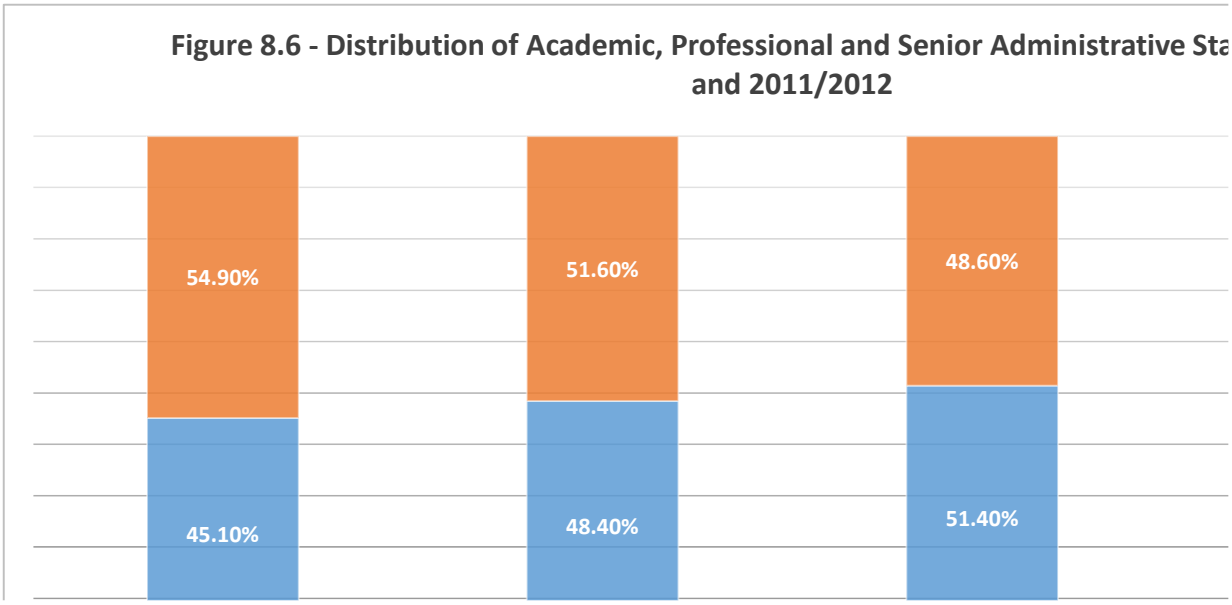
Figure 8.5 : Academic, Professional, Senior Administrative and ATS Staff- Open Campus, 2010/2011 and 2011/2012



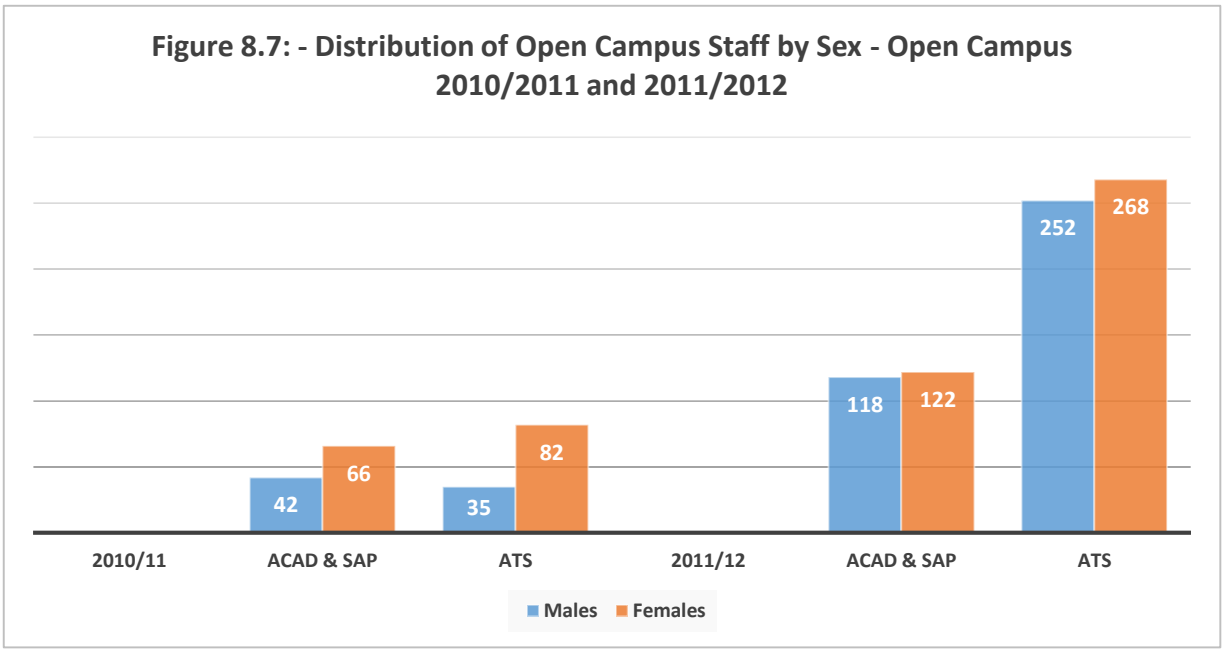
Source: Open Campus Human Resources Department
Note: ATS refers to Administrative, Technical, Support Staff.

For the Open Campus where data were provided for 2010/2011 and 2011/2012, the greatest increase was in the Lecturer rank followed by Assistant Lecturer, Senior Lecturer and Professorial (see Figure 8.6). The posts of Assistant Lecturer and Lecturer showed an increase of 9.8 and 3.2 percentage points respectively, while posts of Senior Lecturer and declined by 2.8 percentage points and Professorial significantly by 29.4 percentage points.

An examination of the distribution of staff at Open Campus by sex shows that female staff generally outnumber male staff among the Academic and Senior Administrative Professional and Administrative Technical Support staff (see Figure 8.7).

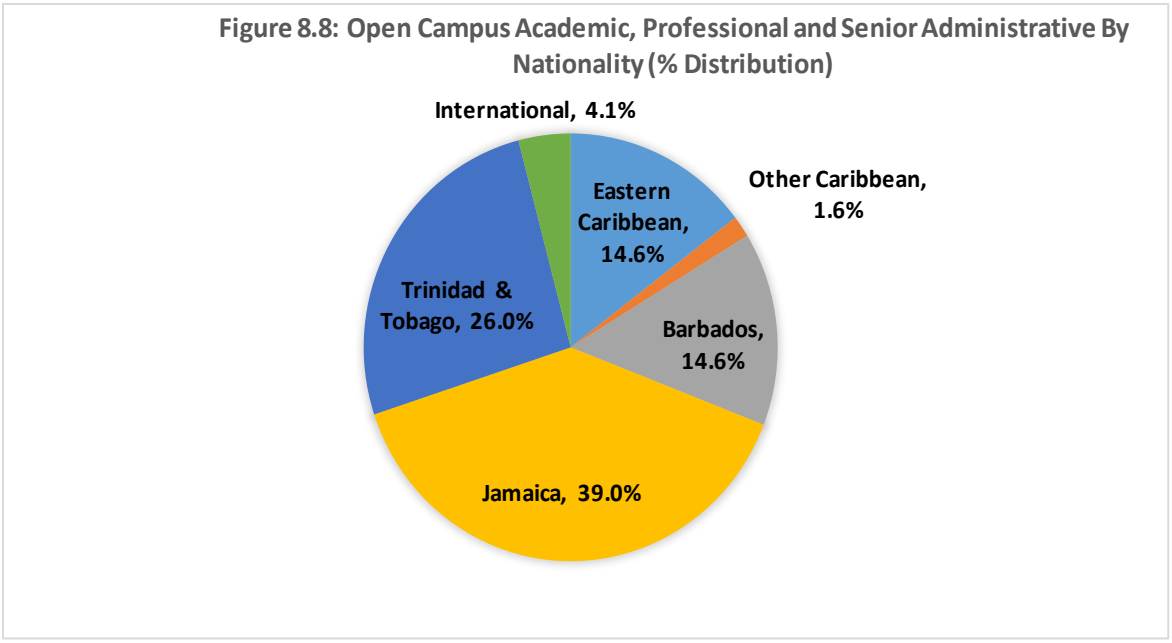


Source: Open Campus Human Resources Department.



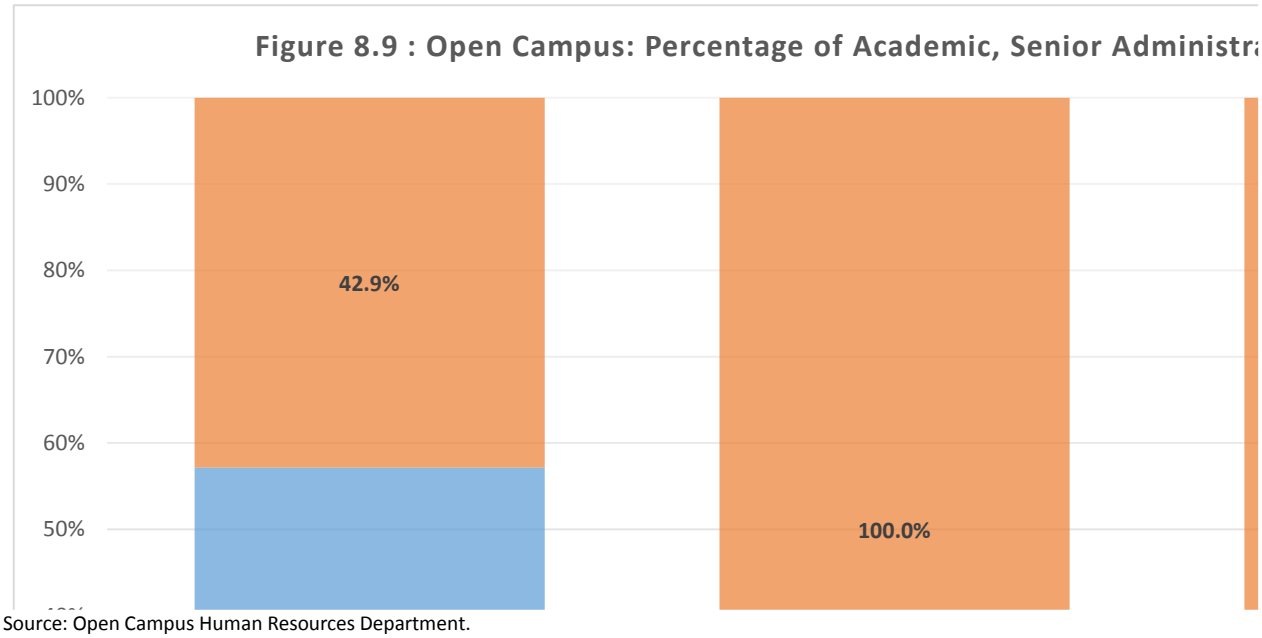
Source: Open Campus Human Resources Department.
Notes: Acad refers to Academic staff and SAP refers to Senior Administrative and Professional staff. ATS refers to Administrative, Technical, Support Staff.

At the Open Campus individuals from Barbados, Jamaica and Trinidad and Tobago dominated among Caribbean nationals for 2011/2012 (see Figure 8.8). Non-Caribbean nationals account for 4 per cent of employed persons at Open Campus.



Source: Open Campus Human Resources Department.
Note: Eastern Caribbean includes the countries of Dominica, Grenada, Montserrat, St. Kitts and Nevis, St. Lucia and St. Vincent and Grenadines. The other Caribbean includes The Bahamas, Belize, British Virgin Islands, and the Cayman Islands.

Based on the data, a higher percentage of academic staff (57.1 per cent) hold PhDs compared to Senior Administrative staff (11.9 per cent) in 2011/2012.

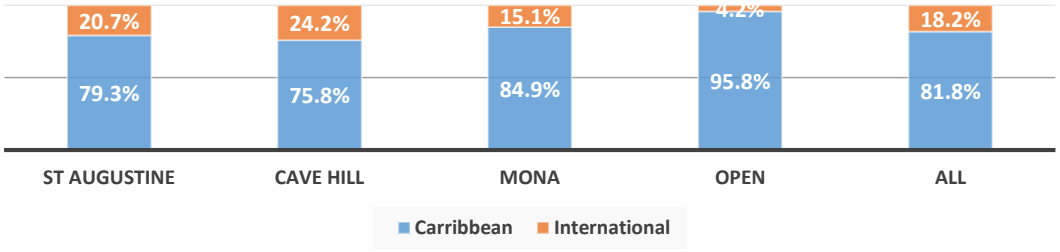


Source: Open Campus Human Resources Department.

8.4. REGIONAL AND NATIONAL DISTRIBUTION OF ACADEMIC, SENIOR ADMINISTRATIVE AND PROFESSIONAL STAFF

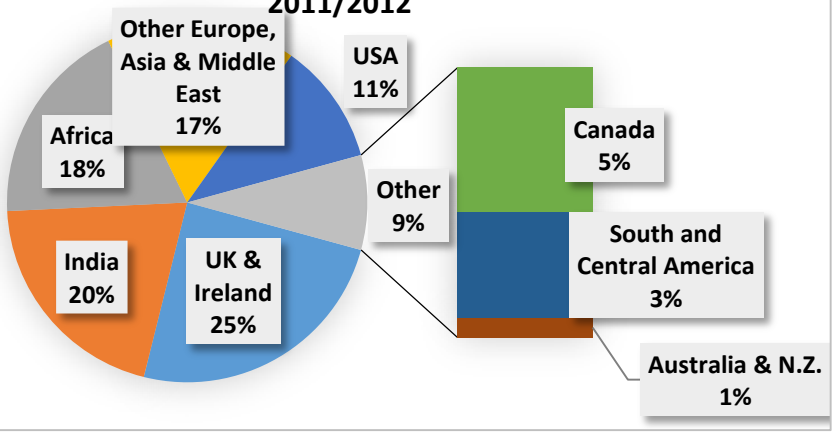
Despite the increasing global mobility of the academic labour market, over 75 per cent of UWI staff from 2007 to 2011 originated mainly from the Anglophone Caribbean territories. In the 2007/2008 academic year the ratio of Caribbean to non-Caribbean staff was 4.2:1, while for 2011/2012 academic year, the ratio was 4.5:1 suggesting that non-Caribbean staff is decreasing. Of the less than 20 per cent which originated from outside the Caribbean, the United Kingdom, India, Africa and Other Europe/Asia/Middle East account for 83 per cent of the total international staff at the university with the remainder emanating from the Americas, Australia and New Zealand *(*see Figure 8.10 and 8.11).

Figure 8.10: Percentage of Caribbean and International Academic, Senior Administrative and Professional Staff, 2011/2012



Source: UWI Annual Statistical Review, 2007/2008; and 2011/2012.

Figure 8.11: Percentage Distribution Of International Staff- 2011/2012

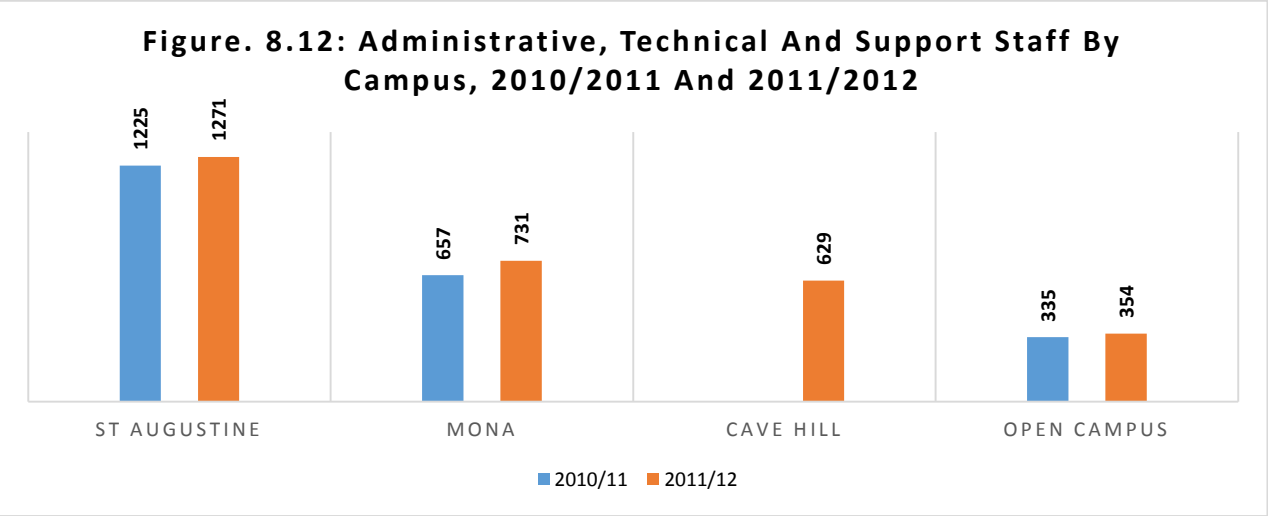


Source: UWI Annual Statistical Review, 2007/2008; and 2011/2012.

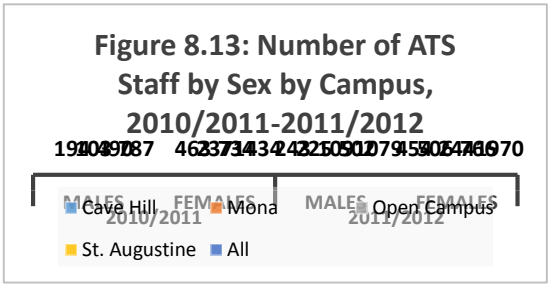
8.5. THE CHARACTERISTICS OF UWI ADMINISTRATIVE TECHNICAL SUPPORT (ATS) STAFF

Based upon available data for Open Campus, Mona and St Augustine for two academic years, 2010/2011 and 2011/2012, St. Augustine employs the most ATS while Open Campus employs the least which is reflection of the construct of Open Campus (see Figure 8.12).

Based on available data there are more females employed at St Augustine campus followed by Mona and Open Campus (see Figure 8.13). As such, there are 1.8 females for every male ATS staff in 2011/12.



Sources: Campus Planning Offices at Cave Hill, Mona and St, Augustine and Open Campus Human Resources Department.
Note: Data for ATS excludes ancillary staff at Mona and part-time staff at Open Campus and St. Augustine.



Source: Campus Planning Offices and Open Campus Human Resources Department

8.6. CONCLUSION

Generally, at the UWI there was an increase in the rank of Lecturer for level of appointment for its academic, professional and administrative staff and a high percentage of its academic staff holding doctoral qualifications between 2007 and 2011. At the same time, there was an increase of females represented at the Lecturer and Senior Lecturer level. Females dominated among all staff categories. By and large, academic staff outnumbered administrative staff (2.8:1). The largest percentage of total UWI ATS staff came from the St. Augustine campus. Further, in relation to academic, senior administrative and professional staff, international staff accounts for less than 20 per cent of total staff at the university with the persons from the Barbados, Jamaica and Trinidad and Tobago dominating among Caribbean staff.

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CHAPTER NINE: FINANCING THE UWI

Higher Education has always been an expensive undertaking. Compared to primary or secondary education, its highly qualified faculty and staff, the provision of cutting edge equipment and supplies to support science and technology, its time consuming research and high quality publications set higher education apart as a costly undertaking (Roberts 2010, 1). The increase in global demand for tertiary education is a trend that is reflected in the region. Tewarie (2011a, 102) noted that the increased demand for higher education in small states, and the desire for countries to participate in the knowledge revolution, has led to the need for more investment in higher education. The challenge now is how to pay for the new plant and infrastructure and for enhanced quality in a context in which expansion will lead to diversity in institutional orientation and student bodies (Tewarie 2011b, 234).

Within the Caribbean region, the increased need for higher education requires the expansion of higher education well over the average 15 per cent of the relevant age group set in 1997 by Caribbean governments and even beyond the 40 per cent set in 2010 in Paramaribo (UNESCO-ILESAC 2010, 5). Roberts (2010, 2) posited that to achieve developed country status the expansion of tertiary education in the region is required and the enrolment target should be set to well-over 50 per cent of the relevant age group. In seeking to expand enrolment in higher education it means that there would be a corresponding increase in the total cost of operations which would have to be absorbed either by the state or the student.

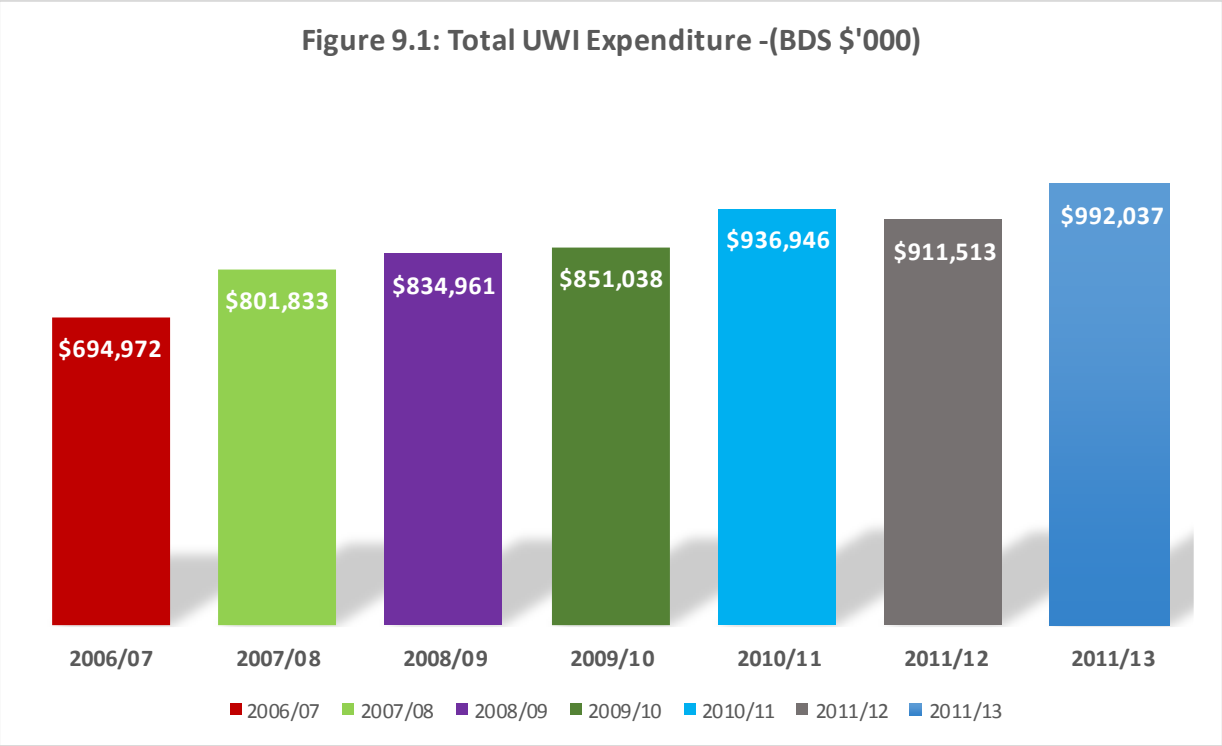
As expanding access and increasing participation rates in higher education have become important priorities for Caribbean states, some Caribbean governments have supported the UWI but have simultaneously developed national universities, community and state colleges to help to meet their local demand for tertiary education graduates. The UWI is financed from several sources – seventeen (17) governments of the Anglophone CARICOM countries, tuition fees, investment of assets, fundraising and philanthropy. However, as countries began experiencing economic challenges with the global financial and economic crisis of 2008, Caribbean governments have reconsidered their mandate of the provision of subventions to TEIs, hence, the university began to consider alternative funding measures that could be employed to make the institution more financially sustainable and independent.

The UWI is currently facing serious financial challenges having to endure dire cutbacks and tuition hikes, while at the same time having to meet investment demands as well as increasing wage demands. In this scenario, the UWI must become more efficient while significantly improving its productivity in all areas. In other words, the UWI must grapple with the issue of 'cost disease' which refers to a university's inability to implement efficiency measures as well as increase or maintain productivity in the context of increasing cost.

This chapter explores University's sources of expenditure and income, the issue of financing higher education at the UWI is also explored.

9.1. TOTAL EXPENDITURE

The expenditure of the UWI increased from $694,972 in 2006/2007 to $992,037 in 2012/2013, representing an overall increase of 42 per cent. The highest annual rate of growth occurred from 2006/2007 to 2007/2008 where university expenditure increased by 15 per cent (see Figure 9.1).



Sources: The University of the West Indies Financial Report and Consolidated Accounts 2007 -2013.

9.2. EXPENDITURE BY CATEGORY

In terms of the distribution of expenditure, departmental expenditure comprised the largest segment over the period examined fluctuating between 46 per cent and 52 per cent, this was followed by central expenditure which moved from 16 per cent in 2007/2008 to 19 per cent in 2012/2013. Other categories of expenditure were fairly consistent over the period.

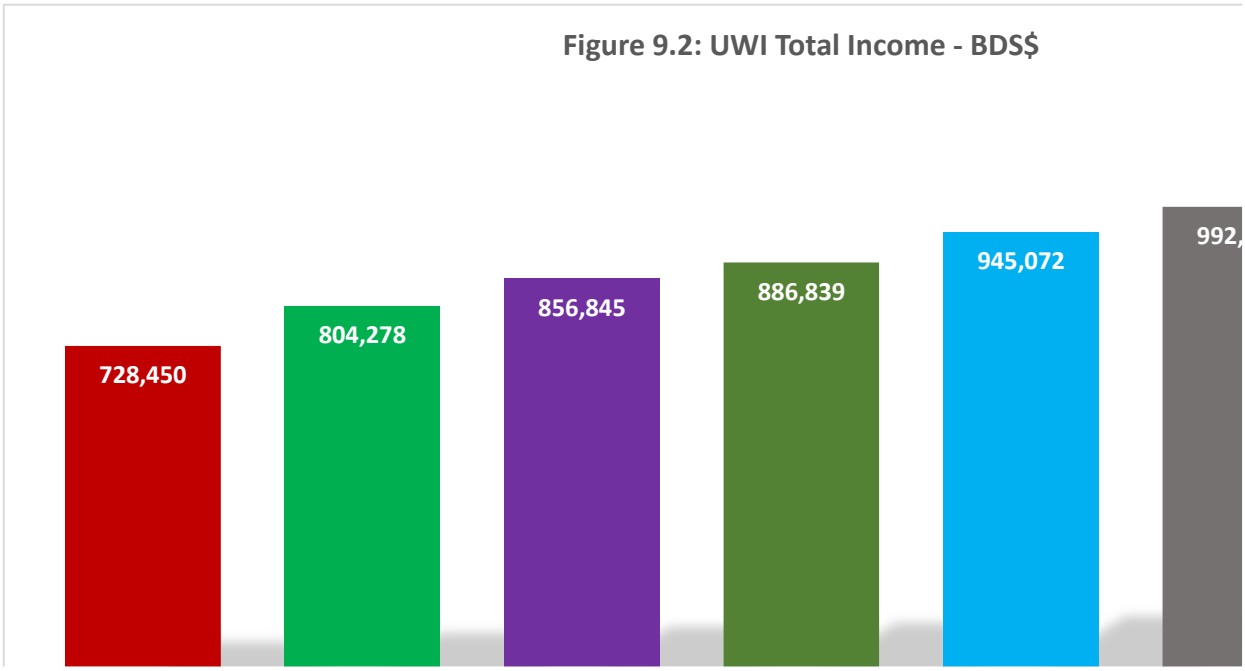
Table 9.1 Categories Of Expenditure as % of Total Expenditure, 2007-2013

SOURCES	2006/2007	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012	2012/2013
Administrative	9.0%	8.9%	9.6%	9.9%	9%	9%	9%
Departmental	46.5%	49.3%	51.6%	48.0%	47%	49%	46%
Central Expenditure	16.0%	14.9%	13.2%	17.5%	18%	14%	19%
Special Projects	8.7%	7.7%	6.7%	6.1%	6%	8%	7%
Other Projects	14.7%	13.7%	13.0%	12.6%	14%	14%	14%
Commercial Operations	5.1%	5.5%	5.9%	5.9%	6%	6%	6%

Sources: The University of the West Indies Financial Report and Consolidated Accounts 2007 -2013.

9.3. TOTAL INCOME

Income to the UWI increased by 36 per cent between 2006/2007 and 2011/2012 moving from $728,450 to $992,023, however, in 2012/2013 income received fell for the first time during the period examined to $974,279 which was a decrease of 1.8 per cent.



Source: The University of the West Indies Financial Report and Consolidated Accounts 2007 -2013.

9.3.1. Sources of Income

The sources of income to the UWI have been tracked for a seven-year period. Over the years, government funding has been provided to support the work of the UWI centre (Vice Chancellery or Regional Headquarters) as well as the individual campuses. The data showed that more than half of the UWI's income was derived from government contributions and this proportion stayed relatively stable from 2006/2007 to 2012/2013. The percentage of income received from contributing governments was at its highest in 2008/2009 with 56 per cent (see Table 9.2), but subsequently decreased to 49 per cent in 2011/2012 and 2012/2013 respectively.

Income derived from student tuition and fees remained stable at approximately 15 per cent of total income during the five-year period (see Table 9.1). This is because governments provide 80 per cent of the economic cost hence, the 15 per cent consistency. The percentage of income derived from special projects declined slightly from 8 per cent in 2006/2007 to 6 per cent from 2008/2009 to 2010/2011, but improved marginally to 7 per cent thereafter. In contrast, income from other projects increased from 13 per cent in 2008/2009 to 20 per cent in 2010/2011. Income resulting from commercial operations remained stable within a range of 5 to 7 per cent for the period. Income from tuition fees remained relatively constantly at 15 per cent for the period.

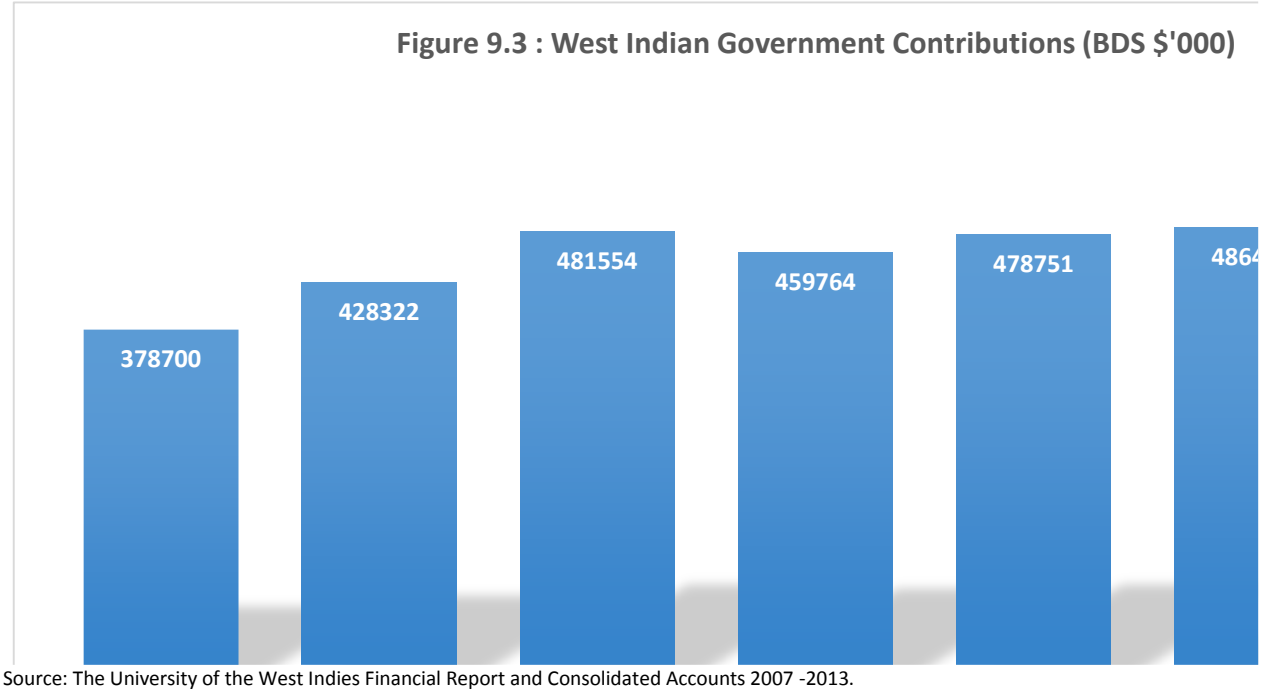
The data presented in Table 9.1 suggest that the University still needs to strengthen efforts to diversify its funding base, particularly in commercial operations and research and other project income.

Table 9.2 Sources Of University Income as % of Total Income							
SOURCES	**2006/2007**	**2007/2008**	**2008/2009**	**2009/2010**	**2010/2011**	**2011/2012**	**2012/2013**
West Indian Government Contributions	52%	53%	56%	52%	51%	49%	49%
Tuition Fees	15%	14%	14%	15%	15%	15%	15%
Special Projects	8%	8%	6%	6%	6%	7%	7%
Other Projects	15%	14%	13%	18%	20%	20%	20%
Commercial Operations	5%	6%	7%	6%	6%	6%	6%
Other	5%	5%	4%	3%	2%	3%	3%

Source: The University of the West Indies Financial Report and Consolidated Accounts 2007 -2013.

9.3.2. Government Contributions

For each financial year, governments are provided with a finalised bill which is based on actual student numbers and the approved budgets. The sum of monies received from West Indian governments grew by 27 per cent from approximately BDS$379 million in 2006/2007 to BDS$482 million in 2008/2009 (see Figure 9.3). However, the sum of government contributions fluctuated during the period 2009/2010 to 2012/2013, reaching as high as $486 million in 2011/2012, but subsequently declining to $472 million in 2012/2013. Despite these cutbacks universities find that they are expected to respond to increasing demands by governments for justification of existing funds.

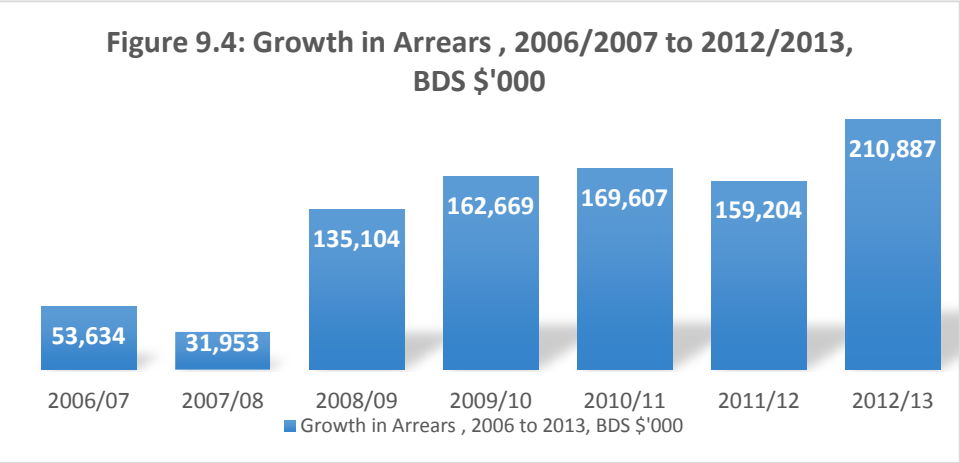


Source: The University of the West Indies Financial Report and Consolidated Accounts 2007 -2013.

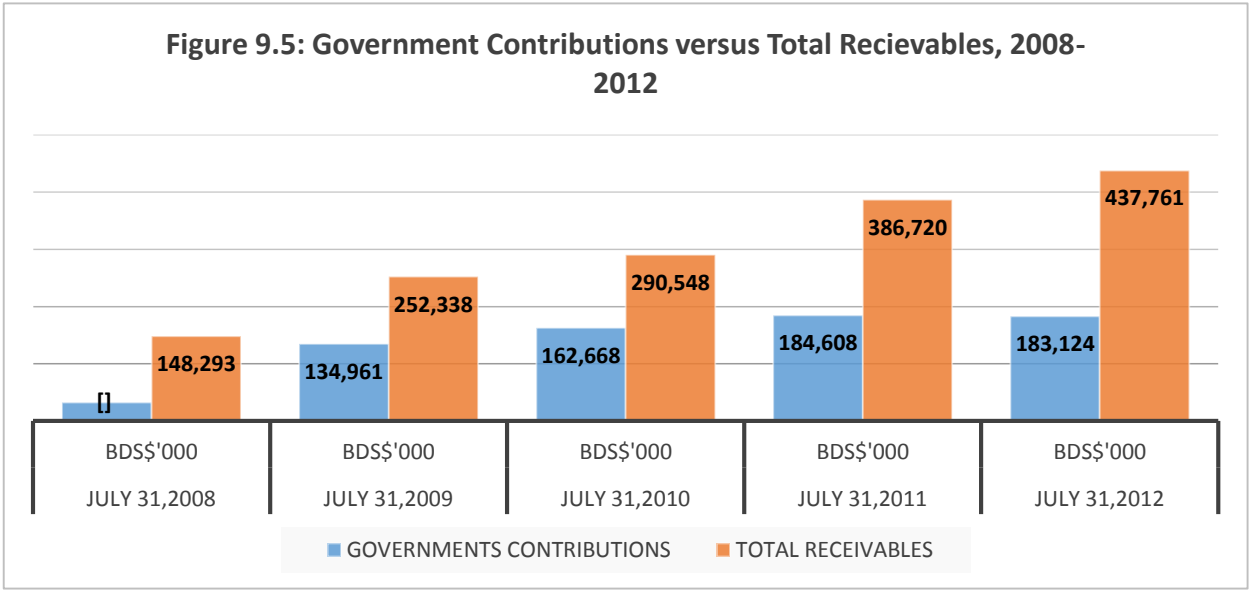
Faced with a dire global economic situation, governments worldwide have sought to reduce budgetary support to HEIs. The situation is no different in Caribbean where there has been a

decline in government's contributions to HEIs. For instance, Jamaica has been influenced in its contributions to the UWI and other HEIs by the demands of the IMF structural adjustment programme which favours a shift from support to tertiary education studies to earlier levels and types of education.

Further, arrears to the UWI by regional governments have led the university to implement several strategies and measures to broaden its funding base. Based upon the data from Figure 9.4 arrears grew by almost 200 per cent between 2006/2007 and 2010/2011. Total indebtedness to the UWI based upon government's contributions between 2008 and 2012 increased (see Figure 9.5).



Source: Vice-Chancellor's Report to Council 2013 and 2014.



Source: Vice-Chancellor's Report to Council 2013.

9.4. FUNDING STRATEGIES

UWI *2007-2012 and 2012-2017 Strategic Plans* identified the need to broaden the funding base and reduce the overdependence on any one source. As such, some of the strategies identified to broaden the funding base included development of funding from philanthropic sources, establishment of a Regional UWI Endowment Fund; advocacy for student financing support schemes; establishment of a viable and sustainable financing mechanism for the UWI Open Campus; exploitation of opportunities for growing earned income through engagement in commercial activities and investments *inter alia*.

Roberts (2010, 6) noted that the Open Campus' intention is to "increase the proportion of the contribution from tuition fees and this is seen as achievable through the creation and promotion of high demand and high quality programmes." The approach, she noted, is one of using individual courses as an operational unit, creating a costing model which recognises and attributes a costing to all the inputs into course creation and all the delivery costs. By doing this, Open Campus can "determine how much it would cost to develop and deliver a course either on its own or in partnership with its sister campuses" (Roberts 2010, 6). With this knowledge the quantum of tuition fees can be negotiated allowing the Campus to break even. Revenue from tuition fees was BD$24,167,421 in 2013 and BD$22,291,716 in 2012 (UWI 2013, ii).

9.4.1. Student Financing

In 2000/2001 the UWI spent US$239 million to educate 20,000 students, and in 2008/2009 the institution spent US$423 million to educate 43,000 students (Tewarie, 2011b, 240). The government contribution in 2000/2001 was US$145 million and US$246 million in 2008/2009. University expenditure increased by 76 per cent to accommodate the significant increase in student numbers, however, government contributions increased by 69 per cent for the 2000/2001 to 2008/2009 period. Clearly, government spending did not keep pace with university spending. What also becomes apparent is that direct funding or subsidies cannot continuously support a growing higher education population. Hence, strategies will have to be identified in support of a cost-sharing system.

Cost sharing has been a worldwide phenomenon during the last decade and examples of these have been referenced in Chapter Three. Rising student tuition fees and elevated levels of student debt combined with the effects of the global financial crisis on government subventions has led universities to shift some of the burden of paying tuition fees to parents and/or, students (particularly in the United States, Canada, and the United Kingdom).

In the case of the UWI, which has four (4) campuses covering seventeen (17) countries across the Caribbean, different financing models apply according to the host country. Generally, tuition fees are computed as a percentage of economic cost and students in most countries are responsible for the payment of these fees. Countries like Barbados pay these tuition fees along with the economic cost on behalf of their students to any of the three physical campuses, but certain conditionalities apply including duration and level of study, and in the case of Medical Sciences and Law, within an agreed quota. In Barbados, student subsidies are not provided for study through distance education in the Open Campus. Through GATE, Trinidad and Tobago

pays the tuition for all approved programmes including approved Open Campus courses and for all nationals across the campuses and indeed at all approved tertiary institutions within Trinidad and Tobago. The student financing models for the university territories are summarised below:

- Barbados – pays the tuition fees and economic cost for its nationals for the minimum period required for a first degree, plus one additional year where necessary (up to 2015)
- OECS – state financing of specific students
- Trinidad and Tobago – the state covered 100 per cent of tuition fees for students in undergraduate programmes
- Jamaica – combination of state financing, private tuition and a traditional loan scheme. There have however been efforts to redesign the student loan scheme in Jamaica, as regards to tenure of loans, and interest rates (Office of Finance Report to Council 2012).

The *Strategic Plan, 2007-2012* identified among its strategies for *Funding the enterprise* the need to advocate student financing support schemes with the following features (i) well-structured contingent loan arrangements, (ii) loan-approval by programme rather than year to year decisions, (iii) flexible loan guarantees, (iv) extension of coverage to include elements of the living expenses of students. In discussing income-contingent loan schemes, Professor Alvin Wint, former Pro-Vice Chancellor, Undergraduate Studies suggested that these loans should cover realistic living costs and the loans should be priced to students at about the Government's borrowing rate and the loan-repayment period should be extended to a maximum 20 years (Gilchrist 2009, n.p.).

Access to and availability of finance can affect enrolment. For the Open Campus, concern was recently expressed that the lack of or access to finance could be the main source of low enrolment from UWI-12 students. This is especially true if the economic cost is not readily paid by their governments. Where governments do not contribute the student may have to pay the full economic costs which are substantial (UWI 2012, UWI-12, 41).

Financing higher studies can be costly. Over 30 per cent of the students surveyed in the UWI 2009 and 2013 Undergraduate Student Experience Survey indicated their education was government sponsored/free tuition (UOPD 2010, 26 and UOPD 2014, 60). Other sources of financing education were parents, loans and self-financing (see Table 9.3). Postgraduates registered in both the taught and research programmes generally funded their own studies however, among research students there were a moderate number funded by the UWI (see Table 9.4).

Table 9.3: Sources Of Financing Education - Undergraduates				
	2009		2013	
Sources	**Count**	**Per cent**	**Count**	**Per cent**
Student loan	970	17.0%	385	17.4%
Scholarship	391	6.9%	122	5.5%
Government Sponsored/Free tuition	2118	37.1%	731	33.1%
Self-financed	500	8.8%	403	18.2%
Parents	1451	25.4%	492	22.3%
Commercial loan (relatives, friends)	68	1.2%	26	1.2%
Not stated	205	3.6%	50	2.3%
Total	**5703**	**100%**	**2209**	**100%**

Source: UOPD. *Student Experience Survey- Speak Your Mind*, 2010, 26 and UOPD. *Student Experience Survey- Speak Your Mind*, 2013. December 2014, 60.

Table 9.4: Sources Of Financing Education – Postgraduates				
	2010		2013	
	Taught (n= 1926)	**Research (n = 223)**	**Taught (n= 318)**	**Research (n=89)**
Sources	**Per cent**	**Per cent**	**Per cent**	**Per cent**
Government grant/scholarship	6.5%	0.0%	18.2%	13.5%
Self-funded	73.3%	52.1%	75.1%	25.8%
Employer	6.6%	7.4%	2.2%	2.2%
Charity	0.2%	1.4%	0.0%	1.1%
UWI	7.4%	27.4%	4.4%	57.3%
Other	6.0%	11%		

Source: UOPD. *Postgraduate Student Experience Survey, 2010.* December 2012, 11, 15 and UOPD. *Postgraduate Student Experience Survey, 2013*. December 2013, 19.

9.5. THREATS TO SUSTAINABLE FUNDING

The key challenge to financial viability relates to limited and competing resources of supporting states. This requires rationalising the allocation of resources nationally and regionally combined with the identification of measures to attract and manage finances is needed to better serve stakeholders.

9.6. CONCLUSION

University income has increased steadily since 2006/2007 with more than half of income being derived from government 'subventions'. University expenditure also increased steadily during the period. Cost sharing measures are being adopted to decrease the reliance on regional governments; however, this approach will adversely affect students as more than a third of students list government support as their main source of funding their education.

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CHAPTER TEN: CONCLUSION

The phenomenon of globalisation has impacted higher education vis à vis demand and supply, access and equity, funding and benefits. The economic crisis of 2007/2008 have also influenced universities and encouraged an evaluation of their operations and orientation (teaching, research and public service or combinations thereof) and adopt a corporate outlook.

This chapter attempts to pull together some of the issues discussed in the previous nine (9) chapters and identifies some policy options for the university in implementing the *Strategic Plan, 2012-2017* and rolling-out the University Operational Plan, 2012-2014.

10.1. HOW IS THE UWI DOING?

With the completion of the 2007-2012 planning cycle the external environment in which the University operates is still dominated by the:

- dynamics of the knowledge-based economy and society
- multiple impacts of globalisation including the implications of the GATS;
- the public policy commitment of contributing countries to the expansion of participation in tertiary education;
- continuing revolution in ICT; and
- the three-pronged challenge of matching the transformations in higher education globally, keeping pace with the knowledge revolution especially in Science and Technology and responding effectively to regional challenges including providing solutions to pressing problems and democratising higher education.

The environmental factors identified above were further complicated by the economic crisis which began in 2007/2008. This meant that the additional challenge of funding the university came to the fore which forced to the University to expand its approach to meet funding gaps.

This *HESR,* as noted, focussed on issues and trends over a general six year period for which data were available. It considered issues relating to 'Teaching and Learning' (a strategic theme); 'Funding the Enterprise' (the major enabler) and 'Strengthening Regionality' and "International partnerships' (other areas of strategic interest) in the *Strategic Plan, 2007-2012*. In other words, the *HESR* has drawn upon data sets relevant to enrolment and achievement for a large part.

While the UWI as a whole experienced an increasing demand for both undergraduate and postgraduate education, demand outstripped supply for both undergraduate and postgraduate programmes. Flowing from demand for higher education and admittance to the university, the UWI saw an increase in total student enrolment by 25.2 per cent over the six year period (2007-2013). Undergraduate enrolment doubled not unlike global trends and was dominated by full-time students under the age of 24 years. Although STEM programmes are seen as driving innovation and thus, economic growth, enrolment is modest in UWI's STEM programmes similar to international trends where enrolment in these programmes is declining. Postgraduate enrolment remained about 20 per cent of the university's total enrolment over the six-year period,

still modest as this level of education is increasingly seen as the driver for stimulating growth for the knowledge economy. About 36 per cent of all students studying in the United Kingdom HEIs are postgraduates. Globally, there is an increasing trend towards professional graduate programmes and at the UWI more students register for the taught programmes than research degrees.

Globally, graduation outputs were mixed: it remained stable in some countries, parallel to entry rates or was on the increase in others. At the UWI, there was a cumulative increase of 26.8 per cent in graduation outputs between 2007/2008 and 2012/2013. Graduation output among postgraduates increased by 42 per cent over the six years. The majority of first degree graduates received Second Class Honours (Lower Division). The proportion of students graduating with 'good honours' were generally about one-third of all first degree graduates. There was a high percentage of non-STEM graduates to STEM graduates at both the undergraduate and postgraduate levels for the 20011/2012 academic year.

As the presence of females increased on campuses, there was a corresponding increase in female graduate outputs internationally. The UWI is no different as there was a greater presence of females in enrolment (2.1 females: 1 male) and 2.5 females for every male graduate for the period in review. The under 24 year age group continued to drive growth at the university followed by the 25 to 34 age group. While there is a growing concern about access and opportunities for the differently-abled, enrolment of this sub-population remains low.

Technology provided the opportunity to push the boundaries of learning thus leading to the growth in online programmes and more recently, MOOCs. Technology also broadens access and allows for improved flexibility in learning though quality remains a concern. Digital technologies strengthen international communication and collaboration in research and also impact on the delivery of services to students including the way in which universities engage students. Improvements in technology led to increasing use of learning/course management systems and the use of e-books. The UWI also tried to keep pace with international trends in technology. During the period, there was an increase in bandwidth, creation of student email accounts, establishment of a social media presence, increase usage of learning/course management systems and clicker technologies with a move towards increase use of e-books.

10.2. THE IMMEDIATE FUTURE CHALLENGES AND POSSIBLE RESPONSES FOR THE UWI

The big future challenges for the UWI remain how to enhance its culture of excellence in teaching, research and service provision and improve access while identifying alternative sources of funding. These, of course, suggest that there is need to introduce or scale-up the flexibility of programmes; reduce the lengthy duration of studies particularly at postgraduate level; encourage increased mobility of students, staff and graduates and introduce measures to encourage globally competitive research and innovation. The university also has to contend with a less homogenous student population, alterations in patterns of academic work and of the academic profession itself, public calls for accountability leading to an increase in managerial control within the institution, the rise of the 'value for money' ethos, and the notion of education 'fit for purpose'. It also has to contend with fast pace of technology which impacts learning and re-

search and alters communication with stakeholders. To this end, the university also has to differentiate itself from its competitors and remain mission-focussed. These changes are part of the logic of mass higher education, which became increasingly apparent in the 21st century. All of these changes will be taking place at a time when there is still a slowdown of global economic performance and as such, requires a level of flexibility that allows the UWI to make decisions and manage resources without being encumbered by bureaucracy.

Based upon the trends at the UWI and internationally, this section proposes some policy recommendations for the UWI as it moves forward with the implementation of its new *Strategic Plan, 2012-2017*. For the UWI to "be globally recognised as a regionally integrated, innovative, internationally competitive university, deeply rooted in all aspects of Caribbean development and committed to serving the diverse people of the region and beyond" as is articulated in its Vision (Strategic Plan 2012-2017, 21) it needs a concentration of talent, resources, and favourable and flexible governance (Salmi 2009, 71). In this regard, the University has decided to examine the issues from the 'Financial', 'Employee Engagement and Development', 'Internal Operating Processes', 'Teaching, Learning and Student Development', 'Research and Innovation', and 'Outreach' that are in-keeping with initiatives articulated in the University Operational, 2012-2014 and 2014-2017. Based upon the global trends, the UWI trends between 2007/2008 and 2012/2013 and the initiatives in the new planning cycle, consideration may be given to the following policy options:

- **Financial:** Given the financial constraints and the need to identify alternatives and additional funding sources there is need to clearly articulate (i) funding streams such as self-financing programmes and commercialisation of intellectual capital; (ii) tuition pricing policy including financial aid packages (high tuition/high aid; moderate tuition/moderate aid; and low tuition/low aid). Commercialisation of research outputs should be encouraged, "open innovation" partnerships between multinational companies, SMEs and universities for revenue growth should also be pursued (Illieva 2012, 7), and operational outsourcing explored.

- **Teaching, Learning and Student Development:** Given the character of the trend it suggests there is need to: (i) align the curriculum and teaching approaches to meet the diverse learners' needs, interests and learning styles; (ii) review, revamp and repackage short cycle programmes and develop modular programmes for career change and continuous professional development; (iii) make employability and life skills a high priority in the curricula reform and link curricula to labour market requirements; (iv) continuously invest in faculty development and training; (v) strengthen student advisory services and enrichment programmes that can contribute to the overall positive student experience as well as develop systems for advising and supporting students based on the shift to technological distance learning; (v) promote multiculturalism as a policy to support student diversity on the campuses; and (vi) target needs packages – scholarships, work-programmes - for students. The UWI may very well have to expand its online and distance education programming if it is to compete efficiently in the higher education market. As such, the UWI will need to focus on activities that deliver unique value to the institution and students.

The current *Strategic Plan* takes an integrated and mutually dependent approach to addressing the new educational and socio-economic environment and as such, it is worth looking at other Perspectives to determine synergies. In this regard, elements from the Perspectives 'Employee

Engagement and Development', 'Internal Operating Processes', and 'Outreach' are relevant to the Perspective **'**Teaching, Learning and Student Development' and can impact on its achievement. These include:

- **Enhance institutional awareness (within Employee Engagement and Development):** Increase institutional-awareness through improved communication and participation in decision-making processes and scale-up training in functional areas. Also, implementation of biennial Employee Engagement Surveys.

- **Technology (within Internal Operating Processes):** As the use of technology becomes more pervasive in administrative processes and the teaching and learning environment there is need to: (i) restructure existing educational budgets to support technology growth; (ii) develop systems and procedures to ensure academic information integrity and security; (iii) plan for technical [hardware] obsolescence; (iv) build capabilities and capacities of TEIs to improve access through virtual learning spaces as well as improve the infrastructure and service delivery of open and distance learning.

- **Student Demographics/Recruitment/Retention (within Internal Operating Processes):** As universities expand their catchment of students and attract a more diverse student population there will be more demand for services. Student mobility amongst institutions or students pursuing programmes at different universities simultaneously would suggest that the UWI would also need to identify policies to address that phenomenon. The university, therefore, will need to scale-up policies and procedures to support transfer recruitment (within and without).

- **Outreach:** In the context of internationalisation consideration should be given to encouraging an 'internationalisation at home' programme whereby the curriculum and programmes, teaching and learning processes, extra-curricular activities, and other research and scholarly activities complement the internationalisation abroad programmes. These international programmes will contribute to the realisation of the attributes of the ideal UWI graduate who is, *inter alia*; globally aware and well-grounded in his/her regional identity (UWI Strategic Plan 2012-2017, 24-25). The UWI should continue to advocate for the "a structured tertiary education system [that] enables establishment of standards that ensure each institution has an adequate system of internal and external quality assurance that meets national and regional requirements" (Harris 2010, 2), the Regional Accreditation Authority and the development of the CQF as means for ensuring quality the tertiary education system.

Universities will have to contend with issues of quality and relevance, financial sustainability, institutional diversification and flexibility in the immediate future in an environment where economic competitiveness is increasingly based on knowledge, creativity and innovation. The trends that would affect the higher education sector for the next 3-5 years include:

- Student participation will continue to expand though perhaps, at slower rates.
- Females will form the majority of student populations in most developed countries and their participation will increase everywhere.
- The student population will become more varied, including more international, older and part-time students.

- Increase demand and participation in online and distance education programmes including MOOCs.
- Attitudes and policies relating to access will become more central to national debates.
- The academic profession will become more internationally oriented and more mobile but will remain structured according to national circumstances.
- Academic activities and roles will become more diversified and specialised, and subject to varied employment contracts.
- In developing countries, the need for more lecturers will mean that academic qualifications, already rather low, might not improve much and reliance on part-time staff will continue.
- Academic programmes and research outputs will increasingly become interdisciplinary.
- Focus by university administrators less on entrance information and more on exit assessment, competency-based degrees[1], retention and graduation graduate school acceptance, career placement and alumni satisfaction.

Further, in the area of "research and Innovation', careful consideration may be required by academics, university administrators and regional governments on how the university fits into the regional higher education system and its research-based uptake, diffusion and rank in the world university ranking systems. The UWI may also be well-placed to reposition itself as the seat of Caribbean knowledge.

The various changes that are taking place nationally, regionally and globally (such as the continued demand for higher education, quality and relevance of the institution and programmes, diversity of the student population, student retention and persistence, the dynamism and pervasiveness of technology, the nuances of the academic labour market and funding) will demand that the UWI respond with a level of agility and flexibility. It, therefore, means that the UWI will have to be clear on its institutional configuration and pathways and adhere to the tenets of its mission and vision to respond to these trends.

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[1] The *Strategic Plan, 2012-2017* (33) speaks to promot[ing] competency-based activities linked to the attributes of the UWI graduate to the needs of the workplace and society. Further, there is need to broaden and deepen the institutional research agenda of the UWI and in particular, the UOPD to further explore retention at both the undergraduate and graduate levels.

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