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# Disrupting and democratising higher education provision or entrenching academic elitism: towards a model of MOOCs adoption at African universities

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**Abstract** Challenges of broadening access, escalating cost, maintaining desirable quality and enhancing meaningful learning experiences in African higher education (HE) have spurred debates on how to restructure higher education delivery to meet the diverse needs of heterogeneous learners and adapt pedagogical models to the educational realities of low-income African countries. In view of these complexities, Massive Open Online Courses (MOOCs) have been advanced by Western Consortia, universities and online platform providers as panaceas for disrupting/transforming existing education models African universities. MOOCs have been touted as disruptive innovations with the potential to create new niche markets for HE courses, disrupt traditional models of instruction and content delivery and create new revenue streams for higher education. Yet academic elitism which manifests in the exclusive selection of top American universities to develop, host and deliver MOOCs, MOOC providers' use of university brand and reputation as benchmarks for charging recruitment fees on headhunters recruiting MOOC graduates and their complex business models involving the sale of students' big data (e.g. learning analytics) for profit seem to be inconsistent with claims about philanthropic and egalitarian drive of MOOCs. Drawing on disruptive innovation theory and a review of mainstream literature on MOOCs adoption in American and African tertiary sectors, this study argues that behind the MOOC rhetoric of disrupting and democratizing higher education lies the projection of top academic brands on the marketing pedestal, financial piggybacking on the hype and politics of academic exclusion.

**Keywords** MOOCs · Disruptive innovation theory · Democratisation · Academic elitism

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## Introduction

Higher education in Africa and the world over is pressured by momentous challenges of broadening access to content and instruction, reducing cost of provision, maintaining desirable quality of content and enhancing meaningful experiences of learners. To make sense of this increasing complexity in educational provision, mainstream literature has attempted to categorise these challenges as: *internal* (souring costs of provision, inherent conflict between increasing access and maintaining quality, while keeping costs down, improving meaningful interaction between educators and students) and *external* (declining state funding, enhancing national/international competitiveness, meeting the demands of quality assurance bodies, higher education national bodies and the skills expectations of graduate employers) (Australian Trade Commission, 2013; Ng'ambi and Bozalek 2013; Universities UK, 2013). For instance, while “enrollment in tertiary education in Sub Saharan Africa (SSA) grew by 8.6% annually over the past 40 years, compared to 4.8% annually on average for the rest of the world,” the “public funding for higher education in SSA increased at only 6% annually from 1970 to 2008” (USAID 2014, p. 5, 6). The question of how to educate a rapidly growing African student population while improving the quality and relevance of educational provision has challenged many African higher educational institutions (HEIs) to experiment with different educational delivery models. Unsurprisingly, Massive Open Online Courses (MOOCs) have been proposed as possible panaceas for addressing these complexities (Australian Trade Commission 2013; Moody's Investors Service 2012; Stepan 2013).

The claims about the potential of MOOCs to disrupt content delivery methods and democratise access to quality higher education at large are often informed by disruptive innovation theory. Disruptive innovations “denote innovations that deliver a physical product or a service to consumers in ways that contradict established market expectations” (Christensen and Raynor 2003; Yuan and Powell 2013, p. 4). To the extent that MOOCs are envisaged to offer flexibility to course delivery, render affordable access to online higher education in comparison with mainstream traditional education and enable fast-track completion of courses at low cost for anyone interested in learning (Yuan and Powell 2013), they qualify as disruptive technologies that can potentially transform higher educational landscape. The disruptive potential of MOOCs also lies in: their capacity to “offer more classes and courses to an unlimited number of students across the globe through low cost open courseware platforms” (Moody's Investors Service 2012, p. 1) and empower students to self-pace their learning by attuning their studies to their preferred schedule and re-watching parts of lectures conceived to be more challenging (De Jager and Van Reijswoud 2014).

For African higher education, however, the disruptive potential of MOOCs lies in their capacity to overcome the social exclusion of vulnerable groups based on gender, age, socio-economic status and ethnic origin. In the African context, “lack of digital equipment (e.g. computers, Internet) has a direct effect on the participation” of vulnerable groups (women, youth, the aged) “in the educational opportunities provided by MOOCs” and in the knowledge society (De Waard et al. 2014, p. 5). While there is persistent “rhetoric that MOOCs will broaden learning opportunities” for “learners in developing (African) countries” who lack such opportunities, they “may be serving only the ‘privileged’ who already have access to digital technologies, international language learning opportunities,” or have more access to information about MOOCs, leading to their enrolment for courses (Liyaganawardena et al. 2013, p. 5). In Burundi, where 97% of the population live

without electricity (Legros et al. 2009) and in Zimbabwe where erratic electricity supply has become the norm, hopes of using MOOCs to democratise educational participation remain bleak. Similarly, the “fail faire,” an event of the eLearning Africa, which encouraged participants to provide honest narratives of their experiences of failure highlighted power outages, intermittent Internet connectivity, and inadequate bandwidth as most common failures in Africa (Elearning Africa Report 2013). These accounts undermine claims about the “economic potential of using MOOCs and open textbooks to reduce the cost of procuring materials for schooling” (Butcher 2013, p. 30) especially in textbook-poor contexts like those of rural South Africa. The aforementioned challenges of erratic power and connectivity frustrate hopes of creating an egalitarian MOOC-driven knowledge society for rural, textbook impoverished regions of developing countries. This is particularly so for Limpopo and Eastern Cape provinces, South Africa, where the late delivery of text books before matric exams (the “textbook saga”) by the Ministry of Basic Education triggered public outcry and civil litigations by the civil rights group, Section 27 in 2012.

In juxtaposition with these claims about MOOCs’ disruptive potential and capacity to democratise participation in higher education (the *demand side* of MOOCs) are counter claims about the oligarchic and exclusionary tactics immanent in the offering of MOOCs by elite American universities and their powerful, resource-rich, collaborative networks (the *supply side* of MOOCs). For instance, Coursera, a prominent MOOC platform provider launched at Stanford University, is contractually bound to offer classes from “elite (largely) American universities [mostly members of the Association of American universities (AAU)] or top ‘five’ universities in countries out of America) unless the Coursera board waives this requirement” (Rivard 2013a, p. 1). By the same token, edX, another provider of online course platforms, “hosts classes from only 12 elite universities (including its founders Harvard and Massachusetts Institute of Technology)” and of these, 7 are North American Universities (Rivard 2013a, p. 2). The dominance of MOOC provision by Western institutions (e.g. universities, consortia and partnerships), contractual preferences for elite American universities (usually those in the “Ivy League”) for MOOC provision and limited visibility of African universities in the exportation of MOOC knowledge to the developed world are all potentially indicative of academic elitism and by extension intellectual neo-imperialism. With only “one dedicated distance education provider, the South African higher education has limited experience in online education” and “bandwidth limitations have been serious constraints” (Czerniewicz et al. 2014, pp. 123–124) for effective exportation of MOOCs. With these setbacks evident in most developing economies, there is a danger that the MOOC phenomenon would further entrench hegemonic, metro pole-based knowledge production. The core-to-periphery guise of the current MOOC system is unacceptable (Sharpe 2013). It manifests in the design of “most MOOC platforms and courses (with some exceptions) for consumption rather than adaptation, with most being available only under full copyright and demanding that they keep the copyright in user-generated content” (Czerniewicz, et al. 2014, p. 124).

In light of the aforementioned inherently conflictual views on disrupting and democratizing access to higher education on the one hand, and entrenching academic elitism on the other, the purpose of this literature review therefore, is to examine the merits and provide evidence for these contrasting positions and hopefully reconcile these views. The papers employs disruptive innovation and democratization arguments to unravel what (McAuley et al. 2010, p. 7) coin as “pedagogical issues, challenges and questions” in MOOCs, which are: how to [broaden access], foster and extent participation beyond those with broad access and sophisticated digital skills, support deep inquiry among other considerations. Drawing on the insights from the conflicting arguments on disrupting and



democratizing access and academic elitism, disruptive innovation theory, and selected cases of MOOC adoption in African tertiary sector, the study's contribution lies in the development of a context-informed model for MOOC provision in African higher education.

## Disruptive innovation theory

For Christensen et al. (2011, p. 2) “disruptive innovation is the process by which a sector that has previously serviced only a limited few because its products and services were complicated, expensive and inaccessible, is transformed into one whose products and services are simple, affordable and convenient and serves many.” Inferring from Christensen et al. (2011), disruptive innovations usually commence with complex business models involving sophisticated products and dominant technologies, but with incremental perfection of the product/service and technological improvements to suit diverse tastes, the less dominant, inexpensive product expands its market share and ultimately takes over the market. The disruptive dimension of MOOCs lies in the exploitation of digital technologies to “exponentially increase the rate at which knowledge is created and distributed, as well as simultaneously reduced the barriers to creating and consuming it” (McAuley et al. 2010, p. 5). Yet access to digital technologies cannot be assumed to be equitable and universal in the developing world where varying levels of social exclusion with regard to Internet connectivity persist. In the outlying areas of Colombo (less than 5 km from the city centre), Sri Lanka's capital, the lack of high speed broadband compel MOOCs users to “rely on more expensive mobile broadband services, which mobile users perceive to be less satisfactory” (Liyanagunawardena, 2012; Liyanagunawarden et al. 2013, p. 2). Since, many “rural villages in Sri Lanka” have “neither landline nor mobile services coverage” (Liyanagunawardena 2012; Liyanagunawardena, et al. 2013, p. 2), faith in the potential of MOOCs to disrupt educational delivery is potentially unfounded.

Although disruptive technologies may commerce as products (brands) or services that are initially inferior to established technologies, their capacity to provide diverse set of values in comparison with competitors may be instrumental in creating a niche market through the development of improved performance traits (Spencer and Waissi 2014; Yu and Hang 2010). In this process, these traits help satisfy more mainstream consumer tastes. For MOOCs, the provision of an assortment of educational services: from “certificates of completion” for lifelong learners, “examination” for regular students, career services and tuition support services” (Universities UK 2013, p. 2) may appeal better to various learners in search of professional, lifelong and mainstream education than what typical mainstream universities offer. Yet the claims about the disruptive potential of MOOCs often ride on their openness (i.e. free of charge enrollment, lack of pre-requisite qualifications for enrolment), which is debatable. Low cost provision of MOOCs is only at enrolment stages as learners tend to pay for subsequent “premium” services such as certification, examinations and career guidance services-which are considered critical by African learners from diverse backgrounds lacking access to mainstream education due to high cost. Nkuyubwate (2014, p. 190) highlights how Rwandan learners in remote learning setting who cannot afford mainstream education or paying for private educators/knowledgeable peers “resort to self-teaching of courses in the last three years of formal secondary education to compete for higher education student loans.” In light of such resource scarcity, it is inconceivable how such impoverished learners can afford MOOC premium services or

access the cost of connectivity to bandwidth intensive Internet services such as live video streaming.

Although a disruptive product or service may be below the radar of established traditional players (e.g. traditional lecture method), it is “often simpler and more affordable allowing a larger number of non-customers to use it” (e.g. MOOCs) (Christensen 2011; Stepan 2013, p. 69). The new entrant (product/service) is then embraced by low paying, less demanding customers (in the case of MOOCs, those who cannot afford traditional mainstream education, those who want learn to acquire the knowledge of a discipline rather than acquire a qualification, full time employees working time) allowing it to scale up market, secure dominance and possibly outperform the dominant players. The capitalisation on flexible learning in MOOCs manifest in various MOOCs providers’ exploitation of various avenues to deliver a cheaper, differentiated product. These include recognition of prior learning for entry into courses and “reciprocal and licensing agreements for integrating MOOCs into curricula and awards of third party institutions” (Universities UK 2013, p. 2).

For Christensen and Raynor (2003) disruptive innovations, therefore, harness the power of new technology and innovative business models such as lowering the price or designing for a different set of consumers or different needs of existing customers, thus creating an entirely new market. To the extent that MOOCs have simple and inexpensive business models involving non-exclusivity of entrants and free/affordable tuition requirements, they constitute disruptive innovations—that is, innovations which often lie at the lower end of the market spectrum (innovations normally conceived to be inferior to established brands or services) but which then progress as they acquire unique performance traits. Although enunciated at the prestigious American universities (such as Harvard, Princeton, MIT and Stanford) and European institutions, Boga and McGreal (2014, p. 3) contends, MOOCs have “potential to positively impact students” from knowledge hungry parts of emerging economies (China, India, Brazil) “where access to high quality education has been minimal or non-existent,” making it an example of a potentially disruptive technology. However, with African educators increasingly becoming mindful of the relevance of indigenous content to higher education delivery, mutual collaborative partnerships in MOOC provision have been forged in the past years. A case in point is the co-creation of clinical microbiology videos by professors at University of Michigan and Kwame Nkrumah University of Science and Technology in Ghana in 2009 (Omollo, 2013). The videos, which are shared under a Creative Commons Attribution Noncommercial 3.0 License have over 500,000 views on YouTube (Ibid) suggesting their popularity in resource-constrained African contexts. That said, such provision of copyrighted MOOCs implies that “local context-specific content would be out of the hands of its creators” (Cheverie 2013; Czerniewicz et al. 2014, p. 124).

## Disruptive potential of MOOCs

While there are varying opinions on the components of higher educational delivery that will be disrupted by MOOCs, there is increasing consensus on the view that particular segments of higher education may be more impacted than others (Australian Trade Commission 2013; Flynn 2013; Stepan 2013; Yuan and Powell 2013). The Australian Trade Commission (2013, p. 7) submits that the disruptive effects of MOOCs will be more apparent in “the *creation and dissemination* of courses,” non-exclusive choice of students,

“teaching and learning as new pedagogy is created around delivery of education at a massive scale,” and at *assessment* levels through the introduction of “machine learning and peer-to-peer assessment models.” At *content creation and delivery*, it is self-evident that online content platforms (for profit and not for profit), university consortias, education companies (e.g. Pearson), venture capital initiatives, publishing companies are independently or jointly involved in activities that were conventionally conceived as the domain of academics and print publishers.

The disruptive potential of MOOCs lies in that instead of relying on traditional technology and educator-dominated modes of delivery, cMOOCs combine diverse forms emerging technologies (conversational and reflective technologies such as social media) and peer-based interactions to serve profoundly large bodies of self-selected learners (usually thousands). As Flynn (2013) suggests, the MOOCs offered at the university of Manitoba by Stephen Downes and George Siemens combined multiple multimedia technologies (Moodle-based threaded discussions, blogs, synchronous, real-time video meetings), affordances of massive connectivity (the MOOC used a connectivist architecture), and peer-to-peer-centered learning and evaluation than on traditional lecturer-centered approach. Since cMOOCs are structured around connectivist theory, “learners are in control of the content created and knowledge is distributed across connections or networks; knowledge is also generated by the participants creating and sharing artifacts” (de Waard et al. 2014, p. 4). The disruption in cMOOCs, therefore, lies in the reversal of pedagogical roles as “this approach allows learners to come forward as experts in certain areas, share their personal expertise with other experts or peers and collectively grow in the topics covered by the MOOC or its participants” (de Waard et al. 2014, p. 4) rather than anticipate continual, direct support of the educators. For Walji et al. (2016, p. 5) the disruptive potential of MOOCs manifests in the “open participation” which transform “scale and participant heterogeneity;” such that “there is a difference in designing (and delivering content to) a small group of known students with similar backgrounds and designing for diverse participants and to a massive scale. In cMOOCs, learners may not expect direct interaction with the educator due to the large numbers of enrolled learners and the informal enrollment (Walji et al. 2016) hence subverting the traditional teacher-led instructional mode.

Despite these benefits, many MOOCs also appear not to be open at all, despite their marketing claims to the contrary (Butcher 2013; South African Institute of Distance Education 2015, p. 27) casting doubt on their flexibility and adaptation to African and developing world contexts, and hitherto their potential to widen access to education in these regions. MOOCs “may or may not be open in the sense of allowing access to and revision of course content or in allowing and encouraging open communication of ideas and ideals” (Anderson 2013, p. 2) due to license restrictions. More so, while advancing the “open access agenda” is critical to developing country learners’ use of MOOCs, “most MOOCs have been developed in societies that have shifted toward the lifelong learning agenda” (Nkuyubwatsi 2016, p. 14), which is only starting to emerge in developing countries. In Sri Lanka where students may commute on two buses to access Internet cafes, and in many African countries where “download speeds of Internet connections to download large files or view streaming videos” are very slow (Liyanagunawardena et al. 2013, p. 4) the claims about enhanced learning experiences may not hold. Though as it may, xMOOCs are credited with adapting “knowledge dissemination approaches to learning” by rendering a “scalable digitised version of traditional learning” (de Waard et al. 2014, p. 4). Anderson (2013) added that in order to reach scalability, xMOOCs digitise teachers on video and use machine scoring of quizzes, thus morphing lectures,



discussions, tutorials and feedback from classroom student–teacher interaction into student-content interaction.

At the business level of higher education provision, MOOCs (especially xMOOCs) may not be as disruptive as claimed in mainstream literature as students who enroll for them are different in nature from those who take mainstream courses. For instance, although MOOCs can reach out to large numbers of students at minimal cost (thus presenting potential to radically transform higher educational delivery), they are normally considered desirable by particular students seeking “particular professional and personal skills demanded at their jobs but for whom degrees and accredited education are less important” (Lepi 2012a, b, p. 3). While a consideration of the clientele side of MOOCs provision (the demand side) may not provide evidence of significant disruptions of mainstream higher education, a consideration of the leading universities and industrial players delivering MOOCs (the supply side) would demonstrate their potential to disrupt higher education. The innovative business models of MOOCs involving aggressive “marketing of their top-performing students to corporate headhunters, who are keen to pay up to 20% finder fees on these students’ first months of employment” (Kolowich 2012, p. 2; Flynn 2013), demonstrate that MOOCs’ funding models may incrementally compete with mainstream education’s funding models into the future. For post-colonial Africa, however, the dominance of leading Western and European universities and institutions in the unilateral creation and dissemination of MOOCs and their delivery in languages of colonial domination (mainly English and French) on the continent serve as Trojan horses distracting from the viability of this business model, the generation of home-grown MOOCs of relevance to the continent or integration of MOOCs into local curricula. As Noukakis (2014, p. 4) observes in reference to African MOOCs, even where MOOCs are offered through North–South partnerships, the North tends to define and lead the more prestigious activities of “developing the technical platform, provision of the relevant infrastructure and critical human resources” that train the instructors for local adaptation of MOOCs while the South’s role is normally relegated to that of “local volarisation of courses and dissemination of content”.

At the level of *teaching and learning*, to the extent that MOOCs design is centred on recognition of acquired competencies and adaptive learning rather than foregrounding the awarding of grades and completion of courses, MOOCs constitute disruptive technologies that accommodating groups (e.g. full time professionals, those seeking the knowledge of a discipline but not a qualification, those constrained by geography from attending face-to-face classes) not normally targeted by mainstream education thus democratizing access to higher education. For example, in the United States MOOCs could be the driving force behind competence-based education, which is challenging credit-based education and emphasises the mastery of skills irrespective of the duration taken to acquire them. As the Australian Trade Commission (2013) suggests competency based education subverts reliance on credit through assessing and understanding individual skills and concepts including prior skills acquired. Similarly, the customization of MOOCs to meet student learning needs and their attuning to the wiring of students allow for their wide scale adoption naturally (Stepan 2013). Like traditional online courses, cMOOCs potentially subvert mainstream models of delivery by providing “constant interactions among students and faculty, constant feedback and correction, and space and time for conversation beyond the contours of the course material” (Vaidhyanthan 2012, p. 2). Overall, cMOOCs present possibilities for introducing new pedagogical strategies in mainstream education that has been traditionally dominated by the educator. However, our African experience is that “while MOOCs just like open text books may drive down the cost of delivering textbooks

to schools, they are still driven by an assumption that the underlying curriculum and classroom-based organisational models, with defined roles and responsibilities for teachers to 'teach the content', are what will best prepare young people for the knowledge society" (Butcher 2013, p. 1). Rather than promote the reconfiguration of educator-student relations, xMOOC are still modeled around the logic of mainstream classrooms which are content heavy, silo-based and assessment driven. Modeled around online lectures, assessments interspersed with short questions, "it is less clear what has been gained by these initiatives because the value of innovation is hard to measure unless it can be tied to more tangible objectives" (Hollands and Tirthali 2014, p. 10).

## Democratizing potential of MOOCs

Besides MOOCs' disruptive potential, another claim peddled in mainstream literature is their capacity to equalize academic participation of large groups of people. As already highlighted in the introduction, the democratising potential of MOOCs should be approached from the perspective of what McAuley et al. (2010, p. 7) call the "pedagogical issues, challenges and questions" on MOOCs. These include: whether and the conditions under which successful participation can be extended beyond those with broadband access and sophisticated social networking skills, the breadth versus the depth of participation; the extent to which they can support deep enquiry and the creation of sophisticated knowledge, processes and practices that might encourage lurkers or "legitimate peripheral participants" to take on more active, central roles and strategies to maximise the effective contribution of facilitators. It can be inferred that the democratizing potential of MOOCs lie in their capacity to address physical and psychological *access barriers* of students, promote *quality of participation*, foster *meaningful learning experiences* and render agency to implementers/educators.

As the foregoing discussion suggests, the discourse of MOOCs' capacity to democratise higher education can be approached from the quadruple pedagogical dimensions/questions of broadening *access*, maintain *quality* of educational delivery, ensuring cost *efficiency* in delivery and promoting meaningful *learning experiences* among online learners. For an *access* perspective, MOOCs are commended by learning practitioners for their capacity to: broaden access to content in diverse formats (De Jager and Van Reijswoud 2014; Trucano 2013); positively impact student learning experiences (Department for Business, Innovation and Skills 2013), create learning communities and supporting innovative forms of pedagogy (Australian Trade Commission 2013). Trucano (2014, p. 39) highlights that participants in a course from Coursera claimed that such MOOCs avail learning opportunities that "they could not otherwise have for various reasons such as geography, disability, illness or cost." Some MOOC collaborations by universities in the North and South are indicative of growing need to reconcile the availing of resources to resource constrained universities in the South with the relevance of such resources to students in the developing world. The East Africa Health Alliance (a consortium of 7 schools of public health -Makerere University (Uganda), Jimma University School of Public Health (Ethiopia), Moi University (Kenya), University of Nairobi (Kenya), National University (Rwanda), Kinshasa University (Democratic Republic of Congo), and Muhimbili University of Health and Allied Sciences (Tanzania) and Johns Hopkins University (USA) and Tulane University (USA) jointly created MOOC videos on disaster management for African students in 2009–2012 (Omollo 2013, p. 1). Theoretically speaking, the direct

input and participation of African educators in the development of home-grown MOOCs potentially enhances their psychological access and relevance to African learners due to their adaptation to local contexts and circumstances (Omollo 2013, p. 1). That said, the dissemination of these video lectures in English-only captions and narration make them largely inaccessible to regional French- and Swahili- speaking countries (Omollo 2013).

De Jager and Van Reijswoud (2014) argue that adoption of MOOCs at African universities is tipped to replace the yellow papers (recycled personal lecture notes from previous generations used for new students) that African educators often use of teach despite the need for new, continually updated learning materials. The crowd sourcing of knowledge from peer-based information networks, appropriation of social media technologies to engage and interpret current information and opportunities for peer-based evaluation all constitute the academic value of appropriating MOOCs platforms. The collaborative production of Open Education Resources (OER) Africa by the South African Institute for Distance Education (SAIDE) and the allied African Health OER Network, a consortium of African medical schools and the University of Michigan, which creates and shares health sciences OER in Africa is a welcome development that will broaden access to learning communities and/resources for formal education and community education on the continent. The challenge with OER just like many MOOCs is the complexity of repurposing, re-using and adaptation of learning content and resources due to copyright/licensing restrictions notwithstanding the widely hyped claims about the openness of MOOCs content and learning resources. The claims about MOOCs' potential to "breach geographical boundaries" by allowing students to access "professors videotaped in the field" and access disaggregated content that corresponds to learners' ability to follow (Trucano 2013, p. 39) may fall away in the face of complexities of adapting content to situated African contexts. Therefore, access issues need to be reconciled with the flexibility with which MOOC content, learning resources and objects can be repurposed, adapted and reconfigured to suit resource constrained students' contexts, conditions and circumstances.

The offering of "freemium" (i.e. providing basic services such as online content at no cost and charging for premium services such as tutoring) services to thousands of learners across the globe who would have been excluded from higher education by escalating costs of university education and mounting student loan debt are all accoutrements of the potential of MOOCs to democratise access to higher education (see Flynn 2013, p. 7). For instance, while the student loan debt of US students is ballooning—currently standing at over US\$1 trillion dollars (Consumer Financial Protection Bureau, n.d.), the cost of attending a public four year institution in 2011–2012 in state was US\$8244 per year and the cost out of state was US\$20 770 (The College Board 2011, p. 4). While these claims about democratizing access are logical in stable, developed economies where students can afford less costly but competitive education outside mainstream higher and informal education, the same cannot be said in developing African economies. The truth of MOOCs is that while enrollment can be free for prospective African students, premium services such as tutoring, examination, accreditation and recommendations for employers upon successful completion are chargeable, thus questioning the logic of freeness. To reduce the cost associated with such delivery, Butcher (2013) proposes the creation of new contextually-relevant MOOCs and OERs like those in Guyana. More so, for text book impoverished rural regions in South Africa where high school text books tend to take long to deliver, the use of open licences would improve student access to MOOC resources.

In terms of *quality*, MOOCs are predominantly offered by reputable American universities or in partnership with well-resourced consortia and are delivered by highly qualified, renowned academics from these institutions. As such, the content can be

assumed to be of premium quality. To the extent that a university's brand, prestige and reputation shapes and influences its competitive advantage (Stepan 2013), it is undeniable that the successful evolution and offering of MOOCs is partly attributable to universities with Ivy League status and partly to high profile academics with strong (former or present) ties to these elite institutions. Nevertheless, Amussen and Poska (2013) denounce MOOCs for fostering sexism through male-dominated delivery of courses, purveying the myth that the "best" teachers are located at the "best" universities, reinforcing intellectual imperialism- the view that expertise is the province of white men at elite US universities (see <https://historiann.com/2013/05/15/guest-post-on-the-lords-of-mooc-creation-whos-really-for-change-and-who-in-fact-is-standing-athwart-history-yelling-stop/>). The emergence of MOOCs as a predominantly white male, Western academic evangelism undermines their quality, credibility and relevance in post-colonial, anti-imperialist Africa.

Other approximates of MOOCs for Africa are Open Textbooks, which promote quality education through provision of "up-to-date content or customised content to suit local requirements" and "cost reduction" (Hodgkinson 2013, p. 6). Examples of school-focused Open Textbook projects include Siyavula (formally the Free High School Science Texts) in South Africa (<http://www.siyavula.com/>). While these home-grown initiatives prove to be rich alternatives (print, e-book and audio formats) to delivering hard copies to impoverished regions in South Africa such as Limpopo, such content is not necessarily interactive. More so, given that a majority of the 66% of the 16 million South African inhabitants living on social grants are young adults coming from child-headed households (below 18 years) (Global Statement 2014), these initiatives may not be falling on fertile grounds due to cost involved.

Although arguments about the academic *quality* of xMOOCs may not be contested, what is in dispute is the effectiveness of their teaching strategies which tend to be educator dominated and lack a personal educator-student and peer-based interactive qualities. These inadequacies are particularly striking in view of the unprecedentedly large masses of students enrolled in one course and the non-exclusivity embodied in MOOCs' open entry (absence of entry requirements and prior experience). More so, the lack of critical inquiry, personalized learner support and appropriate assessments compromise their worthiness in academic contexts. While providers and promoters of MOOCs hail them for their potential to democratize entry and access to 'quality' high education, Imperial College UK harbors skepticism about MOOCs' openness due to their unveiled prerequisites and critiques the unsubstantiated claims about their impact on lowering barriers and inequalities in education (Epelboin 2014). As Salerno (2012, p. 2) suggests, the "massive" and "open" approach adopted in MOOCs is a flawed pedagogical approach as it may be "incompatible with selectivity that drives quality."

With regard to *learning experiences*, the provision of MOOCs by reputable American universities can be conceptualized as an attempt by these universities to provide affordable, high quality education to diverse student groups and those who cannot afford mainstream education tuition. As Yuan and Powell (2013, p. 2) reiterate, xMOOCs are part of MIT's continued development of their Open Courseware initiative offering the opportunity to learners from different parts of the world to access high quality teaching and learning for free. The social media affordances and multimedia capabilities (text, video, text and graphics) of MOOCs present opportunities for enhancing online education in developing countries by facilitating collaboration between people, places and technology (Boga and McGreal 2014). More so, the application of learning analytics offers an opportunity to greatly improve the teaching and learning experience for both domestic and international students (Australian Trade Commission 2013, p. 18). Students are given the opportunity to

explore “online program providers and programmes that can demonstrate excellence in graduate and employment” prospects (Australian Trade Commission 2013, p. 17).

On the contrary, the transmission mode of xMOOCs seems inconsistent with learning needs of 21 century students striving to function in an information society. Butcher (2013, p. 1) laments that many MOOCs are still largely driven by “curriculum [and] classroom-based organisational models” and transmission pedagogies, which “fail to sufficiently prepare students” for the information society and further education. Modelled around the logic and structure of traditional university courses (Butcher 2013, p. 1), MOOCs fail to create a vibrant environment for educator-student interaction, fostering deep intellectual inquiry and meaningful learning experiences. They are critiqued for disconnecting the practices of teaching and learning from their affective grounding in face-to-face interactions (Cost et al. 2013). While such a critique on xMOOCs seems to rest in the romanticization of face-to-face contact’s engagement capabilities, this view does not hold for cMOOCs that ride on the collaborative generation of content and knowledge by users via online communities and transactive exchanges via social networking platforms.

The intensification of MOOCs initiatives in education-hungry regions such as Latin America and densely populated countries, such as China and India including the setting up of adaptable MOOC versions in these countries transcends benevolent and philanthropic claims of the providers. Hodgkinson-Williams (2014, p. 2) observes that in reality “MOOCs do not necessarily democratize provision of quality education or offer a direct pathway to accreditation as they as they seem to be protecting their fee generating accreditation process.”

## Academic elitism in MOOCs provision

Although other public universities, liberal arts colleges and community colleges have taken up MOOCs successfully, the dominance of AAU universities due to their strong research orientation (Rivard 2013a) seems to support the oligarchic structure of MOOC provision. Although the language in Coursera’s contractual agreements does not prohibit the company from freely licensing its software to non-AAU universities, universities that use MOOCs delivery would not appear on the Coursera website and would not have automatic access to Coursera’s over three million registered voters (Rivard 2013a). This academic exclusivity embodied in the choice of elite universities to host MOOCs, in Moody’s Investor Service’s (2012) view manifests not only “leading universities and industries’ capacity to use their brand reputations to pursue technological innovations that destabilize residential (campus) business models in the long run” but rather presents significant risk for for-profit education companies and not-for profit colleges to be excluded from emerging high reputation networks (cited in House 2013, p. 5). As such, MOOCs remain a predominantly Global North phenomenon (Hodgkinson-Williams 2014) and come across as “neo-colonization and one-way flow of content based on the massive amount of content published by those in richer nations” (Amiel 2013, p. 127).

There is increasing dissensus and conflicting perspectives on the potential incentives of MOOCs in the higher education terrain especially American universities and by extension in emerging economies. While the leading US universities who enthusiastically engage in MOOCs (by lending their brands, content, funds, staff, badging and policy support) envisage opportunities for brand enhancement, pedagogic experimentation and business model innovation, “smaller often less prestigious universities” remain skeptical about



them citing “lack of capacity, lack of opportunity” and claim that MOOCs are ill-equipped to serve learners with more complex learning needs (Department for Business, Innovation and Skills 2013, p. 4).

Another accoutrement of academic elitism is embodied in aggressive marketing of MOOCs. As Moody's Investor Service (2012, p. 4) suggest, the “recent proliferation of free online courses offered by elite universities is expected to impact the credit impacts of these universities with global presence” and contribute directly to stronger brand recognition through favourable publicity, name recognition and political goodwill. The publication and sale of big data from learning analytics also serve to increase the global presence of these reputable, oligarchic institutions. As such, learning analytics (on enrolment figures, popularity of courses, student learning experiences and successful placement of MOOC graduates) can also be interpreted a marketing gimmick of the powerful, leading institutions, which “crowd out” the influence of less reputable institutions dominating the market and usurping the influence of rivals. The ‘freemium’ concept—can be applied in MOOCs by elite universities, where “basic content can be given way for free” with the goal of upselling more premium interactive content, “tutoring, assessment and credentialing” services (Australian Trade Commission 2013, p. 18). For example, students can sample university courses at no cost (as part of marketing and recruitment processes) after which they could be charged for premium services (Australian Trade Commission 2013).

Similarly, charging of recruitment fees by the elite universities on companies that recruit graduates who completed MOOCs can be conceived not only as an innovative funding formula of MOOCs but rather as a subtle, authoritative confirmation of the global quality and integrity of their bands. It is a business commitment to preserve their elite brand reputation, a guarantee of their political good will and affirmation of their global presence in view of other providers of higher education. As Educause (2012) and Yuan and Powell (2013, p. 3) rightly observes, the business models of for-profit organisations such as Coursera and Udacity include “selling student information to potential employers or advertisers; advertising for sponsored courses; fee-based assignment grading; access to the social networks and discussions; and tuition fees for credited courses.”

The Oxford Internet Institute (2014) suggests that sophisticated data collection and analysis tools are being created in MOOCs to gather and analyse information about each student as they move through the system, as they learn and interact with each other. While this information could be vital for developing increasingly adaptable and personalised learning systems, but therein also lies the potential for misuse—in the words of for-profit providers of education, for “brand differentiation” (The Oxford Internet Institute, 2014).

## A reality check of the MOOC effect on Africa higher education

While there has been a massive uptake of MOOCs in America, Europe and parts of Asia, this cannot be said of the African higher education sector where this remains a relatively new phenomenon. Evidence of their uptake remains anecdotal and African participants' experiences of them remain undocumented. As late adopters of MOOCs, African universities have been trying to catch up with developments at leading American universities. Notwithstanding the sizable enrollments from African students, concerted efforts at adopting MOOCs on the continent remain emergent and fragmentary. Literature highlights the financial, geographical and educational factors that militate against MOOCs sustained

adoption and participation in developing world as: lack of “reliable electricity supply,” lack of “uninterrupted access to networked devices capable of playing video and sound,” absence of secure, “unrestricted Internet connection” and safe and comfortable space in which to learn (Mitchell 2013; Szűcs et al. 2013, p. 109). The few cases of MOOCs adoption in the African tertiary sector are documented in subsequent sections.

Murphy (2014) observes that there are several home-grown and foreign MOOC initiatives on the African continent that are experimenting with a variety of courses and degree programs that combine online content with discussions, mentoring, hands-on experience, and internships. Examples include First Atlantic University, started by a Nigerian technology entrepreneur and Carnegie Mellon graduate, which offers blended programs focusing on technical and practical skills. Kepler University, which emerged out of Generation Rwanda, aims to combine U.S. MOOCs with highly interactive, small group classes and global internships (Murphy 2014). Yet the success of such depends of the scalability of courses, their cost effectiveness, their geographical reach and grounding in African social practices and contexts.

Trucano (2013) documents the partnership between World Bank and Coursera aimed at rolling out market-related IT courses to Tanzanian students to breach the gap between IT graduates and the IT knowledge, ICT skills and competencies required in the job market. This programme called New Economy Skills for Africa Programme (NESAP)-ICT seeks to building skills for the knowledge economy by supporting the development of SMART (Software, Mobile Applications, Research and Technology) Skills Knowledge Hubs, which will advance education in IT and a strong skills base in the country (Trucano 2013). NESAP-ICT in collaboration with Coursera are designing a MOOC IT curriculum aligned to the needs of Tanzanian private sector. To ensure effective adaptation of the curriculum to local conditions, IT lecturers, Dares Salaam entrepreneurs and local businesses all contribute to its development. While this attempt at developing ICT skills of Tanzania university graduates is commendable, Tanzanians are faced with the challenges of poor networked infrastructure and limited Internet resources that may derail the success of this programme. Effective access and adoption of MOOCs in Africa has been hampered by multiple inhibiting factors such as: as lack of resources (e.g. reliable electricity supply, sustained access to networked devices and availability of devices with multimedia capabilities) and sophisticated infrastructure (e.g. secure, unrestricted internet connectivity) (Mitchell 2013).

The Virtual University of Uganda is one typical example of Small Private Online Classes (SPOCS), a newer variant of MOOCs (De Jager and Van Reijswoud 2014). SPOCS employ blended forms of online learning that harness MOOC types of video lectures and other learning materials to engage small groups of students in preparation for live lectures (flipped classroom). As Oremus (2013) observes, when educators assign lectures as homework, the small lecture sessions can be devoted to addressing student queries, identifying student misconceptions with learnt materials and ensure educators' greater involvement with students' projects. In SPOCS, educators also employ MOOC-style online assessments including automated grading features and social media technologies (e.g. Google hangouts and Skype) to engage students. However, unlike MOOCs, participants of SPOCs are selected based on entry requirements, they are granted individual attention and their higher order cognitive skills may be addressed using them (De Jager and Van Reijswoud 2014; Oremus 2013).

Yet the implementation of SPOCs at the Virtual University of Uganda should be conceived in light of weak national ICT policies and regulation, the lack of coherent integration of these policies into the innovative pedagogical strategies and provision of

quality education in the Uganda in general (De Jager and Van Reijswoud 2014). Like other African nations, Uganda is also overwhelmed by perennial challenges such as limited private ownership of personal computers, which compels MOOCs participants to access online learning resources from telecentres or cybercafés that may restrict access to high bandwidth websites such as You Tube, which is a core component of MOOC resources (Mitchell 2013). More so, since many MOOCs are developed by elite American universities or in partnerships with Western venture capitalists with little adaptation to African educational contexts, African students' priorities and cultural models, this exportation of Western knowledge have spurred the criticism that MOOCs constitute another subtle form of intellectual neocolonialism. Siemens (2014) bemoans the lack of African knowledge hubs such as African MOOC portals that serve the needs of African learners and warns against the wholesale importation of pedagogies and knowledge from elite Western institutions (cited in Tamburri 2014).

Initiatives are under underway for Coursera and edX to expand their partnerships with African institutions such as the Africa Virtual University (AVU) and other French-speaking African institutions to broaden their market in Africa. Guided by the underpinning philosophy of developing IT solutions that address African educational problems, AVU is harnessing its academic and support staff to develop its own online course materials tackle various challenges ranging from of network operations, computer repairs, educator support and network access (Rivard 2013b). The courses transcend mere technological offering but rather constitute processes for building the necessary educational infrastructure and institutional capacity. At best, they resemble initiatives developed by African educators who prefer to create their own content, technological structures and delivery systems rather than rely on exports from the US (Rivard 2013b).

MOOC participants at AVU are not insulated from the African trope of poor literacy backgrounds, lack of learning skills and foundational knowledge about online courses. As Mitchell (2013) observes, [African] students from disadvantaged economic and academic backgrounds often struggle with the curriculum and perform poorly due to a lack of understanding on how to learn in online learning environments. Foundational knowledge of end user computing and digital literacy is critical to student progression and successful completion of the MOOCs offered by AVU. Moreover, technological confidence, prior experience in learning in a MOOC environment and personal motivation of MOOC participants are considered as critical to effective engagement in a MOOC (Liyanagunawardena et al. 2013; Milligan et al. 2013).

Besides individual technological efficacies, access to MOOCs at AVU may be interrupted by a modest technological infrastructure and erratic connectivity. As Liyanagunawardena et al. (2013) observe, participation in MOOCs may be interrupted by the variations in basic digital infrastructure (electricity supply, Internet connectivity)-pockets of which exist in major African capital cities and few major towns but virtually existent in the majority of other smaller towns and rural areas. Since MOOC participants may be geographically distributed, varying levels of connections to the Internet and power may derail their meaningful interactions in MOOCs.

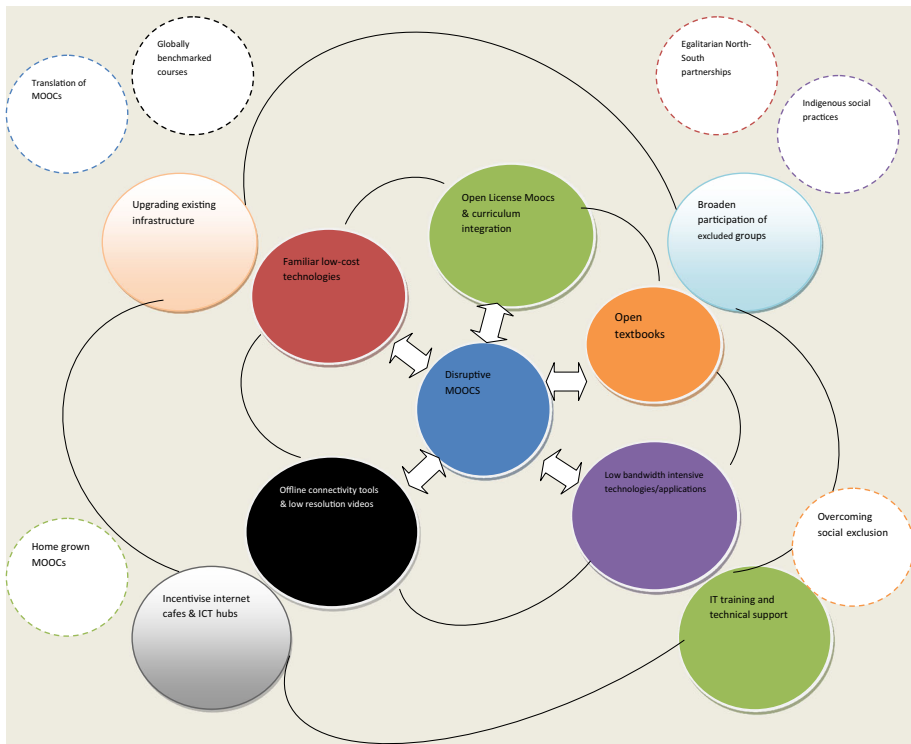
The African Management Initiative (AMI), a leading African leadership institution, developed and customized a MOOC for African managers and entrepreneurs. This free online course, which is offered in partnership with African Business schools, seeks to deliver high quality, practical business and management education for free to thousands of small business owners and young managers across Africa through an innovative model that blends online content with offline peer-led learning (Harrison 2013). In recognition of the high bandwidth intensive nature of video lectures, AMI has bridged free online lectures

(involving low video, audio and text formats) delivered by top lecturers from Africa's leading business schools with on-the-job practice, group work, peer-based discussions and optional offline facilitation (Harrison 2013).

## Towards a model for understanding MOOCs provision in African higher education

In view of the foregoing discussion on innovative disruptions and the pace of MOOC provision at African higher education institutions, three levels of forces that drive MOOC adoption on the continent are identified: *micro level*, *meso-level* and *macro level* (see Fig. 1). These forces serve as the basis for (1) promoting equitable access to learning resources (2). Enhancing cost effectiveness of delivery models and content creation (3). Leveraging quality provision of HE (see Kanwar and Kaushik 2012), (4). Promoting meaningful teaching and learning experiences and (5). Enabling crowd sourcing of knowledge and skills using social media technologies. The African model for MOOC provision should emphasise the following fundamental micro variables:

- Provision of MOOC content under open licences and integrating it into existing curricula (see Global Statement 2014) to allow for adaptation, re-purposing, and re-contextualisation to meet the demands and realities of resource-constrained contexts. Such MOOC provision means that cash constrained academic institutions may need to rely less on highly expensive, satellite connections for internet connectivity but rather use relatively cheaper fibre-optic cables. These academic institutions may need to emulate the models of National Technology hubs such Kenya's iHub, Tanzania's Kinu, Nigeria's CcHUB and South Africa's JoziHub in Johannesburg (Macharia 2014) at institutional levels to increase access to MOOCs at affordable prices.
- Use of open textbooks in various formats (print, electronic, audio formats) under open licences and including repurposing, re-using and adaptations of OER.
- Exploitation of familiar, low-cost, ubiquitous technologies (low-end mobile phones, mobile social media technologies, texting, CDs and flash drives for downloading MOOCs content and reading/watching offline). In view of the fact that mobile broadband access accounts for more than 90% of Internet subscriptions on the African continent and that sharp variations in internet penetration persist on the continent (ranging from less than 5–80%), the provision of terrestrial infrastructure should be augmented by establishment of Internet exchange points (IXPs) at the local, national and regional levels to increase the depth of internet connectivity (Nyirenda-Jere and Biru 2015) at these levels.
- Use of low-cost, low bandwidth intensive technologies/applications such as Mobile Instant Messaging applications to deliver MOOC content. The provision of new submarine cables and the availability of domestic and cross-border terrestrial bandwidth need to be complemented by the discouragement of public monopolies that provide internet connectivity. The liberalisation of internet provision at local and regional levels will lead to increased competition and weaken the monopoly power of Internet Service Providers and Network providers, which has led to high prices, rationing of access; few users affording the service, thus undermining economies of scale (Schumann and Kende 2013).
- Lower resolution versions of videos, offline connectivity tools and offline reading (see Global Statement 2014).



**Fig. 1** Towards an African home-grown MOOCs model

These provisions will allow for broadened access to MOOCs in Africa by reducing cost of access due to exorbitant tuition fees, competing work commitments, constraints of geography and physiological (e.g. disability, age) barriers. These will also enable affordable, convenient education to learners (i.e. delivery models), and render providers and educators with efficient, inexpensive platforms for hosting and delivering materials, evaluating progress and performance of large cohorts of students.

At the, meso-level the African model of MOOC delivery may emphasise the following:

- Leveraging existing technology infrastructure to ensure wider roll out of broad band by institutions delivering MOOCs. To ensure this, barriers to the terrestrial connectivity between the submarine cables, the IXPs, the ‘last-mile’ fixed or wireless access infrastructure and the Internet service providers (ISPs) that deliver access to the end-users in Africa should be removed (Schumann and Kende 2013). The liberalization of the African ICT infrastructure would remove roadblocks to new market entry and expand investment into ICT infrastructure backbone and networks.
- Broadening participation of excluded groups with limited social networking and digital skills through increasing community—based access to available, inexpensive ICTs. The participation issues should be conceived in view of the gender divide which continues to undermine quality access to the internet services among the African population. The Broadband Commission 2016 report highlights a disturbing trend of



growing a gender divide gap in access to networked technologies—from 11% in 2013 to 12% in 2016 and these gap was highest in Least Developed African Countries. Since gender gaps may be attributed to information security, cyber-bulling, cybercrimes and limited digital competencies, Cwele (2016) emphasises that the establishment of the National Internet Governance Forum, which continually liaises and engages with the national governments on these issues. Subsequently gender-responsive ICT policies may be instituted to respond to these issues.

- Incentivisation of and developing the technology infrastructure of those Internet cafes or ICT hubs that offer users access to MOOC video streaming and high speed broadband. The acceleration of the implementation of the recently launched Southern African Development Community Internet Exchange Point ensures greater investment in modern communications infrastructure on the continent, which will increase the downloading speed of open text books, increase access to information circulating within the region and within countries, ensure better Internet user experiences and lower the cost of connectivity (Cwele 2016).
- Provision of IT training personnel to Internet Cafes that provide dedicated infrastructure and technical support to watch MOOC videos and content. The 30 IXPs on the continent should be increased to improve local exchange of traffic, increase access to internet, exchange of relevant content and information. The absence of IXPs tends to cause ISPs to engage in ‘tromboning’, a practice by which ISPs use international connections to exchange domestic traffic, resulting in higher costs and lower service quality (Schumann and Kende 2013).

At the macro levels, the following considerations can be emphasised.

- Providing globally benchmarked courses orientated towards the industry’s needs and with certification upon completion (Global Statement 2014).
- Translation of MOOCs into widely accessed indigenous languages (e.g. Swahili) and provision of software for such translation to broaden the psychological reach.
- Egalitarian North–South partnerships in which roles are reversed, exploitative relations of dominance are subverted, content is mutually shared and knowledge and experiences are contested-indigenous scholars take a more leading role in knowledge production using MOOCs. The more efficient and effective international management of the Internet requires multilateral, transparent and democratic processes that afford equal participation by all governments in relation to International Internet public policy matters-consistent with the Tunis Agenda for the Information Society (Cwele 2016).
- Exploitation of indigenous African social practices such as communal social relations Ubuntu philosophy (shared computers, shared passwords) to promote more legitimate participation.
- Overcoming the digital divide and social exclusion through uninterrupted power supply, internet connectivity, digital literacies and broadband issues. The National Internet Governance Forum in South African may need to adopt a holistic and developmental approach that ensures that the internet is used to contribute to the creation of an inclusive,, participation-driven, highly literate society (Cwele 2016).
- Home grown MOOCs and partnerships generating indigenous content, adapting and contextualising it at design, copy right and delivery levels.

## Conclusion

At the outset, this literature review examined evidence on whether MOOCs can be conceived as platforms for disrupting and democratizing higher education or are mere expressions of academic elitism of top American universities. This study argued that when MOOCs are adopted at appropriate scale and intensity, they potentially disrupt the traditional higher educational delivery models by: broadening access to quality education at costs lower than mainstream high education, rendering opportunities for enriched learning experiences with a global online community and accomplished educators through networked interaction (e.g. cMOOCs), presenting great avenues for students to crowd source new knowledge, information and ideas using social media technologies often sub-optimally used in traditional African universities (e.g. Small Private Online Classes).

However, the emergent, slow uptake of MOOCs in Africa higher education could be pointing to the inherent challenges in the philosophy and operationalization of MOOCs as well as African higher educational administrators' uncertainty about the transformative potential of MOOCs for their educational systems. For example, the non-exclusivity of MOOC classes, the reluctance or ambivalence of elite American Universities and providers to certify and offer credits to MOOC graduates could be pointing to the fact that MOOCs could be expressions of second class courses that these institutions are unwilling to associate with their world class reputation, high academic standards and global brands. The large class sizes that complicate meaningful personal educator-student contact, the high dropout rates, the "one-size-fit-all model of MOOCs and lack adaptation to African local contexts and African students' learning priorities are indicated of the flawed pedagogical model inherent in MOOCs and their incapacity to democratize higher education delivery in Africa.

The view that MOOCs design and provision promote academic elitism is equally debatable. While academic elitism could be attributable to the exclusivity in MOOC provision, which is dominated by top universities in the US, the increasing inclusion of lower tier universities of moderate reputation in the delivery of MOOCs is incoherent with the "academic elitism" trope. In contractual dealing between universities and MOOC providers, providers provide clauses that compel universities to maintain certain standards in terms of MOOC quality, excellence in delivery and evaluation of MOOCs. This provision helps maintain prime quality in MOOCs might not be inconsistent with claims about academic elitism purveyed in mainstream literature. Rather it displays attempts by elite universities to democratise provision of quality education to previously excluded groups. However, the exportation of MOOCs whole sale without any adaption to African conditions can also be interpreted less as a genuine effort to advance affordable, quality education to Africans and more as a subtle form of academic neocolonialism.

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