

From R&D to Entrepreneurship

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ABSTRACT

Turning R&D ideas into money-making products is an age-old challenge for academics. This paper demonstrates a contemporary innovation that has registered phenomenal success not only as a business but also as an agent for socio-economic transformation in some of the more disadvantaged members of the community.

Keywords: Entrepreneurship; Intellectual Property; MakaPads, Research and Development; R&D

1.0 INTRODUCTION

It is highly desirable and hugely satisfying for any Research & Development (R&D) to turn into a product with commercial and/or social value. The investigators would subsequently turn themselves into entrepreneurs or sell off their Intellectual Properties (IP). Nowadays, one of the criteria used in ranking Universities is entrepreneur development. However, it is well known that hundreds, or indeed most, Research and Developments never survive the harsh road leading to entrepreneurship and/or IP.

The author wishes to discuss this road, critically analysing the milestones, as well as challenges, while citing personal examples. In the interest of this Conference, he will address himself heavily to the challenges and how they can be overcome.

2.0 R&D WITH ENTREPRENEURSHIP

It is not usual for an academic research to have entrepreneurship inbuilt into the objectives. Many schools of thought will argue that entrepreneurship is not a direct mandate of a University. At best they would propose the sale of IP to other organizations or companies who are best at the game. The sale of the IP arguably is proper and appropriate because this frees the academics to continue into R&D while at the same time enjoying the financial benefits from the sale.

The shortcoming of the sale of IP may lead to the distortion or complete loss of the original objects of the R&D. It is easy to sight an example of a successful solar cooker whose objective was to serve the rural and urban poor and whose production would provide huge employment to the local communities. An entrepreneur, having bought the IP, may find more economic sense in an automated production process for higher volumes and better quality thereby satisfying the larger and wealthier part of society.

The strategy is to do R&D subsequently obtaining a product, becoming an entrepreneur without losing focus of the original aims of R&D, keeping the IP and also remain in academics.

3.0 R&D LEADING INTO A PRODUCT

It is imperative that at the onset of the research a product is envisaged as a primary objective. Hence the research must have its focus on a product that is viable and indeed appropriate. An

appropriate product is one which will not only satisfy the target group but must be sustainable and easy to duplicate so as to ensure scaling up.

There lies a dilemma in the academic world of the end product; in order to publish in recognized journals the tendency is to aim at a product with the latest technology e.g. microprocessor-controlled, etc, while on the other hand keeping the price low. It must be clearly understood that both may be achieved though not as fast as desired. This could be achieved by keeping production under low technology but with an acceptable/appropriate product.

In the developing countries, the price tag is vital in the success of the product while in the developed countries a niche of the market can be attained where a premium price will be paid by a small group of people resulting into high profits. [Let's consider one example where the price rules in a developing country: The dry cells trademarked "*Tiger Head*" that are sold at UGX 200 are sold much faster than "*Energizer*" which cost UGX 1000. This is true despite everyone's knowledge that "*Tiger Head*" falls below acceptable standards evidenced by the Government's attempt to ban their sale in Uganda].

The type and amount of energy used in production greatly affects the sale price and sustainability of the end product. It is very tempting to design the production process that minimizes human resource/labour because it is slow, needs more supervision and is sometimes unreliable. So, the natural choice is an automated process. However, there are several challenges in automated processes especially for developing countries. The unreliability and increasing cost of mains electricity and the capital investment into alternative energy sources may lead to short-lived products.

An automated process not only requires electrical energy, but skilled labour for operation, maintenance and repair (usually using imported spare parts). It is best to optimize between human resource and automation taking into consideration the above challenges. The author's experience is that it is hugely satisfying to employ many people mainly because of the most moving testimonies they give on their social and economic growth.

4.0 FROM R&D TO ENTREPRENEURSHIP

Once an appropriate product, which has a ready market and makes economic sense, is pronounced at the end of R&D, the demand to move to the next stage, i.e. putting the product on market becomes irresistible. The resistance or delay may cause loss of IP and/or pirating the innovation/invention.

There is a natural hesitation by academics to step into "the unknown world" of entrepreneurship. [University education, especially in other disciplines which are not directly related, glosses over entrepreneurship. The fear is made more vivid when an academic has had little interaction with the world outside University enclosures].

However, there is always help out there. If the product has social benefits there are several organizations willing to finance the production process with very loose or no strings attached. This may become a springboard into real, economic production. Thereafter, with little or no capital investment, there are several people with venture capital. However, one must exercise caution on partnership; there are some agreements with footnotes written in the smallest letters but with the greatest binding conditions.

5.0 BENEFITS AND CHALLENGES OF ENTREPRENEURSHIP

5.1 Benefits of Entrepreneurship

The obvious benefit in entrepreneurship is financial gain of the entrepreneur; after all it is the primary aim. However, the most satisfying benefit is the human interaction. While in academia, the human interaction is limited and automatically selected. In entrepreneurship, the interaction cuts across the entire cross-section of society (from the poor to the rich).

The financial gains of those involved in the enterprise have far-reaching implications especially in developing countries where poverty manifests itself in several forms. It is best to document the social and economic benefits of the employees. These range from reduced domestic violence to change of social status. When scaled over the whole community, a complete change of social, cultural and economic values may be formed.

5.2 Challenges of Entrepreneurship

The most challenging activity is the selection of human resource, when all the other systems of production (forming a company, seed capital, production process, etc) have been accomplished. Academic qualifications in the relevant fields and some kind of experience of human resource have proved not to be the determining elements of success. While these are guiding criteria, there are some salient qualities of employees which surpass the known benchmarks. [For example, it is very difficult to gauge someone's self-motivation at the interview stage although every interviewee will claim to possess a high level of it. Integrity is extremely vital but has no measure even after several months of employment].

The whole of human resource management is such a big challenge no matter how many books the entrepreneur refers to or the level of professional advice he/she may seek. The author's experience is that while money is highly motivating (where people are paid on production basis) it has a limit to efficiency increase.

6.0 THE STORY OF MAKAPADS

MakaPads are sanitary pads/towels made out of papyrus and waste paper as the absorbent. The Rockefeller Foundation (RF) sought the innovation services of the author to R&D sanitary towels, made out of local materials in as far as was possible and produced in a cottage industry using locally fabricated machinery. The aim was to produce sustainable sanitary pads which were affordable by poor schoolgirls. [The earlier intervention of providing the poor schoolgirls with imported pads in order to reduce their absenteeism during menstruation days had proved unsustainably expensive].

Using 100% financial support (USD 78,000) from RF, the author's R&D emerged with an innovation of sanitary pads whose absorbent is made from papyrus and paper waste. The sanitary pads were then trademarked "*MakaPads*". The product and production process met all the above criteria such that *MakaPads* cost 20% of the imported pads and all machinery are locally designed & fabricated and consume little or no energy.

Two days after a newspaper article, *MakaPads* were immediately sought after by the United Nations High Commission for Refugees (UNHCR). They wanted a partnership whereby refugees would produce *MakaPads*, as source of employment; UNHCR would buy them and distribute them among their beneficiaries and save money on imported pads. A mini factory was established in a refugee settlement (Kyaka II) and to date UNHCR buys 2,200,000 *MakaPads* from T4T

annually. Soon after that several NGO's simply wanted to buy *MakaPads* and distribute them among their clients.

Clearly, the stage was set for *MakaPads*; they met nearly all the criteria of a new product: ready market, affordable and locally producible from local materials whose cost was almost nothing apart from processing. A company, Technology for Tomorrow Limited (T4T), was incorporated to produce and market *MakaPads*. To date T4T has received free funding from organizations (local and international) and is soon moving into Private Public Partnership. T4T employs 137 people (mostly women) and has four production centres each of which is unique; refugees, urban slum dwellers, former Lord's Resistance Army (LRA) abductees suffering with HIV/AIDS and rural poor women.

MakaPads are 90% biodegradable with no chemicals, in contrast with all other sanitary pads which are not only imported but have chemicals that enhance blood absorption. In 2011/12, *MakaPads* are planned to hit international markets as natural products which are 100% biodegradable and free from chemical additives.

7.0 CONCLUSIONS

The road from R&D to entrepreneurship is both exciting and challenging. The public attitude on academic institutions has been non-supportive or negative in terms of viable products. The industries have for long felt left out of R&D by Universities and believed that such works were good for academic purposes only. The University students are visibly excited and inspired when they learn of an academic who is also a successful entrepreneur.

However, with real products, which are competitive on the open market, the attitudes are changing and there is increasing collaboration of the Universities with the outside world. The challenge will always remain of academics being able to balance their roles should they wish to stay in both worlds of academia and R&D.