Exploring the relevancy of Massive Open Online Courses (MOOCs). A Caribbean University Approach.

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Abstract:

The challenge of Information and Communication Technology Management within the Caribbean university system remains daunting. On the surface there exists constant need to revisit infrastructure, system architecture, software and relevant hardware in keeping with the myriad number of changes across the global technology landscape. However, a greater challenge is emerging rapidly forcing universities across the globe to re-evaluate their strategic direction as it relates to course delivery. Massive Open Online Courses (MOOCs) represent the next frontier for open and distance education; allowing for dispersion of courses (free of charge) to participants with a diverse array of digital content spanning the sciences, arts, humanities and business. MOOCs represent a new thinking for content design/delivery rooted in the transformation of production and knowledge sharing Tapscott & Williams, (2007). University systems regionally as traditional gatekeepers of knowledge must now become au courant to ensure currency and competitiveness. This paper examines MOOCs as a new digital content frontier, their relevance to Caribbean higher education institutions and the challenges that universities face as they become more prevalent. It will also provide insights into the potential strategies for adoption of MOOCs within the Caribbean university system.

Key Words: **MOOC, Disruptive Technologies, E-Learning, Technology Adoption, Content Strategies, Disruptive Innovation**

Introduction

The emergence of such education models as MIT's MITOCW, Udacity, Coursera & Udemy signal alternative approaches to content delivery modalities. Moreover, as the digital age progresses into its maturity stage the relevancy of knowledge acquisition needs to shift accordingly. Brick and mortar institutions are already challenged by tools such as YouTube (Burgess & Green, 2009) which provide a high degree of subject content knowledge. MOOCs may be next. MOOCs represent an exciting time for the global higher education market, not only are they relevant for learning but also represents a source of disruptive innovation, (Christensen, 1997) that is wreaking havoc on higher education business models both within traditional as well as for profit university settings. The emergence of new education business models and their utilization of MOOCs as a source of competitive advantage make access to students outside of the traditional radar of US/European based higher education institutions more palatable as affordance becomes less of an issue through increased access to Information & Communication Technology (ICT).

The potential impact of MOOCs on the Caribbean university system remains inevitable due to already existing changes in ICT. The landscape of education in the Caribbean region is changing, not only as a result of the growing need for a more educated cadre of professionals who can contribute to the new knowledge driven economies but also because of the emerging impact of globalized education opportunities without the need for travel. Online learning has gained much momentum in the region, including the University of The West Indies' (UWI) Open Campus' foray into the realm of open and distance education. The reach of the dominant Caribbean University (UWI), within the region is now as pervasive a click environment as it has been in the brick landscape for over 60 years. Currently, UWI's Open Campus system offers more than 30 blended learning courses on an annual basis with a total of 6,499 enrolled during the 2011-2012 period (Open Campus, 2012). This is an impressive feat that attests to the robustness of the University system and its foresight in embracing a geographically diverse student population spanning the region.

The origins of the University's approach to online education commenced with UWIDEC (The University of the West Indies Distance Education Centre), (Thurab-Nkhosi, 2006). It has traditionally offered its programmes using a mix of print, audio-conferencing and face-to-face

tutorials with limited use of asynchronous, computer-based technologies. While there has been much debate about the effectiveness of technology-based learning versus face-to-face (Rampage 2005; IDECC 2005) cited by (Thurab-Nkhosi, 2006), the final impetus for UWIDEC to move away from synchronous delivery however, was influenced by practical considerations. According to (Thurab-Nkhosi, 2006) the increasing student numbers over a wider geographical spread, and greater demands being placed on the audio-conferencing network, prompted the move toward more asynchronous delivery. This incorporation of more asynchronous delivery using computer-based technologies into the mix was considered a move toward "blended learning". The University initiated a blended learning initiative establishing the UWIDEC as a blended learning project, headed by the curriculum specialist/campus coordinator at the St. Augustine campus. The project was designed to prepare a set of pilot courses incorporating more asynchronous, computer-based technologies in time for delivery in the 2005/2006 academic year.

A total of thirteen courses were selected as pilot courses based on the willingness and skills of lecturers/course developers at the Mona, Cave Hill and St. Augustine campuses. The course developers were content specialists for the respective courses and each worked with a course development team comprising a curriculum specialist, editor, web designer/multi-media specialist and technician. This gives a brief history as to the formulation of an approach to online/distance education within the dominant Caribbean University's (UWI) system.

While the blended learning format at UWI is now standard in its delivery to diverse learners, the university is still very insular in its approach. The insularity occurs as a result of the barriers to entry (i.e. admission/matriculation requirements) as most of the participants are matriculated into a full course at the certificate, diploma or degree level. As such assessment for entry remains based on meeting the pre-requisites for acceptance which allows participation only to those who matriculate successfully. While there is nothing wrong *per se* with this approach as it represents standard procedures for most universities, it does preclude participation of persons with an interest in a specific aspect(s) of the respective university's offerings. Another common concern surrounds the technological infrastructure within the institution in that it may not be able to support as many learners as MOOCS. In addition, the teaching resources to support coordination and massive course registration may just not be possible given both the existing *eCompetence*, i.e. *the ability to make appropriate judgments on the effective integration of ICT into the*

educational context and processes of some academics, (Timoshtchenko & Bavrina, 2009). eCompetence is essential for MOOC success as it creates:

- ✓ Understanding of the processes of personal growth and interactions within both the internal and external environment of the institution as it relates to technology's role

- ✓ The idea of responsibility of educators and the consequences of their actions with regards to adoption/non-adoption of technology from a longer-term perspective

- ✓ Environments where educators are responsible for providing students with experiences that are immediately valuable and enable the student's contribution to society. Technology is core to that responsibility

The last (4) years we have seen the emergence of MOOCs as a tour de force in higher education technology. They have been touted as the next big thing in online learning and educational models development having received much coverage through respected online education magazines such as the Chronicle.com and peer reviewed online academic publications in the online learning space. Much has been said about their power to educate en masse and provision of solutions to the problems of universal access to education products/services. However, for all they are, their presence on the menu of the Caribbean University's plate are yet to emerge as increasing demand for access to tertiary education learning by larger audiences burgeons to meet the developmental needs of the region.

Throughout this paper we continue to examine MOOCs as a new digital frontier, its relevance to Caribbean higher education institutions coupled with the challenges that universities face as they grow in prevalence. The approach adopted will be via an exploratory case study utilizing the University of the West Indies as its primary example. Inherent in the exploration will be the following:

1. Definition of MOOCs
2. Possibilities, Challenges and Future Opportunities
3. Conclusions and Recommendations

Through this exploratory approach readers may gain a closer insight into both the emergence of MOOCs as well as determine a methodology to further investigate this phenomenon via empirically-routed research. Review of current literature available will assist in framing the discussions as well as provide potentially new insights appropriate for a Caribbean context.

However, prior to getting into the discussion some empirical data to support MOOC's emergence is required to provide readers with greater understanding as to its rapid adoption. Let us examine data from two of the most innovative providers of MOOCs; MITx & HarvardX, (Daly, 2014).

Table 1 - Performance MOOC Data (Harvard & MIT)

	HarvardX as @ Feb 2014	MITx as @ Feb 2014
Enrollment Worldwide Registrants	1,076, 421	820,365
Certification Attainment	37,148	29,263
Gender Composition of Total Enrollment	Male: 59.5% Female: 33.2%	Male: 66.2% Female: 23.7%
Education Levels (Possessing Bachelor's Degree)	67.8%	64.6%
Age Composition	Median Age: 28	Median Age: 27

The information above represents data collected since inception of respective university's MOOC initiative. The relevancy of these figures illustrates the extent of persons enrolled as well as the certification success rates, despite MOOCs growing popularity. However, before we further critically analyze their performance we must first gain better insights into MOOCs.

MOOCs Defined

In order to better understand the implications for MOOCs within the contemporary Caribbean university context we must firstly understand its background. According to (Waard, et al., 2011) the concept of MOOCs was first introduced by Stephen Downes and George Siemens while building a course format to fit with the theory of connectivism for the University of Manitoba. MOOCs are by definition open and online, allowing as many participants as possible to join.

They allow learning to happen across space and time due mainly to their asynchronous nature, with the idea that learning is not limited to one group or environment as would be the case with more traditional e-learning delivery systems. Daniel (2012) defined a MOOC as "*a type of online course aimed at large-scale participation and open access via the web.*" Daniel indicated that MOOCs are an education buzzword and attributes their momentum to adoption by such elite institutions as Harvard & MIT based on their collaborative efforts with edX (https://www.edx.org/). There are other MOOC providers such as Coursera, Udacity, Khan Academy and Udemy all in the space of providing open courses to large audiences focused on a business model with the hopes of monetization. These for profit models of MOOCs have seen much visibility beyond educational value and more as a source of future economic rents for adopting organizations. MOOCs to the education sector represent a disruptive technology (Christensen, 1997) and by extension a source of disruption of existing approaches to learning. They are helping to create new markets and networks that will eventually disrupt the traditional premise of education delivery. Up to this point they remain a fashionable technology and as a consequence institutions are flocking to them to integrate into existing education models least they feel left out or worse perceived as lacking technological currency and leadership. The general argument has been that MOOCs will resolve some of the issues associated with access to education in developing countries however, the basic premise of this tool at the moment is its utilization by people seeking knowledge for knowledge sake and not as course credits citing (Pisutova, 2012). Additionally, despite their popularity, the drop-out rates are significantly high with only a 10% completion rate and limited abilities to assess the quality of MOOCs which are still in their infancy. The question then arises, why would Caribbean Universities specifically want to adopt MOOCs given their present struggles and what challenges would they face in so doing?

Simple, according to (De Coutere, 2014);

1. They work just as well as equivalent classroom-based offering: providing insights, concrete action plans and feedback.
2. They attract a high number of learners, but just as easily drop-outs and are therefore not suitable for everyone so adopters must be wary. However, given that universities target potentially successful participants/students the approach has merits.

3. They represent technological barriers and thus require the university to establish systems from the onset. The pro being informed design, the con being cost of infrastructure and human capital to accomplish the assigned tasks.

MOOCs at the Digital Forefront

According to (Gupta & Sambyal, 2013) MOOCs promise free access to cutting edge courses that could drive down the cost of university-level education disrupting existing models of higher education. We already see examples of this through Courser, Udemy, Udacity & edX. The question remains as to what makes MOOCs so digitally relevant. Simple, they are flexible, highly accessible, customizable to specific interest, free, targeted, rapidly launched and they require little or no prerequisites, (Gupta & Sambyal, 2013). Furthermore, it puts learning at the forefront informally with a high degree of self-regulation and a variety of assessments formative and summative which allows participants to advance their knowledge and careers. To take this discussion further the use of social media integration into mainstream educational technology and mobile devices represents a new path for both access and dissemination of education content, (de Waard, 2011). Thus there is rising interest in finding new methodologies which build upon these new technologies to enhance the learning and teaching process. MOOC are one of these emerging formats and can boost institutional, corporate, or NGO knowledge, provided they are open to its innovative approaches. Their contribution to the digital frontier rests in the fact that as web-based technology they have already moved beyond these boundaries to ubiquitous mobile devices across several environments. They act as a convergence of higher education pedagogical delivery placing the entire system in one place. This has not been accomplished by any other technology or pedagogical innovation previously. Moreover, their popularity is only further supported by the popularity of publications which have arisen on the topic within the last 5 years. According to (Liyanagunawardena, Adams, & Williams, 2013), the first MOOC journal publication was in 2008 since then we have seen the emergence of over 20 articles in one year on the topic, Fig, 1 refers.
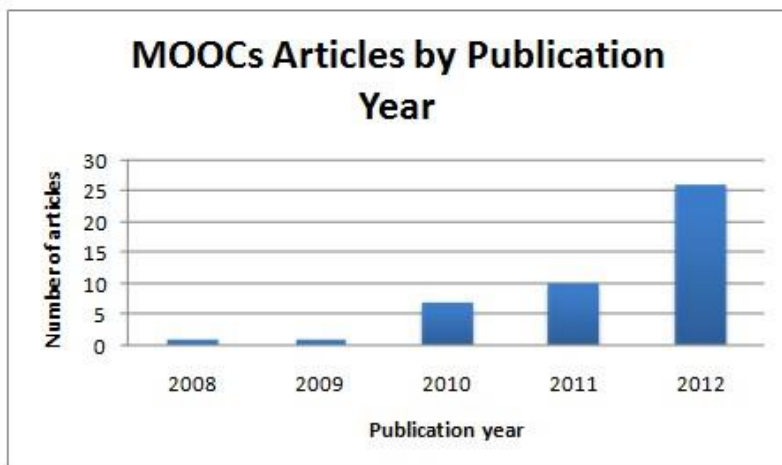
Figure 1. Articles by publication year.

They further go on to demonstrate the nature of discourse across the various mediums for knowledge dissemination, Fig 2, indicating the popularity of the topic across the various domains.
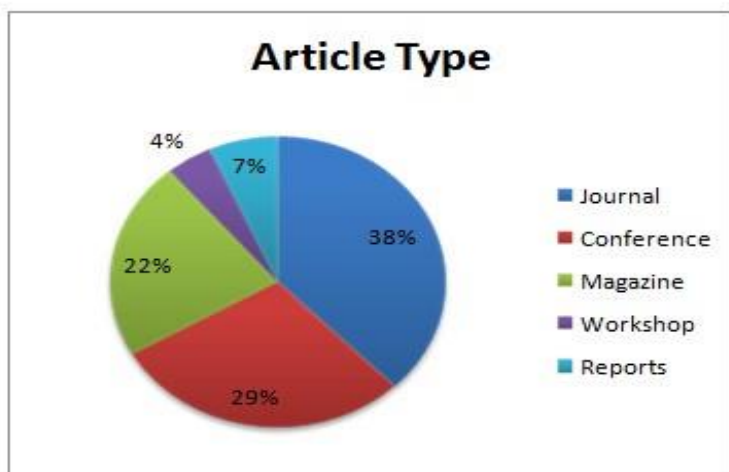

Figure 2. Article classification by publication type.

The contribution of MOOCs to the digital frontier of education technology cannot be underscored as MOOCs have managed to create debate across the themes of agency, connectivism, actor network theory, learning experience, pedagogy and technology. To date 74 institutions across the globe have rushed to embrace this phenomenon, (Waldrop, 2014).

"*In 25 years of observing higher education, I've never seen anything move this fast,*" says Mitchell Stevens, a sociologist at Stanford and one of the leaders of an ongoing, campus-wide

discussion series known as Education's Digital Future citied again by (Waldrop, 2014). MOOCs are hitting at exactly the right time. Bricks-and-mortar campuses are unlikely to keep up with the demand for advanced education: according to one widely quoted calculation, the world would have to construct more than four new 30,000-student universities per week to accommodate the children who will reach enrolment age by 2025, (Uvalić-Trumbić & Daniel, 2011). For anyone to argue that MOOCs are not at the digital frontier would be to ignore the alarming fact that they are an integral component for reducing the impact of skyrocketing tuition, and infrastructure cost plaguing higher education institutions today. Moreover, they represent an opportunity for large-scale pedagogy fuelled by relentless advance of technologies such as broadband, social networking and smart phones. However, they do come with their own shortcomings.

Possibilities, Challenges and Future of MOOCs – Caribbean Context

Possibilities

The relevancy of MOOCs to Caribbean higher education institutions commences with its contribution to cost-structures. (Depover & Orivel, 2012), discourse on e-learning in developing countries treats with the capabilities of digital technologies for *responsive interactions at a distance* and its exploitation affording a number of advantages through ICT, other than those directly related to student-teacher interaction. They make the point that using the Internet as a platform for teaching/learning transactions allows very different scenarios, including some of a very distinct cost-structure. It becomes a discussion of economies of scale and as such level of fixed costs as compared to variable cost per student. As a consequence, Caribbean University systems such as the University of the West Indies can sustain its growth momentum while reducing its operational cost through adoption of a digital technology such as MOOCs. The achievement of characteristic economies of scale means that the threshold between present distance educations efforts can potentially out-competes the face-to-face mode and achieved earlier benefits. Hence, scale achievement affords affordable education for all, which is one of the strategic pillars of the University of the West Indies' mandates. The relevancy to Caribbean higher education institutions and the challenges they face are specific to cost-parameter as they would potentially reduce the *average cost per student* (AC).

Despite much hype, the possibilities for MOOCs are endless as they provide ubiquitous access to material across geographic boundaries which if properly managed, improve the lot of individuals

with specific subject matter interest. The real possibility for MOOCs rests in their ability to provide access to credits cheaper than traditional education, thus making a college education more affordable specifically within the Caribbean context. According to Bates (2012) cited by Daniel (2012), MOOCs not only address the challenges of expanding higher education in the developed world but may encourage universities to develop online learning deliberately. They could also assist in finding their way into the teaching of local institutions. An excellent example would be access to introductory science or mathematics courses for CAPE (Caribbean Advanced Proficiency Examination) a system designed for access to acceptance in higher education. Hence it can be leveraged for student's introduction to 1st year undergraduate course material and thus provide a better foundation for students planning to attend these institutions at a later stage. Another possibility is for the utilization of MOOCs to address the needs of those at the bottom of the pyramid Prahalad (2004) cited by Daniel (2012) through development of specific extension courses which may be used to provide foundational or remedial education to disenfranchised groups who would not traditionally attend/access university but may meet the basic requirements with some form of learning reinforcement. A further opportunity rests in the creation of a new business model for the Caribbean university system by leveraging the potential power of MOOCs and extending the core delivery capabilities of the institutions in question to non-academic institutions. The extendable core is defined as the theoretical principles of disruptive innovation as the basis for performance advantage, Mazoue (2013).

 Five elements characterize the extendable core and would represent a competitive advantage which UWI can use to remain relevant. They are:

1. Research-based methodologies
2. Individualized learning
3. Efficient – competency based approaches
4. Scalability
5. Cost effectiveness

UWI as the premier institution in the region possesses in ready supply all of the requisite characteristics for creation of competitive advantage against emerging competition from institutions which simply import most of their curricula. For the Caribbean University (UWI), adoption of MOOCs provides the possibility of learning optimized courseware with the

advantage of producing better learning given the need to develop large scale standards for delivery of quality learning en masse. Additionally, as the premier institution it possesses the ability to share its MOOC business model with other higher education institutions in the region and so set the pace for standardization of open education resources (OERs) and online delivery. Downes (2007a, 2008, 2009b) cited by Mackness, Mak & Williams (2010) suggested that the key characteristic of an online course utilizing connectivist principles are autonomy, diversity, openness, connectedness and interactivity. These ingredients already exist in the UWI's framework and would need to be coordinated to achieve success.

Challenges

Two challenges that MOOCs face within a Caribbean and global perspectives are quality and accreditation. Despite the heralded benefits of cost reduction and expanded access the issue of quality is paramount. For the most part MOOCs are at present self-service learning with an element of crowd sourcing, that is, the ability to bring large groups to a single location based on a specific product/service. While self-directed learning has instructional benefits it is inherently skewed towards more advanced learners who have the ability to self-regulate. Novice learners require instructional guidance and in an MOOC environment they are largely on their own Mazoue (2013). The quality issue is important as it speaks to credibility both short/long term. In a survey by Babson Research Group only 28% of chief academic officers believed offering MOOCs was sustainable, Allen and Seaman (2013). While MOOCs offer an almost altruistic approach to learning with free universal access, most participants partake in a course motivated by certification usually with an aim to improved livelihoods.(Wiley (2011) cited by Panto & Comas-Quinn (2013).

Open Accreditation Resources (OARs) should be made available to support the large numbers of learners/courses providing an appropriate evaluation system. For a Caribbean University the challenge of accrediting large numbers of persons based on a single module without connection to a full program remains a challenge especially given the inability to accurately supervise examinations and the logistic involved in coordinating such a venture. The University system would have to engage in efforts such as Mozilla's Open Badge Initiative, an open framework to support conferring badges to show competencies achieved. However, the question remains how this approach will be accepted by employers in the workplace given the traditionalist nature of

Caribbean employers and educators. Accreditation success of MOOCs will reside in the domain of adoption by large corporate organizations as the main driver.

We cannot assume that because they represent a popular model for the elite institutions that they are right for all university systems. The desire for MOOCs must be built on relevant need and as such academic planners need to understand the requirements of such technologies from both a financial as well as a value proposition perspective. They must also examine the present challenge of time & drop-outs. Time is not something you have, it is something you make and consequently the Caribbean university system must be cognoscente of present student study/performance habits and assess accordingly to ascertain feasibility. There also needs to be a clear understanding of the university's ICT capacity. Is the technology an institution must have or have not? This determines the degree of investment and period to recoup as these institution must allocate resources efficiently and in so doing prioritize for efficiency.

Finally, one of the nagging concerns that the author perceives will challenge the Caribbean University system is attrition. Chu (2013) reported that 155,000 persons registered for courses with MIT but only 7000 received any form of certification. What is more interesting is that two-thirds of the participants who registered dropped out almost immediately, signing up to never return. Given the degree of resources which are required for such an undertaking within the University systems, especially one which does not possess the resource base of an MIT implementation, it becomes a very ambitious venture.

While the Caribbean University system does not have a potentially high number of dropout, primarily due to the robust requirements and access to free tertiary education via Government Assistance for Tuition Expenses (GATE) there are still issues with timely completion within the timeframe allotted for degree success.

Potential adopters must be cognizant of both the cost of implementing MOOC ventures. They must also consider the longer-term resources that are required for continuity weighing those benefits against traditional online or blended delivery which have already achieved a mature life cycle.

The Future of MOOCs

MOOCs are still in their evolutionary state and as such there is still much room to manoeuvre as it relates to implementation. MOOCs have the potential to serve as an "educational positioning system", Mazoue (2013) which precisely navigates students through their curricula along individualized pathways and route students to success. The use of MOOCs as course exemplars, i.e. precursors to the main course acting as prototypes to optimize the learning process can positively impact student performance. The utilization of well-designed MOOCs can be an effective catalyst for transitioning students within the Caribbean University system by challenging the traditional syllabi to create handcrafted models of teaching. This approach enables student learning both within a more relaxed and precision-based environment towards more effective and innovative content delivery. This approach would guarantee a higher degree of success through educational practice and better conceptual adherence for the students as they progress through the system.

Secondly, if the credit system(s) for MOOCs get worked out they present an opportunity for economies of scale with regard to the cost of Caribbean University education bringing with it affordability, access and participation rates that are yet to be achieved within a Caribbean education context. As a source of concern for the future of MOOCs the issue of "free" may disappear as the phenomena evolves. Institutions which have implemented are still licking their proverbial wounds from the impact of free and as such there is still much refinement of the MOOC model which will need to occur, inclusive of the current model of liberal access and quality. There exists the potential to continually erode face-to-face learning, which while ideal under certain conditions is not as attractive to today's digital natives. Students today require instant feedback from their professors and MOOCs provides this criteria through peer-to-peer learning interactions as well as flexibility and variety. As part of future thinking some believe that MOOCS may destroy the future of learning. (Vardi, 2012), suggest that if MOOCs do emerge as a potential threat it is not due to their intrinsic technological value but the seductiveness of reducing cost of operations within higher education. Consequently, MOOCs future may result due to undue financial pressures and not necessarily its educational benefits. This hits specifically close to home for the Caribbean university system as for the most part they are funded by a pool of resources from the various governments. The financial pressures exuded globally and impacting Caribbean trade and economics have resulted in the university rethinking

its strategic plans with careful consideration of resource allocation. University endowments and fund raising efforts have taken a hit as has state support therefore MOOCs as a potential source of cost efficiency may become irresistible.

Recommendations

Potential strategies for the adoption of MOOCs with the Caribbean university system are presented below:

1. **University Model**: Implement approaches within the education system that allow for a higher degree of open access to students, specifically focused on foundational courses which provide an opportunity for exploration of subject matter from ground zero. For example, a student interested in science would traditionally have done CAPE, leveraging the power of the university model to allow exploratory programmes for less qualified participants through MOOC primers would be a positive step providing an ability for future recruits to improve their performance prior to entry.

2. **Structural Model**: Academic rigour, especially at the lecturer/professor level, leaves very little room for academic entrepreneurship. Changing the composition of how they operate within the system will greatly improve the degree of internal innovation often shrouded by the bureaucratic protocols of a system still holding on to its colonial past. The degree of academic flexibility provided by MOOCs allows for "de-siloing" of present functional structures and increasing the collaboration impetus of the organization.

3. **Funding Model**: Greater Private Public Partnerships (PPPs) between the university and the corporations can assist greatly in both the creation and funding of MOOC courses that meet specific industry sectors. Hence, the burden of design and implementation can shift to specifically designed MOOC courses that are available to dominant sectors in the regions such as Finance, Health, Energy or Tourism. Moreover, these experimental MOOCs via PPP represent a new source of revenue and academic entrepreneurship via content creation which both meets industry specification and encourages pedagogical innovation.

4. **Success Model**: Our system is plagued by the traditional definition of accreditation. Success is defined by pass/fail, GPA and other standardized criteria which based on continued rates of participation within the university sector have not seen astronomical

increases in performance. Leveraging certification from other institutions such as the regional NTA (National Training Agency) with responsible for Technical Vocational & Education Training (TVET) systems for Prior Learning Assessment & Recognition (PLAR) and National Vocational Qualifications (NVAs) i.e. competency based assessment may go a long way to providing a framework for assessment and accreditation of MOOCS. More importantly, it extends the reach of the Caribbean University system to support and reinforce essential standards which already exist at the higher education levels to those of the technical vocational domains.

Critique of Adoption Strategies

However, while each of these strategies has their merits regarding adoption universities must remain vigilant of their implementation limitations which impact all of the above approaches if not carefully managed. Generally speaking these strategies require further components for success, (North, Richardson, & North, 2014):

1. **Institutional Motivation** - MOOCs currently and generally have thus far been developed by elite universities using their professors. Consequently, this approach has had the two-fold benefit of: (i) serving as a great global marketing technique for universities and (ii) provides opportunities for faculty involved to sell course materials, textbooks and other related items. There is also the factor of student motivation to take these types of courses including curiosity or certification acquisition from the elite universities, boosting their ego and possibly their resume. Given the present culture of the Caribbean University system, still grappling with finding its identity would the same factors motivate the institution to adopt one of these approaches?

2. **Enormous enrolment** - MOOCs have the potential to engage a large number of students—thousands—to take a single course. For instance, Stanford's course on artificial intelligence, taught by two "celebrity professors," attracted 150,000 students. The class size may be intimidating to instructors, and the common tasks of regular interaction and evaluation at that scale run tangential to the current University's modus operandi. Adopting a large enrolment models would require a degree of quality due diligence

within its present *structural strategy* for which the university system may not have the wherewithal.

3. **Retention** - One of the major challenges of MOOCs is drop-out rates. Since students do not invest any financial resources, it is easy for them to drop a course at any time without any of the consequences that they would have faced with traditional courses. Courses commonly only have a 10%-20% completion rate – a few anecdotal reports denote as low as 2% completion rate. If the Caribbean University used present resources through any *funding model*, PPP or otherwise how would it account to its benefactors? The University must bear in mind the perception of possible negative return on investment and conservatism of funders due to a lack of technology savviness. As a society we are still hindered in our technological efforts despite post-colonial rhetoric by predominantly traditionalist benefactors rand their unwillingness to expend investment on cutting edge technologies.

4. **Diversity and disparity** - Students taking MOOC courses inherently represent a wider and larger diversity target audience when compared with traditional structured curriculum courses. MOOCs experience a wider variety of elements taking into consideration such factors as background education, specific knowledge and skill, etc. Traditionally online courses, student geographic disparities and the natural magnitude are much larger within MOOCs offerings than present efforts of the University's Open Campus. While having a significant regional geographic reach Open Campus will experience significant impact on its *structural models* as resources strain or shifts core competencies. This re-focus can adversely effects its mandate as the preferred institution of research and teaching excellence towards its strategic development of a truly world class university.

5. **Interaction and feedback** - Almost no participant in a MOOC receives individual interaction or attention from an expert. The lack of consistent review and grading system further weakens the already non-existent interaction, which ultimately provides unacceptable feedback compared with traditional learning. Generally, the evaluation of students' work utilizes guided peer assessment, which, in turn, opens up new safety and privacy issues. For MOOCs to be successful, careful attention has to be paid to the *success model* of the institution to ensure that exacting standards are continually met to

retain accreditation value. This may require further support of various quality centres within the existing system.

To place these strategies in context let us look at the implementation of one recommendation in context. The University's Open Campus has entered into a partnership with the Certified Management Accounting (CMA) body to offer a Professional Diploma in Management Accounting. This Foundational Studies Programme is aimed at university graduates in all fields of study. Through the programme graduates who attain CMA's full suite of prerequisite topics are exempted from the Foundational Studies Programme and allowed to challenge the CMA Entrance Exam directly. Integration of a *university model* allowing for open access via a MOOC platform may greatly enhances foundational courses delivery across greater geographic boundaries. Furthermore, from a *funding model* perspective as a private/public partnership (PPP) it would allow Open Campus and CMA to share future cost of development thus increasing both operation efficiencies and economies of scale. While this is only one example of strategic adoption it does illustrate the applicability of the various strategies to some degree in forging MOOC adoption.

In considering a model for adoption which can support the Caribbean University system it must take place within the context of existing University harmonics. This approach ensures a strategic migration of existing infrastructure and other resources. Fig 3 provides some insight.

Figure 3 - Integrative MOOC Model for Caribbean University System
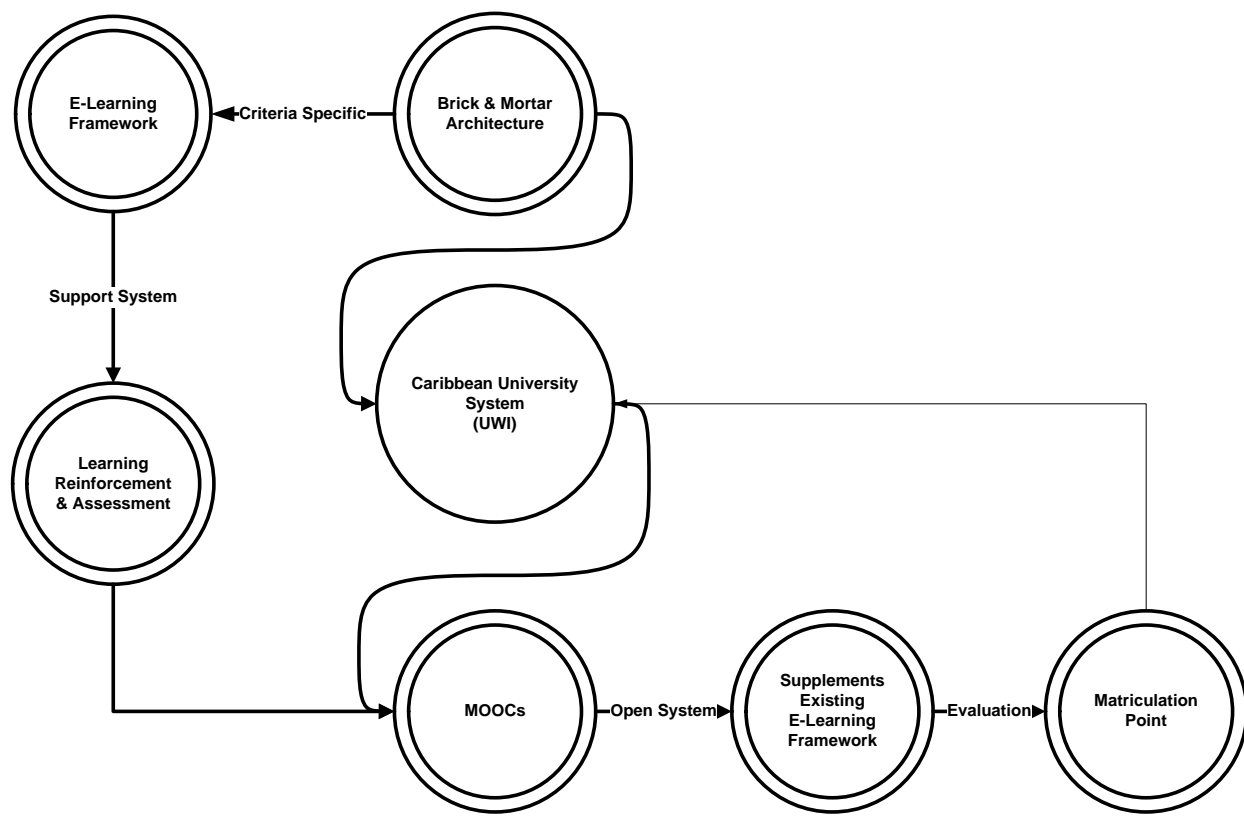
The model above, Fig 1, illustrates the role of MOOCs as it relates to the Caribbean University system. Whereas e-learning presently represents an extension of the content of the university MOOCs can be utilized to both supplement and provide alternative matriculation paths to worthy students, i.e. SPOCs (Small Private Online Courses), (Fox, 2013). As such these SPOCs can both increase the enrolment as well as provide supplemental course material/content to participants to support learning challenges associated with specific subject domain content. Moreover, a SPOC format is one way that MOOCs can be successful. It helps to answer the broader question of how to re-allocate already scarce instructor time so that they can focus on higher-order learning activities requisite for the overall success of the system.

In addition to the above framework there are some other recommendations which the Caribbean university system as well as those in other realms should be aware:

- Firstly, avoid the temptation to repurpose existing materials and quickly convert them into MOOC for academic teaching purposes. It has not worked for those converting classroom slides to e-learning page-turners, and it will not work well for MOOCs either.

This is simply because the conversion of subject domain content regardless of the architecture of the technology requires pedagogical planning. Making short videos, devising insightful discussion questions to kick-start reflection and curating the best links for deeper knowledge creation all take time and money.

- Secondly, don't make the e-learning 1.0 mistake of investing heavily in creating material and then throwing it over the fence. MOOCs are alive and need continuous adaptation. As such they need constant resources for currency, both human and intellectual. Consistent discussion forums every day to interact with our MOOC participants is necessary and thus requires a reconfiguration of lecturer mindset to support the environment especially in the beginning weeks. It is essential to start building the community at the onset so as not to see diminishing return as the courses progress. If this process is correctly executed in a few weeks people will emerge who are willing to take over some of the facilitation role.

- Don't forget the students. While current MOOC environments are fairly easy to navigate. Ensure that they successfully completed a MOOC course in a timely fashion, reward them via some form of certificate of accomplishment (with one of two levels), "Signature" verified-identity version of the certificate so that they are authentic and represent future currency for the students either for credit or employability, create credit

recommendation and further courses/books which can assist them in continuity.

Secondly, the use of a MOOC approach provides evaluative metrics for new technologies which are impacting the academic systems' pedagogical structure. The framework posited by Grover et al., 2013) as depicted in Fig 4, provides some degree of leverage/insight for the universities. It includes the learner background, technological infrastructure, content domains, evidence-based improvement, and provides a basis for assessment that accurately reflects today's digital population. This framework allows academic administrators and educators in general to assess internal competencies and approach MOOCs not as fashionable technology but as an integrated core competence. Faculty can leverage the scale of MOOCs to enhance classroom teaching and offer new curricula opportunities that specifically meet the criteria of today's learners in a format that is more relatable. From an analytical perspective, the use of MOOCs in evaluation allows for larger data sets for inferential statistical analysis vs. present small classroom data sets which only allow identification and answers to key questions related to their target audiences' "in-class" performance. MOOCs may actually raise the bar for teaching within the Caribbean university system as more performance data on instruction becomes readily available. Thus the introduction of learning analytics, i.e. "the measurement, collection, analysis and reporting of data about

learners and their contexts, for purposes of understanding and optimizing learning and the environments in which it occurs," (Siemens & Baker, 2012). Thus MOOCs create value from data in order to guide planning, interventions, and decision-making as an important and fundamental shift in how the Caribbean University system functions and shares the goals of improving education by improving assessment, how problems in education are understood, and how interventions are planned and selected.

Conclusions

The argument for adoption of MOOCs, inclusive of its advantages of producing better learning are but one of the many important issues related to the development of large-scale standards for delivery. Hence arguing for its adoption means understanding its impact on a few different levels. Although much controversy surrounds the idea of MOOCs, studies have cited several advantages. MOOCs have been cited as most beneficial as it relates to accessibility, increased potential for student engagement, and expanded lifelong learning opportunities, (Carr, 2012) & (Duderstadt, 2012).

1. **Accessibility**: Participants and instructors note benefits from the enhanced accessibility that MOOCs offer, (de Waard, 2011). They are typically low cost or free and create irresistible appeal for recruiting potential participants. The online format of MOOCs offers access and flexibility eliminating prerequisite requirements. (Leber, 2013) stated that, "as online education platforms like Coursera, edX, and Udacity burst onto the scene over the past year, backers have talked up their potential to democratize higher education in the countries that have had the least access" (para 1). Additionally, MOOCs have not been limited to college students, and/or professionals, but even younger students can participate in the MOOC experience.

2. **Student Engagement**: MOOCs are designed to enhance student engagement as improving student outcomes is one of its primary goals. (Trowler & Trowler, 2010), stated that student engagement is the investment of time, effort, and other relevant resources by both students and their institutions. The goal therefore being to optimize the student experience and enhance the learning outcomes and development of students and by extension performance and reputation of the institution. MOOCs deliver the necessary environment conducive to student and instructor participation, motivation and

instructional method, i.e. MOOC educators play a vital role in enhancing student engagement, (Rodriguez, 2012).

3. Finally, **Lifelong Learning Experiences**: According to (de Waard, 2011), "lifelong learning skills will be improved, for participating in a MOOC forces you to think about your own learning and knowledge absorption" (p. 2). They allow participants to pursue a particular interest or to continue their professional development. Beyond MOOCs conventional lifelong learning experiences, educational opportunities exist for underprivileged populations encouraging lifelong learning. Additionally, employers can utilize MOOCs to keep employees abreast of competitive labor markets throughout their lifetime in a cost-effective manner.

University systems globally represent the single most important medium for conservation, understanding, extending and handling knowledge to subsequent generations. MOOCs are fascinating developments as they blend the power of online learning with the potential of attracting massive participation at low cost. They have the potential to improve teaching by forcing a more deliberate approach to Open Education Resources (OERs) and allow for consolidation of disparate online programmes that can benefit from rationalization into MOOCs for efficiency. The core problem we face today in the Caribbean and worldwide is a system of education created in the 11th century (Mehaffy 2012). As a result it is hard for a university system even as young as the one in the Caribbean to perceive structural changes. MOOCs can be initially utilized in a blended small class format to supplement the existing classroom experience. Furthermore, they can yield valuable information metrics which assist the university system in the re-engineering and design of new products and services. These products can include executive education and professional development, pre-requisite courses to support Science, Technology Engineering & Mathematics (STEM) content as well as general outreach courses to support the University's social responsibility as an education disseminator.

As the DNA of face-to-face institutions change it is certain that MOOCs are now a permanent fixture in the education landscape. Digitization is the order of the day and with it faculty, administrators and regional governments must realise that present thinking on infrastructure and concrete edifices are an obsolete approach. Funding for public education is also waning as budgets are cut and students find alternative education models to increase their knowledge base.

The Caribbean University regardless of its best attempts will be threatened by new for-profit models of education as well as traditional players, global in nature, who are already expanding their reach into developing country domains. Institutions like MIT & Harvard have already contributed well over $30m to their course efforts, (Grossman, 2013) and have commenced offering credit. What's to stop Caribbean University students from accessing these institutions vs. local providers for more globally recognized qualifications?

MOOCs have been heralded as the most important effort to streamline education in the past 200 years, (Massachusetts Institute of Technology (MIT), 2013). As such it is believed that the landscape of education is about to change dramatically. The disruptiveness of MOOCs will continue to spread and perhaps eventually topple completely existing education models with far reaching impact to those in developing states which are only now beginning to catch-up. The proposition of free, quality education is a game changer and the Caribbean university system despite the availability of tuition concessions to its participants may not be able to sustain the onslaught of new learning technologies which provide alternatives to the education ecosystem.

Technology will be a defining factor in what happens next with the Caribbean university system and the adoption of systems which assist in the development of better performance metrics for students will prevail. The economic and societal importance of education, specifically within the Caribbean context is a relevant topic for discussion. Countries seeking developed country status as well as others looking to migrate from colonial structures and dependencies face a huge task ahead as MOOCs begin to extend their reach into lesser developed markets.

Further empirical study to advance the relevancy of the MOOC in the Caribbean is required, addressing both practicality and return on investment (ROI). The question remains, how best can the Caribbean Universities benefit from MOOCs without over committing or exposing themselves to failure?

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