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Lead Researchers' Voices on the Nature and Motive of Academic Research at Makerere University

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Abstract

The production of knowledge that is diverse in nature has gained importance in research-led universities. However, the nature of scientific knowledge and researchers' motives of producing such knowledge across disciplinary fields in research-led Sub-Saharan African universities are not clearly known. This study set out to access the voices of lead researchers regarding the nature and motive of academic research in Uganda's research-led flagship academic institution-Makerere University. Data were collected using semi-structured interviews with twelve lead researchers that were purposively selected. This was triangulated with documents checks. The thematic analysis method was used to analyse data. The paper draws on Hakala and Ylijoki's knowledge production framework as an analytical lens. Overall, findings show that in spite of the production of knowledge that has application to policymakers, civil society, the ordinary people, and, the corporate sector, academic research is more understood in terms of the basic research orientation across disciplinary fields because the emphasis is more on publishing in top-ranked journals. Similarly, knowledge production takes place in a highly institutionalized and resource-constrained environment, and this has popularised the donor-driven research orientation. Because of the dominance of basic and donor-driven research, we recommend that there is a need to rethink the University promotional assessment model, diversify research funding sources, and selectively collaborate with the donors.

Keywords: Knowledge Production, Research-Led University, Research Orientation

1. Introduction

The central concern of this article is to explore the nature and motive of academic research across disciplinary fields at Makerere University. Academic research is widely recognized as a source of competitive advantage. Hence, an increasing number of universities are involved in it as a core strategy to enhance their competitiveness (Castells, 2004). Through research which is largely carried out in universities, countries are able to participate in the global economy. Accordingly, the importance of the potential contribution of academic research to societies cannot be overstated (Hill, Capers & Flink, 2014). As a strategic source of competitive advantage, academic

research has been affected by significant changes happening in the environments of universities (Lechuga & Lechuga, 2012). These changes that have been occasioned by the enhanced industry-university collaboration (Laursen, Reichstein & Salter, 2008), a heightened emphasis on the social relevance of academic research (Cherney, Head, Povey, Boreham & Ferguson, 2013), and the need for academic research to catalyze the innovation process (Pamfie, Guisca & Bumba, 2014) have transformed the nature of academic research and researchers motives for engaging in it.

Today there is increasing expectation by the research audience that academic research should be responsive to their needs, grounded in national service, and support evidence-based decision-making and the growth of national economies (Makerere University, 2008a). Indeed, as suggested by Cloete et al. (2011), a balanced approach to knowledge production through engaging in high-quality research and scholarship and delivering knowledge products that can spur socio-economic development is the hallmark of a research-led university. The production of scientific knowledge that is diverse in nature so as to satisfy all the research markets has thus become a major talking point within research-led universities (Ylijoki, Lyytinen, and Marttila; 2011). Five research markets each distinguished by its own beliefs and logic as to what is believed to be the motive, target audience and outcome of research have been discerned in the literature (Hakala and Ylijoki, 2001; Ylijoki et al., 2011). These are the academic, corporate, policy, professional and public markets.

2. The gap

A plethora of studies have explored the nature and motive of academic research in higher education (Pamfie et al, 2014; Cherney et al, 2013; Reddy, 2011; Ylijoki et al, 2011; Laursen et al, 2008; Pearson, 2002; Hakala and Ylijoki, 2001; Nowotny, Scott and Gibbons, 2001; Etzkowitz and Leydesdorff, 2000; and Gibbons, Limoges, Nowotny, Schwartzman, Scott, & Trow, 1994). In many of these studies, academic research has been conceptualised in terms of its social relevance and as a catalyst for speeding the innovation process, enhancing industry-university collaboration, promoting the professional development of academic staff, satisfying the scientific community, and informing policy. Many of these studies were done in Europe and America where the research funding challenge is considerably diminished partly because governments are infused with their flagship research-led universities implying that the nature of produced knowledge largely aligns with their development needs.

The basic argument of this paper is that because of the sub-Saharan African universities' research funding challenge, the nature and motive of academic research therein may be different from that of universities in the developed world. As such, studies describing research orientations in developed countries may not apply in the sub-Saharan African university context. What is more, most studies on academic research in sub-Saharan African universities tend to focus more on donor approaches to research funding, research collaboration, research capacity strengthening, research productivity, and the broader challenges to research capacity (Blom, Lan, and Adil, 2016; Kasozi, 2016; Nakayiwa, 2015; Musiige, 2014; Mugimu, Nakabugo, Katunguka-Rwakishaya, 2013; Mouton, 2010; Sawyer, 2004; Altbach, 2013; Bunting, Cloete, and, Van Schalkwyk, 2014; Cloete, Bunting, and, Maassen, 2015). Such studies are therefore inadequate in explaining the nature and motive of academic research and how resource dependence may possibly shape researcher motives. Hence the need for studies exploring the same in the context of sub-Saharan African universities inspired this study.

We argue that an analysis of how academic research is conceptualised in terms of its nature and motives across disciplinary fields is the key to a better understanding of the current dynamics of academic research in these universities. Examining why academic research is conducted in higher education is relevant in sub-Saharan African countries because of lack of serious research undertakings and absence of close linkage between university research and its publics such as policymakers, business and industry, ordinary people, civil society, and professional practitioners. Drawing on data from semi-structured interviews with eight Associate Professors, four Full Professors, and, documents check we provide scholarly attention of the matter by exploring the perceptions of lead researchers in Uganda's premier research-led institution, Makerere University.

3. Analytical framework

We adopted the knowledge production framework developed by Hakala and Ylijoki (2001) as the analytical framework for the study to holistically explore the nature and motive of academic research at Makerere University. The framework specifically focuses on the intentions and audience of academic research. The elements in the framework were articulated as sub-themes meant to aid analysis and interpretation of findings. They are the academic/basic; the civil society; the state-government; and the entrepreneurial research orientations. The framework is thus a resourceful tool for the study. It is presented in table 1 below.

Table 1: Analytical framework

<i>Research orientation</i> (Nature of Knowledge)	<i>Target Market</i>	<i>Audience</i> (Motive of research)
Academic/basic (Theoretical)	Academic market	The scientific community (Gaining reputation)
Civil society (Practical)	Public market	Ordinary people (Improving practices)
State-government (Instrumental)	Policy market	Decision-makers (Supplying information)
Entrepreneurial (Making profit)	Corporate market	Market forces (Commercial)

Source: Derived from Hakala and Ylijoki (2001).

The framework shows the key elements I derived from the Hakala-Ylijoki knowledge production framework. It also illustrates parameters that characterize academic research such as the nature of knowledge produced, the target market, research audience, and motive. The first element, i.e., the academic/basic research orientation highlights the theoretical nature of knowledge that is produced to satisfy the academic market. The second element, i.e., the civil society research orientation entails production of practical knowledge meant to satisfy the public market by improving prevailing practices. As such, the major audience of research is ordinary people. The third element is the state-government research orientation where instrumental knowledge that is meant to satisfy the policy market by supplying information for decision-makers is produced. The fourth element, i.e., the entrepreneurial research orientation involves the generation of knowledge for commercial purposes with an aim at satisfying the corporate market. Because market forces are critical in determining the kind of knowledge that is generated in this research orientation, the profit motive for producing knowledge remains paramount. Generally, the framework enabled me to interpret the unique subjective accounts given by each participant based on their lived experiences of the phenomenon of knowledge production at Makerere University.

4. Literature Review

The nature and motive of scientific knowledge have been described by studies that have explored research orientations. Hakala and Ylijoki, (2001) categories academic research as basic (academic research orientation), commercial (entrepreneurial research orientation), policy-relevant (state-government research orientation) and community-oriented (civil society research orientation). Similar studies have described academic research in terms of its social relevance, as a catalyst for the innovation process and as a means to enhance industry-university collaboration and the professional development of academic staff and the satisfaction of the scientific community (Cherney et al, 2013; Pamfie et al, 2014; Laursen et al, 2008; Ijeoma, Ibegbulam, and Eze, 2016). Studies about changes in knowledge production have aroused intense debates about the nature of academic research with scholars such as Gibbons et al. (1994) and Etzkowitz and Leydesdorff (2000) popularizing the claim that academic research is taking on a more applied, market-oriented entrepreneurial orientation adapted to the technological application and people's social demands. Conversely, other scholars contend that the academic research orientation (basic research) still remains significantly important in all disciplinary fields (Wernli and Darbellay, 2016; Ylijoki et al., 2011; Lam, 2010; Clark, 1998; Slaughter and Leslie, 1997).

Premised on the above, it appears that by nature and motive, academic research has been dichotomized into two broad orientations, i.e., academic and applied research orientations, each serving its audience and satisfying certain motives. Indeed, Jensen (1995) argues that research orientation toward basic or applied research depends on the motive and goals guiding researchers and the funding agencies, the origin of the research problem, the type of audience, and the actual use of research. Efforts to describe the two broad research orientations have resulted into the coining of phrases like "mode 1" and "mode 2" knowledge production (Gibbons et al., 1994; Ylijoki, 2003) and the "first" and "second" academic revolutions (Etzkowitz, 2003). Within the academic research orientation (mode 1 knowledge production), the nature of knowledge is theoretical, and researchers' main motive in their work is to achieve recognition within the scientific community (Hakala and Ylijoki, 2001). Research satisfies the academic market, i.e., the international scientific community, and it is aimed at fellow researchers according to international standards (Ylijoki et al., 2011). The major motive is to make a contribution to one's own field and promote scientific knowledge (Hakala and Ylijoki, 2001). The most valued outcomes in this orientation are the traditional research outputs like articles in top-ranked journals, scientific monographs and edited books (Ylijoki et al., 2011).

Despite the contribution of basic research in promoting scholarship in higher education, universities are under enormous pressure from governments, research funders, and development partners to justify the relevance of the knowledge they produce (Cherney et al., 2015). Hence the nature and motives for engaging in academic research have become diverse. Within many Sub-Saharan African universities, the focus seems to have expanded to now include the production of knowledge to satisfy other research markets such as the corporate, the policy, and public markets (Cloete et al., 2011). Hence the culture of engaging in research of commercial, policy-relevant, and community-oriented nature so as to: make a profit; supply information to facilitate policy decisions; empower ordinary people and improving societal practice has gained traction within universities.

The commercial nature of academic research (entrepreneurial orientation) is associated with the commercial value of scientific knowledge and the growing intensity of university-industry ties (Bisaso, 2011; Lam, 2010). This type of research is carried out in order to gain applicable results, mainly new products for which there is market demand. The major motive of engaging in research is to make profits, for example by establishing spin-off firms (Clark, 2004; Hakala & Ylijoki, 2001). The research targets the corporate market, i.e. companies whose needs the researchers aim to satisfy. As such, research quality is determined by market forces (Ylijoki et al., 2011). According to Massy (2009) and Crespo and Dridi (2007), the growing commercialisation of scientific knowledge is seen as a long-awaited move for breaking free from the traditional ivory tower image of academic research to a state where the relevance of academic research can be enhanced. This kind of thinking owes its roots to the mode thesis introduced by Gibbons et al (1994) and the notion of the triple helix by Etzkowitz and Leydesdorff (1997) in which they held that curiosity-driven, academic research (mode 1) is giving way to mode 2 type of research which is externally funded, transdisciplinary, problem-oriented, conducted in the context of application and evaluated by economic and social utility.

On the contrary, some scholars perceived the increased commercialisation of research with skepticism. Ziman (1996) for instance argued that replacing the Mertonian imperatives of science such as academic freedom, communism, universalism, and disinterestedness with market-driven norms of proprietary, commodification, secrecy, and authoritarianism implies that academic research increasingly resembles industrial research that is secretive and generates private goods instead of producing the common good and publicly available knowledge. Equally, Slaughter and Leslie (1997) were somewhat cagey about the benefits of the commercial nature of academic research. They argued that this type of research serves the interests of those disciplines that are close to the market, particularly the fields characterized as 'technoscience.'

Whereas the above scholars are lauded for highlighting the implications of the entrepreneurial turn to research-led universities, their focus is on European and American universities. The need for a study meant to deepen and refine our understanding of the same in the Sub-Saharan African higher education context is long overdue. Besides, as noted by Boggio, Ballabeni, and Hemenway (2016), most studies on the subject gathered data from scientists from multiple institutions and in multiple fields. For instance, Lam (2010), O'shea, Allen, Chevalier,

and Roche (2005), Albert (2003) and Ylijoki (2003) gathered data from scientists in the several UK, Canadian, American and Finnish universities respectively. The current paper focused on a single Sub-Saharan African research-led flagship institution-Makerere University.

The state-government research orientation relates to the generation of problem-oriented knowledge mainly for policy-making. The audience for the research is usually governmental for which researchers collect and analyze data concerning some acute societal problems (Hakala & Ylijoki, 2001). The growing importance of policy-relevant research derives from the recognition that scientific knowledge and policy are interwoven in the most inextricable terms (Gornitzka and Sverdrup, 2010; Jacob, 2006; Nisbet and Huges, 2006). As argued by Gornitzka and Sverdrup (2010) academic research is indispensable for informed policymaking in a number of ways. For instance, it can serve as an instrument for problem-solving where scientific knowledge has a direct and decisive impact on the choice of a solution to a specific policy problem (Gornitzka and Sverdrup, 2010), it can contribute to the epistemic quality of decisions, and it can legitimise policy positions (Jasanoff, 1998; Ezrahi, 1990). The above observations fit well within the submissions made by Nisbet and Huges (2006) that academic research serves both a policy substantiating and a policy legitimising role; can provide competence and information on the feasibility and different effects of various policy initiatives; and can be an agenda-setter when scientific discovery unveils conditions that inform salient policy issues. However, there is still a gap in focusing on the actual experiences of lead researchers at Makerere University regarding the extent to which their research is motivated by the need to inform policy.

Within the civil society research orientation, scientific knowledge is practical, and the motive for engaging in research is to demonstrate societal relevance by producing practical knowledge to improve society and the prevailing practices (Ylijoki et al., 2011). Research satisfies civil society and the lay people (i.e., the public market) and provides instruments for them to understand society and to better command their lives. In this research orientation, civil society constitutes a "fourth partner" for cooperation (in addition to the university, industry, and government) and the role of the local population in innovation and economic development is recognized (Etzowitz, 2003). Academic scientists are increasingly being tasked to demonstrate the societal relevance of their scientific work (ERiC, 2010). Retrospectively, societal relevance is defined by the degree to which research contributes to and creates an understanding of the development of societal sectors and practice (such as industry, education, policymaking, health care) and the goals they aim to achieve, and to resolving problems and issues (such as climate change and social cohesion)" (ERiC, 2010 p. 10). Prospectively, societal relevance is defined by "a well-founded expectation that the research will provide such a contribution in the short or long term" (ERiC, 2010 p. 10). The retrospective definition alludes to what the research has yielded in terms of specific societal contributions and effects whereas the prospective delineation makes reference to the expectation that the research will eventually be able to yield such contributions.

Sandberg (2012) defined the societal relevance of research as the value research provides to the community in the form of economic, social, environmental and cultural impacts as a result of engagement in applied or basic research. HEFCE (2011) looked at societal relevance as all the diverse ways in which knowledge and skills generated through research benefit individuals, organizations and nations by fostering global economic performance, increasing the effectiveness of public services and public policy, and enhancing the quality of life, health, and creative outputs. However, HEFCE downplayed the societal relevance of basic research because its actual effects on society are not immediately visible.

Research into broader impact is still nascent higher education (Boshoff & Esterhuysen, 2016). However, from the early 1990s onward, due to dwindling public funding of higher education research, academic science was compelled to account for its accomplishments in the form societal relevance (Bornmann, 2012; ERiC, 2010). Today, the need for relevant knowledge has been theorized in concepts such as "mode 2 knowledge production", or the "triple helix" or "quadruple helix" (Hessels and Van Lente, 2008; Etzkowitz and Leydesdorff, 1998). The production of knowledge that has research impact is at the centre of universities' strategic directions (Alun and Liam, 2014). For instance, Makerere University makes reference to research

impact in its current strategic plan (Makerere University, 2008a p. 26). Internationally, many universities are metamorphosing from being discipline centered to being transdisciplinary by opening up academic disciplines to actors outside the academic world so as to increase research impact (Wernil & Darbellay, 2016).

5. Methods

We conducted this study in a manner that is aligned with the social constructivism philosophy where the notion that reality is socially constructed and given meaning by people is important. Ontologically, we believe that there are multiple realities (Guba & Lincoln, 2005). Epistemologically we believe that truth and meaning do not exist in some external world, but are created by the subjects interacting with the world hence, multiple, contradictory but equally valid accounts of the world can exist (Crotty, 1998; Gray, 2004). Thus, we focused on interpreting the different subjective accounts given by participants regarding the nature and motive of academic research based on their individual lived experiences. The social constructivism view was deemed as the most appropriate philosophical stance for understanding the nature and motive of academic research because knowledge is produced through emergent social processes implying that the focus should be on what people are thinking, feeling, and understanding and then explaining their diverse experiences rather than searching for fundamental laws to explain behaviour (Easterby-Smith et al., 2002).

Congruent with social constructivism philosophy, we chose to use qualitative methods and root the study in the interpretive paradigm that is based on the assumption that social life is shaped by people's experiences and social contexts and that the nature of phenomena is subjective with people constructing meanings that are varied and multiple (Creswell, 2007). We used an intrinsic case study design because it enabled us to gain a better understanding of Makerere University regarding the nature and motive of academic research. Academic disciplines were then studied as sub-units. The aim was to converge data to gain a holistic understanding of the nature and motive of academic research.

To ensure holistic coverage of the University, we stratified the University into colleges, and these became analogous to combined disciplinary fields along the hard-soft and pure-applied dimensions. The selection of disciplinary fields was based on Biglan's (1973) classification of disciplines. We selected eight participants from the category of Associate Professors and four participants from the category of Full Professors from the four disciplinary fields namely: hard-applied (medicine, engineering, and agriculture); hard-pure (chemistry, botany, and zoology); soft-applied fields (law, education, and economics); and soft-pure fields (sociology, philosophy, and anthropology). These participants were labeled as "Lead Researchers" in this study. The total number of study participants was twelve (12). We purposively selected lead researchers on the basis of their prolific contribution to knowledge production. As such, we made consideration for the number of publications, PhDs graduated, and grants won.

We conducted face-to-face audio recorded semi-structured interviews with lead researchers at Makerere University from March 2017 to August 2017. In the main, the interview questions required participants to describe and explain: the University research function; the major focus of the University research agenda and research-related policies; how the research function has been supported; and, the reasons for their Colleges' and personal engagement in research. We transcribed audio recorded data manually concurrently with conducting the interviews. This enabled us to familiarize with the data set. Given that our intention was to explore the conceptualisation of the nature and motive of academic research so as to interpret, explain and develop understanding rather than to generate theory, we used basic qualitative description and interpretation by giving straightforward accounts of participants' understanding of academic research. Document checks as secondary data sources were also used to enable triangulation and to increase the validity and reliability of data (Yin, 2011).

During data analysis, we read through the dataset carefully, and this helped us to generate initial codes. During the coding phase, we used both descriptive and structural (deductive) codes. Descriptive codes enabled us to discover patterns or main ideas that were emerging from the data set. Because these codes emerged from the

data, we used the actual language of the participants to generate them. These codes that are developed by the researcher by directly examining the data are referred to as inductive or in vivo codes (Yin, 2011; Patton, 1990).

On the other hand, deductive coding enabled us to use a phrase or an a priori sub-theme to represent or merge a particular chunk of data with in vivo codes. This allowed findings to emerge from the data while at the same time easing interpretation. The merging of codes into categories and clustering them under a priori sub-themes was based on Bryman's (2012) observation that the researcher's own interpretations are important in qualitative research. As such, we also allowed our prior understanding of the nature and motive of academic research based on Hakala and Ylijoki's (2001) knowledge production framework, literature, and our own experiences to influence our interpretations. The analysis was therefore done both inductively based on raw data (in vivo codes) so as to capture participants' words and deductively based on a priori sub-themes derived from an analytical framework, literature, and our prior experience. Thematic analysis was thus an inductive-deductive approach and was data and concept-driven. This approach aligns well with the interpretive paradigm in which it is recognised that patterned responses (themes) are identified as socially produced and that prior knowledge is important in aiding interpretation (Reiner, 2012). Documentary data were analyzed in terms of the themes or issues addressed by documents.

To ensure confidentiality and anonymity we assigned each participant a pseudonym. Based on academic ranks, FP denotes Full Professor, and AP denoted Associate Professor. For the disciplinary categorisation, HP denotes Hard Pure, HA-Hard Applied, SP-Soft Pure, and SA-Soft Applied. In the end, the following pseudonyms were used for the Full Professorial category: FPHP, FPHA, FPSP, and FPSA. For the category of Associate Professors, the Pseudonyms were: APHP1, APHP2, APHA1, APHA2, APSP1, APSP2, APSA1, and APSA2.

6. Findings

The presentation of findings was guided by elements that we derived from Hakala and Ylijoki's (2001) knowledge production framework. The study findings revealed that across disciplinary fields at Makerere University, academic research mirror elements that are akin to the academic, entrepreneurial, state-government and civil society research orientations. Academic research at Makerere University shares both theoretical and applied elements suggesting that lead researchers are motivated to engage in knowledge production to satisfy the academic market (scientific community); the corporate market (business and industry); the policy market (governance and administration); and the public market (civil society and the lay people). Findings further showed that because of dependence on donor funding for University research, the donor-driven research orientation remains dominant.

6.1 The theoretical nature of research (academic research orientation)

Participants across disciplinary fields conceded that the nature of knowledge that is produced by academics that are still climbing the promotion ladder is largely theoretical and is motivated by the desire to publish in refereed journals so as to earn promotion. They also revealed that academics that are already Full Professors are motivated to produce theoretical knowledge because they want to continuously extend the frontiers of knowledge so as to achieve more recognition within the scientific community. It is in this spirit that Full Professors shared that:

We carry out research and publish it in order to generate new knowledge some of which is for the purpose of getting a promotion. The promotion has always been one of the major motivations for engaging in knowledge production in the College of Natural Sciences (FPHP). Here, if one is coming up with a research proposal, they are not mindful that their research proposal must have: an academic track; a problematic track; and a practice track and that they are going to be measured by those however many publications they do. At the University, people are busy trying to surprise you with publications because it is all about promotion (FPSP)

Associate professors were in support of this when they divulged that:

The University rewards people for the innovativeness in research via publication. Apart from a few in other colleges where they do innovations with patents, the only way you can be recognized is through publication. My general impression is that many people have published, but this has not actually been transformed into impacting policymaking. Because the main aim of doing research is not to influence policy but rather to publish and be promoted through the various ranks of the University (APSA1).

Of course, promotion should not be overemphasized. It is another driving factor for doing research. A person will know that in order for me to become an Associate Professor, I need five publications. So the aim will be to get the five publications, whether the outcomes from the research to these publications have an application or not, he does not mind. His interest is in the promotion (APHA1).

From the above voices, it is evident that the majority of the academics across disciplinary fields are primarily motivated to engage in knowledge production to go through the promotional ladder and possibly enjoy the benefits that come with a promotion such as a salary increment as corroborated by participants' expressions. Codes that suggested engagement in knowledge production to enjoy promotional benefits were: "salary increment," "invited to conferences," "earning income," "increase your pay as you get the promotion," and "earn the professorial rank." A perusal of the Human Resource Manual (Makerere University, 2009a) and the amended policy on appointment and promotion of academic staff (Makerere University, 2009b) showed that staff promotions were heavily dependent on publications in peer-reviewed journals and teaching.

Participants across disciplinary fields also revealed that academic research is a tool for extending the frontiers of knowledge and achieving recognition within the scientific community. As such, one of the important markets to which University research results are principally directed is the scientific community (academic market). This is supported by a common thread that runs through the various narratives of the participants.

When you say that research is just publication alone, you don't understand the other reasons why we publish. We engage in research and publication to generate new knowledge some of which is for extending the frontiers of knowledge. As an academic institution, you feel proud to extend the frontiers of knowledge, to contribute to the fund of knowledge (FPHP).

We engage in research and publication to produce knowledge that is relevant to the global scientific fraternity to advance the frontiers of knowledge. That is why we have many collaborations and linkages with Universities within the region and also internationally. These collaborations help us to have research that informs the global scientific community (APHA1). One of the benefits of publishing is that you are contributing to new knowledge in the world. We get self-fulfillment and happiness when our work is cited. We become visible. We contribute to the growth of knowledge. Then we become renowned scholars, and we just receive invitations to go and share our findings with the international community. Then you will get a lot of networks (APSA2).

I now have in the pipeline 14 articles and books being published. So I am now looking beyond promotion. For now, I have more than enough for my promotion. So my motivation, for now, is beyond promotion. For me, I want to extend the frontiers of knowledge. I want to be recognised internationally (APSP1).

Although many of the participants highlighted that they are involved in research to extend the frontiers of knowledge, some had misgivings as well, as APSP2 highlighted in the following excerpt:

The research which we do as academicians at the University is just academic and largely targets the academic audience. It is confined to the scientific community. And yet our motto here is: We build for the future. But we have that kind of elitist thinking, and we are still confined to what we call the ivory tower yet we are supposed to serve society. You get very

few professors who become public, yet professors are supposed to be public. So generally speaking, our professors are confined to the University, to the scientific community. It is unfortunate!

The above participant speaks frankly about the dangers of confining University research to the scientific community such as promoting elitism and producing discipline centred knowledge that largely remains in the academic audience. Whereas it is appreciated that this type of research secures the position of the University in terms of university rankings, it has also limited knowledge dissemination to the scientific community (Makerere University, 2016, 2015, 2014a).

6.2 The commercial nature of academic research (Entrepreneurial research orientation)

Findings indicate that academic research at Makerere University is to some extent motivated by the desire to produce new products with a commercial value so as to satisfy the corporate market and to come up with inventions with the useful intellectual property. This implies that academic research has to a reasonable degree been conceptualised in terms of the entrepreneurial research orientation. This was clearly evident in the hand-applied fields such as engineering and agriculture. By their nature, hard-applied disciplines have easy access to this market with enormous funding prospects. The following data extracts show evidence of engaging in knowledge production with the aim of coming up with new products with commercial value:

Our research in sanitation is helping us to come up with new products. In the course of solving the problem of the use of sewage, we are getting manure and biomass out of sewage which we use in cooking and for lighting. We are doing research for electricity distribution by designing transformers which are suitable for use by small-scale enterprises such as welders in Katwe [a peri-urban Kampala suburb involved in metal fabrication]. So we are doing a lot of applied research (APHA1).

Of course at the back of every research we do, we are looking at innovation. Can you come up with new knowledge, new ideas, something new that is going to be of useful intellectual property? Our practical orientation defines who we are. So you expect excellence, you expect quality; you expect diversity and innovation. Everything that we do is done in a unique way, including research (FPHA).

Institutional support to research leading to the generation of new products with commercial value is explicit in the Makerere University policies and frameworks. For instance, the University Research Agenda (2013-2018) pronounces support to increase capacity for knowledge transformation and innovation by among others promoting commercialization of innovations (Makerere University, 2013a, p.2). Policies such as IP management policy also proclaim support to commercialisation and innovation. Similarly, the Intellectual Property (IP) management policy highlights that “Makerere University shall endeavour to foster the development of its inventions and discoveries through patenting and licensing to the industry in particular and generally to the private sector. The University, therefore, is committed to managing efficiently and effectively any IP arising out of staff and student work (Makerere University, 2008c, p.7). The problem is that these policies are yet to be fully operationalised.

The above participants, however, cited some challenges to the entrepreneurial nature of University research. APHA1, for instance, narrated that:

Much of the research we do answers questions that have been posed by private companies such as Airtel that always bring problems to us. We work on their problems, get solutions, give back the results, and they apply them... But not all people are receptive to these researched interventions... There is that general belief that our technologies are still uncivilized. So they say: This technology from Makerere University does not work. So that mentality is still a

challenge to us. Although many embraces [our technology]... we still have some that do not embrace it (APHA1).

The above response reveals that in as much as some academics seek to engage in research to satisfy the corporate market, there is still a problem of accepting the researched interventions. According to FPSP, APHA1, and APHA2, one of the ways of enhancing acceptability is to ensure that there is dual engagement with the non-academic audience in problem identification. Findings also showed that the weak linkage between the University, industry, government and research institutes remains a major barrier to entrepreneurial research at Makerere University as evident in the following data extract:

We need to improve that linkage between the University and the sectors that utilize our research. Different ministries and organisations should be encouraged to set up research and development offices. And when these are set up, they should be manned by people who are competent. There should be constant interaction between the university and the communities (APSA2).

The University-industry partnership is weak. Once we strengthen it, then we will really have done a lot. There is this thing they call the triple helix where you have the university, government and the private sector. If we can strengthen this kind of linkage, then this is one big step towards the University becoming more innovative and contributing to development by ensuring that the knowledge that it creates is utilized by government and the private sector (APHA1).

Some participants further expressed that entrepreneurial research is frustrated by the problem of weak Intellectual Property (IP) regimes that tend to limit opportunities for commercial exploitation of knowledge generated through research:

One of the reasons for the few innovations is that people are now redoing what other people have done but in a slightly different way. There is no originality. So when you look at the kind of innovation, you really don't have so much to say. You are using the same methods that have been used by other people to do a similar thing, but you are only changing the environment a little bit. One wonders if our Intellectual Property management policy works (APHP1).

My general impression is that many people have done a lot of work, and they have published, but this work has not actually been patented. If somebody is doing work in environmental economics, he is not connected with for example NEMA. This limits opportunities for commercial exploitation of knowledge generated through research (APSA1).

6.3 Policy-relevant research (the state-government research orientation)

Majority of the respondents shared that a substantial amount of knowledge is generated to inform policy for the needs of governance and administration. When study participants were asked to explain the reasons why colleges, departments, and individual academics engage in academic research, this is what some of them disclosed:

A lot of the research done in the Law School has really wide-ranging policy implications for those engaged in dispute resolution and those trying to project the future of Uganda (FPSA).

The response from the above participant indicates that academics at Makerere University treasure policy-relevant research because it has implications to policymakers in the relevant government departments. FPFA equally shared that research in his disciplinary field has always informed health-related policies that are churned out by the Ministry of Health:

In our malaria research, we have tried so much to answer questions that are relevant to the Ministry of Health. We have a Memorandum of Understanding with the Ministry, and this has helped us to answer questions that are relevant to Malaria control. So during local dissemination meetings, we share research which has policy implications. Our program dies if

our research is not immediately applicable to policy. So for research which has policy implications, we try to disseminate because of the need.

In addition, APSA1 and APHP1 too disclosed that within their colleges, they engage in academic research to generate new knowledge that is useful for policy formulation. In their words:

As economists, definitely one of the issues that we put a lot of emphasis on is to blend theory with practice. You can never be a good economist if you have lost the link with the policymakers that are in key departments and ministries of government. There you are irrelevant. Once you choose a topic to do research, the first question is: how is this area of research interest helping policy? How is it applicable to the policy world? We don't just want to add something new. How are you ensuring that the policymaker is in a better position to improve the economic outcomes? (APSA1).

The goodness of the research that we do lies in the fact that the biggest percentage of it is useful in informing policy. We really generate knowledge that fits the Ugandan situation, and this knowledge is very good at informing policy. But still, the biggest problem is that when you do work that is required to inform policy, you need some kind of funding after the work so that you can follow up by disseminating the information. We have done a lot of work that is good for informing policy, but we rarely disseminate it. If we don't bring this work to those who are supposed to implement it, our research cycle stops because that extra funding that is required to disseminate the information is never given (APHP1).

This participant is evidently of the view that Makerere University has made some progress in as far as the generation of policy-relevant research is concerned. He, however, thinks that there is still much room for improvement with regard to the funding of research dissemination. This was the position held by the majority of the participants (FPHA, APHA1, APHA2, APHP1, APHP2, APSA1, and FPSP) who attributed low levels of dissemination to resource constraints and the preoccupation with the promotion. The above findings are in sync with the Research and Innovations Policy that proclaims support for academic research as a tool of informing policy by “requiring staff to publish research findings in the form of policy briefs for use by policymakers” (Makerere University, 2008b, p.8).

6.4 Scientific knowledge to improve society (Civil society research orientation).

Findings showed that across disciplinary fields at Makerere University, there is knowledge that is produced with a motive of improving society as corroborated by information obtained from the Makerere University Strategic Plan 2008/9-2018/19 (Makerere University, 2008a) which recognises that the strategic repositioning of Makerere University as research-driven university is to enable it to focus more on the production of knowledge meant to improve societies, support evidence-based decision-making and power the growth of Uganda's economy (Makerere University, 2008a, p. 13). Indeed, the majority of the participants expressed that societal relevance of academic research is the ultimate measure of a research-led flagship university. As such, the civil society research orientation can be slightly seen in all disciplinary groups within the University. The production of knowledge with the aim of helping communities can be discerned from the following quotes:

The research we are now engaged in has to do with oil exploration. The reason why we got engaged in it is that we were concerned that the discussion about oil is mainly in econometrics mainly alluding to implications for economic growth. Our concern is: "what is the link between oil exploration and local communities and their lives? What are the legal issues there?" We can talk about the right to freedom of expression and health rights. We want people to discuss these issues freely. So there are all these questions which we need to ask as legal researchers especially if we are concerned about the majority of the communities (FPSA).

The direction of our research is community-oriented. It focuses on conservation of biodiversity, restoration of polluted habitats, and looking for biological agents that can be

helpful to human beings. Much of our research is community-oriented. So I can say that in our discipline, we treasure research that engages communities. We reach out to the affected communities (FPHP).

Here in the humanities and social sciences, our research is community-based and it's directed at solving societal problems. We have the advantage that we are naturally more connected with the political, social, and economic aspects of society. So in the course of doing research, we do not only engage stakeholders, but we also try to solve problems out there. Somehow, communities benefit (FPSP).

It was however established that community-oriented research has low absorptive capacity because of weak linkages between University and user communities. It also lacks a definite funding base culminating into the passive dissemination of research outputs. This means that research results are presented to peers in the scientific community, and potential users are rarely engaged, and opportunities for research uptake and use in society are not optimized. In this regard, APSA2 suggested that:

We need to improve that linkage between the University and the sectors that utilize our research. Different ministries and organisations should be encouraged to set up research and development offices. And when these are set up, they should be manned by people who are competent. There should be constant interaction between the university and the communities. (APSA2)

6.5 Academic research skewed to donor interests (Donor-driven research)

There was a consensus among study participants that academic research is increasingly being understood in terms of donor interests. This is because besides University research being donor-funded, it somehow mirrors donor interests as well. It's along these lines that the following participants shared that:

My appreciation of University research is that almost a hundred percent of the research portfolio is donor-funded. This means that there is a disconnect between the research agenda and the research practice. It is very difficult for you to talk about a Makerere University research agenda because you are not funding it, you are not directing it. So I think it is very difficult even to think that the research portfolio and the research practice at Makerere University can directly contribute to what is actually professed in the very institutional research agenda (FPSP).

There is no money to fund the University Research Agenda. However, the donors have got the money. So we go to the donors, and we get the money. Then in a way, the University Research Agenda will be drawn from the global perspective such as environmental protection, now sustainable development goals, and gender equality. We are forced to do that because the donor needs it, not because the University needs it (APHP2).

Furthermore, participants (APSP2, APHA2, APHP1, APSA1, FPHP, and APSA2) indicated that whenever they do research, they are conscious of donors' presence and that University research caters for the interests of development partners as APSA1 said that:

In many of the cases, we are doing research that so much goes into what the donor is interested in. For example, we are trying to do an economic analysis of technical and vocational education, the impact after the project intervention. We are now more in that area because that is where the resources are.

According to FPSP, the phenomenon of skewing University research to donors' interests has also been occasioned by the fact that:

The higher education sector does not have a robust research agenda to which researchers can respond. This is because the government does not fund research. So this makes it difficult for the University Research Agenda to contribute to what is actually professed in it. The University Research Agenda ends up answering to the interests of donors because they fund research (FPSP).

Importantly, participants (APHP1 APHA2) noted that because University research is donor-driven, the University Research Agenda does not effectively guide University research to the desired direction and as such, it remains somewhat irrelevant. In this regard, APHP1 and APHA2 respectively submitted that:

The moment the donors come here, they have already decided on the kind of work they want. They are mainly interested in people who are thinking like them. Those professors that work with them are not really bringing their innovations into the work but are just fitting into the donors' research agenda. If you are working with donor funds, the possibility to give you room not to think is very big. You are working within the objectives that have been stipulated by the project funders. If we force research to be aligned along those lines, then you cannot do a lot of meaningful research (APHP1).

I have written many proposals where the donors don't seem to be interested in what I am presenting because it does not fit in their interests. So if you are to get donors' funds, you must align yourself to their interests. Generally, you have to fit into the objectives of the call (APHA2).

From the above voices, it can be inferred that there is over dependency on donor funding for the University research arm. What are more, results revealed the comparable contrast between different disciplinary groups with departments in applied areas (such as engineering, medicine, economics) receiving substantial donor funding by engaging in contract research compared to pure areas (such as zoology, philosophy, and anthropology). Obvious benefits in terms of the working lives of academics and academic departments that are substantially funded include: having close contacts with the outside world; using additional earnings to improve departmental resources and being able to improve their material welfare significantly.

7. Discussion

Findings demonstrate that the nature and motives of academic research at Makerere University are varied as lead researchers are involved in the production of knowledge to satisfy different audiences and markets. To this extent, the findings demonstrate the validity of Hakala and Ylijoki's (2001) framework. This implies that the transformation thesis of academic research from mode 1 to mode 2 knowledge production advocated by scholars such as Massy (2009); Crespo and Dridi (2007); Gibbons et al. (1994); and Etzkowitz and Leydesdorff (1997) needs to be revisited.

7.1 The theoretical nature of research (academic research orientation)

Study findings reveal that the following arguments do not get empirical support from this study. One that basic research (mode 1 form of knowledge production) has been wholly replaced by applied and market-driven research (Gibbons et al. (1994). Two, that there is a radical discontinuity and break between the traditional mode of knowledge production and mode 2 form of knowledge production (Crespo & Dridi, 2007; Massy, 2009; and Scott, 1997). Three, that basic research (mode 1 knowledge) has been displaced and the fundamental norms and values turned upside down (Feldman and Desrochers, 2004; O'Shea et al., 2005).

Instead what was found was that at Makerere University, theoretical knowledge continues to be produced. Therefore, the basic research orientation continues to have a firm base and to co-exist alongside applied academic research orientations (i.e., the entrepreneurial, state-government, and civil society research orientations). This finding coheres with Wernli and Darbellay's (2016) observation that the idea that discipline-

centered knowledge (basic research) should be entirely abandoned is not the kind of model that research-led universities are likely to pursue in the foreseeable future, because disciplines continue to have an unequalled power to structure and understand the world. The findings also support results from a large-scale Finnish investigation in which it was established that an academic orientation with strong emphasis on basic research remains central across disciplinary fields (Ylijoki et al. 2011).

7.2 The commercial nature of academic research (Entrepreneurial research orientation)

Study participants from applied fields acknowledged that they engage in commercially oriented research. They highlighted that they engage in research to produce products with commercial value so as to satisfy the corporate market. They also conceded that their engagement in research is partially motivated by the desire to come up with useful intellectual property (patents). Indeed efforts at commercialization of academic research manifested in some cutting-edge innovations in research by individual academics and establishment of interface structures have been reported (Bisaso, 2013; Cloete et al., 2011; Mugabi, 2014).

The above results cohere with Clark (1998) and Slaughter and Leslie' (1997) finding that universities are increasingly getting involved in commercialisation of research as a knowledge transfer mechanism. However, in spite of institutional commitments and aspirations expressed in research-related policies and the University strategic plan towards commercialisation of research outputs, the current study found out that successful commercialisation in the form of break-through innovations and discoveries is yet to be fully achieved at Makerere University. This has been attributed to research funding insufficiency and inability to synchronise research outputs with the needs of industry.

7.3 Policy-relevant research (the state-government research orientation)

There is an indication that University research has policy impact through its focus on social justice, human rights, and governance. According to the 2010 Sida Review by Freeman, Johansson, and Thorvaldsson, (2010), University academics have engaged in policy-informing research over the years. The above notwithstanding, the pace at which academic research at Makerere University filters into policy leaves a lot to be desired. Research shows that emphasis on publication of scientific papers in peer-reviewed journals is working against the policy impact of University research. It can, therefore, be adduced that the tendency of locking up knowledge behind the expensive confines of journals makes it inaccessible by those who would use it in policy and practice.

Previous research also found out that policymakers and practitioners are generally unaware of such academic works, seldom read them, and find journal articles difficult to comprehend (Katy et al., 2016; Barwick et al., 2014). There is, therefore, a need to ensure that knowledge produced in journal articles is summarized, contextualized, and transformed so that it is presented to policymakers and practitioners in a manner that is comprehensible (Gagnon, 2016). Simplification of knowledge for easy uptake could be enhanced through the use of policy briefs, newsletters, policy advice, posters, magazines, stickers, booklets, and technical reports. Publishing research findings in peer-reviewed journal articles should, therefore, be seen as a means to an end, the end being further development of knowledge through transforming it so that what is contained in journal articles is turned into functional knowledge for use in policy and practice.

7.4 Academic research to improve society (Civil society research orientation).

Engagement in community-oriented research across disciplinary fields at Makerere University was reported by the participants as one of the strategies meant to enhance research uptake. Different disciplinary fields were engaged in the production of knowledge with social impacts (Sida review by Freeman et al., 2010; Makerere University Annual Report, 2013b). Nurius and Kemp (2014) portend that contemporary research models are becoming transdisciplinary, multi-level, and community-connected, bent on expediting the movement of research to impact. This indicates a move away from "Mode 1" to "Mode 2" knowledge creation espoused by Gibbons et al. (1994).

The above notwithstanding results also revealed that community-oriented research continues to be weak and vulnerable at Makerere University because, perhaps as indicated by Ylijoki et al. (2011), this type of research lacks a definite funding base culminating into passive dissemination community-oriented research outputs. This means that research results are presented to peers in the scientific community, and potential users are rarely engaged, and opportunities for research uptake and use in society are not optimised. Passive dissemination strategies have been found to be useful only to increase awareness about the existence of research but may not result in a substantial impact on societal practice (Orem et al., 2012). Dependence on typical scholarly strategies of dissemination such as journal publications, conferences, seminars, and workshops may slow research uptake and reduce the societal impact of knowledge (Gagnon, 2016).

7.5 Academic research skewed to donor interests (Donor-driven research)

Findings showed that knowledge production at the University had been largely motivated by the desire to access donor funding of academic research. Participants conceded that the University research agenda mirrors donor interests because they fund research through academic partnerships and links that are constructed as key strategies for capacity building and international cooperation. Although there are several donors that finance University research such as NUFU-Norway; African Academy of Sciences-Nairobi; UNESCO-Paris; FFEM-France; NORAD-Norway; DANIDA, UNAIDS, NORHED, WHO-GPA, and UNDP, of late SIDA-Sweden remains the biggest donor towards Makerere University research. Management at Makerere University considers such partnerships as an integral part and maintains a full directorate to deal with donors and development partners and accords them the status and role they deserve in the internationalisation of the University.

Whereas the underlying assumption is that donors are instrumental in strengthening University research through research capacity building, academic staff development and mutually beneficial, balanced, durable and empowering partnerships, there are some hard realities (Mshoro, Galabawa, Baregu, Chijoriga, Kombe, & Toba, 2007). For example, the majority of the partnerships and links are not based on mutual negotiations between equal partners. This coheres with Gaillard (1994) observation that one of the main problems encountered in the implementation of collaborative research programs relates to the asymmetry of the collaboration and the dominance of the partners in the North.

8. Conclusions

Although basic research is popular at Makerere University, engagement in applied research was reported as well. To this extent, basic research may not be the primary preoccupation of the University staff. Thus across disciplinary fields, academic research is understood in terms of basic/academic, policy-relevant, community-oriented and commercially focused research. These findings validate Hakala and Ylijoki's (2001) study in which they discerned four motives for engaging in research, i.e. to satisfy the needs of the academic market (scientific community), policy market (policymakers), public market (ordinary people and civil society), and the corporate market (industry and business). Academics at Makerere University are therefore involved in both mode 1 and mode 2 knowledge production.

Despite participants' varied understanding of the nature and motive of academic research, this study has shown that the basic/theoretical research continues to have a firm base across academic disciplines and to co-exist alongside applied research at Makerere University. Seen in this light, the transformation thesis of academic research suggested by scholars such as Smith-Doer and Verdi (2015), Etkowitz et al. (2000), and Slaughter and Leslie (1997) from mode 1 to mode 2 science needs to be revisited in the context of Makerere University. This conclusion also supports an earlier finding by Clark (1998) that the increasing entrepreneurial activities in research do not contradict traditional academic values.

This study has revealed that some researchers in applied disciplines at Makerere University feel constrained in producing the research outputs they consider appropriate for facilitating impact due to pressures in concentrating on producing papers for highly rated journals. Despite the encouragement to disseminate their research to non-

academic audiences as extensively as possible, the conflicting pressure to give precedence to publishing in highly rated journals for the academic audience persists perhaps, as argued by Hakala and Ylijoki (2001), because of the wish by researchers to gain academic credentials. The popularity of scientific papers is also explained by the fact that at Makerere University dissemination to non-academic users is unsupported, unrewarded and largely endorsed in rhetoric.

Understanding the nature and motive of academic research at Makerere University takes an external view. Understanding the rules that originate from the wider institutional environment is vital in ascertaining the nature and motive of academic research at the University. Seen in this light, Hakala and Ylijoki's (2001) knowledge production framework becomes inadequate in explaining nature and motive of academic research at Makerere University. This study fills this gap by extending the analytical framework to include the donors' market. It was established that engagement in policy-relevant, community-oriented, and commercially-focused research by University researchers has, in part, been occasioned by the fact that the donors are demanding research which has practical outcomes. What is more, scientific papers produced by lead researchers end up in highly rated journals that are sponsored by donors and Northern research institutions. This means that academic research at Makerere University is, to a reasonable degree, a mirror image of the donor-driven research orientation. This finding leads to the conclusion that academic research at Makerere University somehow answers to the needs of development partners and major research donors. As such, the research arm of the University operates within a highly institutionalized environment.

9. Recommendations

It is clear from the results of this study that although academic scientists across disciplinary fields engage in the production of both basic and applied research, knowledge production is mainly for career growth and largely confined to the scientific community. Results also showed that Makerere University research is largely donor/resource-dependent and as such, external influence on the research agenda remains a big challenge to the concept of being a truly research-led university. Resource-dependence has also significantly diminished scholarly autonomy across disciplinary fields. Cognizant of the above, the study recommends that in order to redirect researchers' motives, so that produced knowledge is more amenable to the country's developmental needs, there is a need to rethink the University promotional assessment model. This means that when academics are being assessed for promotion, they should be assessed on a broader criterion that, among others, includes: number of publications and contribution to policy and the community. But this will require increased autonomy so that academic research caters more for local interests than donor interest. To achieve this, the University should, among others: collaborate with only genuine partners from the North to help supplement the University inadequate expenditure and investment in research, continue to lobby government to allocate a sizeable percentage of its GDP to higher education research, and establish stronger linkages with the small but growing private sector so that it increases its investment in research

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