

Intellectual Property as an Asset

Universities, industry and government each with their own objectives are working together in a synergistic embrace that is fueling a push to extract commercial value from academic research. Companies are under pressure to uncover the next business- sustaining product before their competition and universities are being pushed to deliver a pay-off for their research out. As a result, academic institutes are improving their ability to transfer science into the commercial sector.

In 2019, the Government of Uganda announced its investment of shs.25billion in the Research and Innovation Fund over a 5-year period to fund high impact research and innovation at Makerere University, and a multi-sectoral Grants committee to oversee the fund was consequently inaugurated. Makerere University Research and Innovation Fund in the last financial year funded 224 projects under the first round. Projects funded included the project on the Empowerment of Agro Processing Industry (EAPI) that was started to meet quality and quantity processed agriculture products for local and export market, in addition, the project reports having 25 MSMEs in Agro-processing with products ready for certification and enterprises equipped to meet market capacities.

Under this, there have been Academia-Industry-Government (Triple Helix Partnerships) projects that are seen to catalyze economic growth, The School of Food Technology, Nutrition and Bioengineering in partnership with Uganda National Bureau of Standards (UNBS) and the Uganda Export Promotion Board (UEPB) have trained practitioners in 40 Agro-processing MSMEs, equipping them with skills that enable them to develop processes leading to quality products that meet standard for certification as well as the ability to meet the capacity required for the local and export markets.¹

The Research and Innovation Fund is the second such specialized funding to benefit Makerere's scientists after the Presidential Initiative on Science and Technology launched 10 years ago of which Makerere's colleges of Technology and Food Science are key stakeholders. The Presidential Initiative has institutionalized research and innovations in Uganda and aims to finance high quality research, academia- private sector partnerships, science policy and popularization of science in schools and communities.

The initiative at present partakes in 10 projects under The College of Engineering, Design, Art and Technology these include; MAKAPads project - manufacturing of biodegradable disposable chemically-free pads and have progressed into designing of maternity bed pads.² Center for Research in Transportation Technologies - aimed at applying technologies to develop sustainable transportation solutions for Uganda and Africa. The success of their electric car, The Kiira EV, attracted a lot of interest both locally and internationally. Among other plans, the project intends to design and fabricate a 28-seater commuter vehicle ("KAYOOLA") a public transport solution

¹ <https://agroprocessingpro.com/>

² <https://cedat.mak.ac.ug/research/maka-pads/>

tailored for Kampala City.³ Low-cost Irrigation project- looks to solve the problem of uncertainty and over dependence on the weather by peasant farmers. They have designed and manufactured a low-cost water pump to help farmers reduce the costs of irrigation and are also engaged in educating farmers on the different types of irrigation in addition to the importance of it.⁴

Despite the recent government investment in the university research, Uganda is ranked among the least competitive economies in the world at the 115th position out of 141 countries according to the 2019 edition of the Global Competitiveness Report. Uganda, however, ranks fairly in terms of Entrepreneurial culture (52nd out of 141) and Business dynamism (91st out of 141). Uganda's investment in R&D is still lowly ranked at 102nd, as well as the adoption of ICT, ranked at 125th and capacity for innovation is ranked at 111th.⁵ This indicates that despite the efforts put in place to enhance commercialization of research, more should be done to engage both universities and funding companies in the early stages of the commercialization process that would create a more beneficial and closer relationship between the academia and industry in Uganda.

According to a case study on small business development, universities need to double efforts and focus on reviewing the structure and processes associated with commercialization of university research with respect to the internal and external context of the university research commercialization centers as well as adopting policies and passing laws that support commercialization on the national, regional and local level, improving the capacities of the faculty with regard to commercialization and focusing on education and learning. There is need to define common goals for the university and the industry in line with the development vision of the country, alongside holding specialized common meetings and sessions between the university and the industry to exchange views and identify common issues.⁶ The public funding of academic research and venture capital have a complementary relationship in fostering innovation and the creation of new firms.⁷

The Uganda Ministry of Science and Technology (MOSTI), under the department of research and development, review, develop and implement policies, partnerships and programs for research and development.⁸ Nevertheless, the ministry needs to contribute more through enhancing engagement between the universities and industry, by undertaking "arrow projects" - long-term strategic projects targeted specifically at local industries where an existing potential for international growth exists. These are designed to engage innovative small to medium enterprises (SMEs).⁹ There is need to strengthen the relationship between universities and industry via the adoption of a mission to make the facilitation of economic growth a core strategic goal of the ministry.

³ <https://cedat.mak.ac.ug/research/crtt/>

⁴ <https://cedat.mak.ac.ug/research/low-cost-irrigation-project/>

⁵ http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf

⁶ <https://www.aau/wp-content/uploads/sites/9/2018/04/Obstacles-and-Solutions-of-Commercialization-of-University-Research-Case-Study-of-Small-Businesses-Development-Center-of-University-of-Tehran.pdf>

⁷ https://www.researchgate.net/publication/22741716_Venture_capital_as_a_catalyst_to_commercialization
<https://onlinelibrary.wiley.com>

⁸ <http://mosti.go.ug/index.php/department-of-research-and-development>

⁹ <https://theconversation.com/commercialising-university-research-a-good-but-costly-move-30453>

For commercialization of research to yield more fruits, there is a need for the Ugandan industry to invest more in R&D, and help SMEs improve their innovation and global competitiveness. The modern era of university commercialization commenced when research on DNA conducted in the 1970s by Stanley Cohen at Stanford and Herbert Boyer at University of California, San Francisco, led to the birth of the biotechnology industry. Human insulin – the first new drug based on Cohen and Boyer’s discovery – was approved for human use in 1982 after Genentech (a biotechnology company dedicated to pursuing groundbreaking medicinal discoveries) invested in follow on Research and Development¹⁰. In current day, The Coca Cola Company, the world’s largest beverage company clearly depicts the importance of commercialization of Intellectual Property when in 1919 the company was able to finance their loan by providing documentation of the formula as collateral and placed in a vault in the Guaranty Bank in New York until the loan was repaid in 1925¹¹. Another example is the government of Israel that’s actively participating in the development of the Israeli Venture Capital (VC) market through hybrid financing, i.e., a mix of private and public VC funds. This was done to gain the maximum advantage of private funds from foreign investors solving the problem of small size of their domestic market and limited availability of funds.¹² They managed and developed professional relations with a number of well-known academic institutions and IT incubators in the country, setting up programs (like MATIMOP — an Israeli Industry Center for R&D) that offered assistance to small firms through assessing local and foreign markets for launching their services and products.

In Uganda, The97 Fund, an Investment Vehicle that takes a Venture Building approach, provides an intensive program for founders to build a venture from scratch - turning ideas and research into business ventures. Through our networks at various universities, we reach out for potential ideas and research which we help commercialize and unlock value from. We purposely hold brainstorming sessions together with the inventors on how to monetize the innovation and shape a business model with a viable product-market fit.

There are varying opinions on whether the Venture capital model for research commercialization is the best model for a Low developed country like Uganda, to which the concerns are noted in the above article. But regardless, the concerns noted have sufficient empirical backing to suggest that they are, at least, worthy of consideration as they have successfully functioned in more developed countries. The government ought to be commended for its attempts in strengthening commercialization of research under the university roles, however, more engagement with the industry (such as venture capitals) needs to be made in order to reap tremendous adjustments in the commercialization of university research.

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¹⁰ <https://milkeninstitute.org/sites/default/files/reports-pdf/Concept2Commercialization-MR19-WEB.pdf/>

¹¹ <https://www.worldofcoca-cola.com/media-alert/coca-cola-moves-its-secret-formula/>

¹² <https://medium.com/@eliandalvarez/israel-government-and-venture-capital-8532c46fa1a6>