# INTELLECTUAL PROPERTY POLICY AS A TOOL FOR INNOVATIONS IN UNIVERSITIES, THE CASE OF UGANDA

BY

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A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER IN INTELLECTUAL PROPERTY IN THE INSTITUTE OF PEACE, LEADERSHIP AND GOVERNANCE OF AFRICA UNIVERSITY

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## ABSTRACT

*The study reported in this research, examined the extent, to which Intellectual Property Policy can be used as a tool for innovations in universities. This research study therefore, sought to investigate the current Intellectual Property Policies in Ugandan Universities and how those IP Policies can be used to increase innovations in Universities. Specifically the study aimed at exploring various methods of using intellectual property policies of universities to increase innovations in universities. A total of 55 respondents were purposive selected as a sample and were surveyed, drawn from the following levels: 35 were Masters Students, 10 Principal Investigators and PhD students. The respondents were selected as being those with the optimum information about Intellectual Property Policy in Universities. The actual number of participants was 78 of which 23 participated in the FGD. The findings revealed that the non-existence of established methods of increasing innovations using the university intellectual property policies impacted on the perception of principal investigators, in much the same way as it did to the PhD students and Masters students, limiting production of innovations to the usual research carried out within universities. In addition, while some respondents who participated in this study reported that there were some innovations produced within the universities; such attempts were being constrained mainly due to lack of institutionalized systemic methods of using the IP Policies to increase innovations. Consequently, a lot more support inform of establishing a well streamlined and systematic approach using the IP Policy as a tool in the universities is needed. However, the high frequency of suggestions by the different researchers to improve on the working environment for academicians and researchers, because adequate outputs and outcomes are never realized if tools and inputs are insufficient. That all efforts be made to provide adequate facilitation for researchers to do their work and that researchers and innovators should be availed with the necessary tools, equipment and inputs requisite for the proper discharge of their duties and their workplaces should also be comfortable enough and their environments free of stress. The findings reported in this dissertation are a timely response to the current dearth of research literature on particular methods of using an IP Policy as a tool to increase innovations in universities in Uganda.*

## DECLARATION

I DENNIS KAPYATA, hereby declare that to the best of my knowledge, this research project is my original work except where sources have been acknowledged. The work has never been submitted, nor will it ever be, to another University in the awarding of a degree

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## DEDICATION

This research is dedicated to my father Mr. Christopher Kiige, for his unwavering encouragement and mentorship in the field of Intellectual Property.

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# CHAPTER 1: INTRODUCTION

## Background

One of the major goals of a University ought to be mentoring and nurturing skilled human resource that can foster national development. Cognizant of this fact, several Universities in Uganda continue promoting the carrying out of research supported both internally and externally. Internally supported research, is funded using resources generated within the University like grants, revenue from business ventures and donations. Externally supported research on the other hand is funded using resources from commissioned research through Memorandum of Understanding (MoUs)/agreements with local, regional and international bodies, MoUs/Agreements with other universities, institutes, centres and units. In this way Universities have been ingenuously viewed as ‘‘engines’’ of innovation that pump out new ideas that can be translated into commercial innovations and revenue for further sustainability of both the institutions and national development. This has led to overly robotic national and regional policies that seek to commercialize those ideas and transfer them to the private sector. This has not come without challenges; indeed across the world, universities are facing increased pressure to demonstrate quality and relevance to research production. These research institutions are being coerced to become key contributors to the development of a knowledge society and catalysts of economic competitiveness consequently compelling universities to rethink the managerial issues related to quality assurance, relevance of research and commercial benefits. Sanchez and Elena (2006)

clearly contend that universities are critical institutional actors in national innovation systems.

Indeed in the 2007 Lisbon Declaration ,it is argued that, universities for example in Europe, will increasingly seek to enhance their research and improve their innovation capacities by further developing partnerships with external partners, through professionalizing their processes of knowledge transfer and by looking for synergy between regional, national and the European research policy initiatives. The Green Paper (2007) issued by the European Commission goes even further to suggest that, research institutions, besides their physical infrastructures, should also be encouraged to create "virtual centers of excellence" in the form of strong and durable partnerships between themselves and industries, going beyond the usual project-based cooperation.

Internationally, the most notable policy move in support of technology transfer is the Bayh-Dole Act, enacted in the United States in 1980. It streamlined university-industry technology transfer of technologies arising from research that had been funded by the U.S. federal granting councils and agencies. Prior to Bayh-Dole, each agency maintained its own policies and processes regarding commercialization activities and a complex set of bilateral agreements between individual universities and government agencies governing university technology transfer. The Bayh-Dole Act transferred ownership of all intellectual property arising from publicly-funded research to the universities and required, in exchange, that the universities commercialize any promising technologies. Unfortunately, while Ugandan universities have made tremendous progress in teaching,

research has lagged behind particularly in terms of promotion of innovation, their commercialization and protection in a university setting. Indeed, despite Makerere University being the oldest university in the country with over 90 years of existence; it has only recently embarked on developing the Intellectual Property Management (IPM) policy as well as establishing an Intellectual Property Unit (IP) office in order to stimulate research and commercialization. This perhaps explains as to why the country is still grappling with issues of national development.

While the body of science represented by university-based research is an important and growing contributor to industrial innovation, in reality; University research is not automatically transferred to industry by researchers. This linkage is well supported in the literature; for instance industry researchers across many industries rely on universities for research findings, instruments, experimental materials, highly trained human capital, and research techniques (Cohen, Nelson, and Walsh 2002). Industry researchers further report that, linkages with the university researchers provide benefits in terms of keeping abreast of university research, gaining access to the university researchers' expertise, and receiving general assistance with problem solving (Rappert, Webster, Charles 1990). The successes and failures from basic research at universities provide information useful for guiding applied research in the direction of most promising opportunities, avoiding unfruitful areas, thereby increasing the productivity of applied research (David, Mowery, and Steinmueller, 1992) no wonder Universities were reported to be the most important sources of external technologies by British and Japanese firms (Tidd and Trewhella 1997). It is therefore pertinent that avenues to mitigate factors such as the applicability

regime, the nature of the knowledge, and the competencies developed by firms to identify and exploit this external knowledge (Teece 1986, Chesbrough 2003a) that affect the transfer of this knowledge from universities to firms should be explored.

In view of this it is incumbent upon universities to institutionalise effective IP policies that could streamline the channels through which university research reaches researchers in the industry. The Bayh-Dole Act of 1980 is often credited with a very significant role in encouraging universities to embrace technology transfer activities. In fact, "university-ownership" was the dominant model for university intellectual property policies in the United States prior to the Bayh-Dole Act (Bowers & Leon, 1994). For example, The Economist has declared, "More than anything, this single policy measure helped to reverse America's quick slide into industrial irrelevance" ("Innovation's golden goose", 2002, p. 3). Several studies that investigated the impact of the Bayh-Dole Act provided evidence of this relationship, noting an increase in the propensity of universities to file patents starting in 1981 (e.g. Jensen & Thorsby, 2001; Shane, 2004b). The benefits to the universities are well articulated in the recent decisions U.S. Act in which "university-ownership" policies are fast replacing policies that allowed ownership of university-developed technologies to vest with the inventors (Association of University Technology Managers, 2006a; Mowery & Sampat, 2005).

**Introductions**

While innovation and entrepreneurial capabilities vary across regions within a country; the linkage between the strengths of a regional innovation system and a favorable

intellectual property scheme in universities, remain strong bonding factors between universities and industry (Wright et al., 2007).

An institutional intellectual property policy forms the very foundation of IP management and, as such, serves as the starting point for a system of institutional best practices. Ordinarily, the IP policy should be entirely consistent with the mission of the institution. Doing so will bring efficiency and clarity to IP management, since all the components of the policy, including IP ownership, patenting, confidentiality, and disclosure can be written into the policy. Moreover, the intellectual property Policy will serve the mission in a way that strengthens the institution's credibility, reputation and public image.

Indeed, for a university wishing to adopt a technology transfer program structured around licensing, a conceptually solid, pragmatic IP policy will be an essential building block for the program. It is the foundation upon which all other IP activities and initiatives are built.

The goal of the University is to effectively contribute to national development by providing skilled human resource that can foster national development. To achieve this, the University Intellectual Property Policy provides for and spells out teaching, research and service as the main functions of a public university.

Truly, one of the core functions of every University is research. Universities have been known to be engines of discovery and generation of new knowledge through research. Research ultimately contributes to national development through innovations and

technological advancements. “where science and technology and innovations are the driving forces .The policy addresses fundamental issues such as funding for research and effective coordination of research activities at the Institution by establishing a necessary institutional research agenda affixed on the unique needs of the society it serves. The policy also recognizes the importance of commercialization of research outputs. In this regard, the policy espouses elaborate Intellectual Property guidelines aimed at promoting innovations, inventions and creative works. However the methods of using a policy as a tool for innovation have not been fully explored.

### 1.2 Statement of the problem

Whereas there is enormous radical interest in promoting Innovations in the universities little appears to be known about several of the key relationships in this area between intellectual property policies as a tool for innovations. Often times the university policies are the target of the proposed changes because they are widely expected to be a significant pedal in changing the university researcher’s involvement with technology transfer activities and innovations. However, little research has been done in this area and the impact of these policies upon increase of innovations for universities which can consequently spark off licensing and the formation of spin-off companies. In particular, it is not known whether or not university intellectual property policy can enhance innovations arising from university research and consequently leading to the commercialization of these inventions. Indeed research on the topic of technology transfer and innovation is still quite primary (Shane, 2004a), and very little empirical work has been done to assess the importance of IP Policy in determining the amount of

innovations activity within universities. The research is designed to help answer these important policy questions by conducting empirical research in response to the following research question:

To what extent might the strengthening of intellectual property policies enhance innovations in universities in a developing country such as Uganda?

### 1.3 Purpose of the Study

Research output in form of innovations is one of the major roles of a University. Consequently, in order to strengthen innovation activities, there is need to explore any possible strategies that may be implemented to increase innovations within universities in Uganda. It is therefore imperative that, with the continuous diminishing of university funding, there is need to encourage credible research that will ultimately lead to innovations.

The findings of this research, therefore, add to the knowledge and understanding of the strategies of enhancing innovations in institutions of higher learning.

### 1.4 General objectives of the Study

To enhance innovations through strong institutionalized IP policies in universities.

### 1.5 Specific Objectives

1) To investigate how IP policy can be used to promote innovations in universities

**2)** To investigate the level of awareness about the role of IP Policy in enhancing Innovations

**3)** To identify current challenges in translating IP Policy into increasing innovations

4) To examine ways in which institutions can strengthen the linkage between IP policy and innovations

### 1.6 Research Questions

1) What strategies can be included in IP Policies to enhance innovations in Universities in Uganda?

2) What is the relationship between the observed IP policies and research innovations in the selected universities?

### 1.7 Significance of the Study

This study is significant in the sense that:

a) It provides models of using intellectual property Policy as a tool for increasing innovations in the universities;

b) It generates greater awareness among Universities and Institutions of higher learning of the mechanisms of increasing innovations using intellectual property policy; and Provides important knowledge on factors that may be very useful

when adopting or running Intellectual Property Management within Universities and Institutions of higher learning.

It is the belief of the researcher that this research will therefore unveil the level of awareness of the University IP policy among the Academics , the current challenges being faced by researchers in the institution and make a humble contribution by unleashing the perhaps initially over looked issues of using an intellectual property policy to foster innovations in a University.

### 1.8 Scope of the Study

While the author recognizes the impact of the Intellectual property policy at both statutory and institutional level the findings in this dissertation will majorly refer to the institutional level. Therefore, the main focus of this research is to seek views from inventors, unit supervisors, researchers, and university authorities about how IP Policy impacts on their innovations.

### 1.9 Limitations of the Study

While Rae and Parker (2005) asserts that there is no better method of research than the survey process, in situations when accurate information is required and enough is known about the population to formulate specific questions; some weaknesses of survey methodology can have an effect on the study. Because I used self –completed questionnaires, some of the findings may have been affected by bias within the participants themselves. That notwithstanding, because I gathered information from Principal Investigators, PhD Students and Masters Students, weaknesses arising from

such biases were possibly be kept within acceptable levels. Equally the time frame within which this study was conducted was limited to observe improvements in innovation. In the next chapter the literature that informed this study is explored in more detail.

# CHAPTER 2: LITERATURE REVIEW

## 2.1 Brief background of intellectual property in respect to innovations:

The role of intellectual property as a tool for development has been recognized since ancient times. During the third century B.C, the Greek historian phylarchos wrote that the rulers of the Greek City Sybaris issued patents for new foods (Lipscomb 1984). The patent was a refinement on the more common incentive of awarding a prize. The Greeks also held contests to reward the writing of comedies, painting, the production of superior agricultural products, and skills of medicine and surgery (Skoyles ch. 2). Drawings in Egyptian tombs show workers branding cattle, and quarry marks have been found on Egyptian structures dating from 4000 B.C (McCarthy…)The book of Judges shows king Samson had a trade secret of the power of the God on his hair (King James Bible). Intellectual property rights (IPRs) are property rights in something intangible and protect innovations and reward innovative activity (US Council for International Business, 1985). IPRs comprise a bundle of rights focusing on the physical manifestations of intellectual activity in any field of human endeavor. IPRs are concerned with the expression of an idea for an invention, the details of which have been worked out and which takes the form of a product or process that can be applied industrially. Development over a century has given rise to various IPRs, which have become well known. These include patents, trademark and service marks, copyright and neighboring rights, designs, plant breeders' rights, utility models, appellations of origins.

Intellectual property is intricately related to trade, competition, industrial growth and economic development. The creation of the World Trade Organization (WTO) in 1995 and the consequent formulation of the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) (TRIPS Agreement Annex 1C) have generated new challenges for Sub-Saharan African (SSA) countries, particularly as far as IP protection in these countries is concerned. The TRIPS agreement is the most over-arching instrument on the regulation and protection of all types of intellectual property. The agreement sets minimum standards that all countries signatory to the WTO must comply with. This, therefore, means that Sub-Saharan African (SSA) countries are faced with the challenge of complying with the agreement, which necessarily means exhibiting their IP laws and policies along the provisions of TRIPS.

There exists paucity of literature that examines the influence of IPR Policy to innovation in Sub-Saharan Africa especially Uganda. Together with the above mentioned roles, intellectual property protection is progressively sought by firms as a source of competitive advantage, as a mechanism for market protection (Davis, 2004) and as a bargaining currency to prevent being "locked-out" from using technology held by competitors( Kingston, 2001). This trend in the use of IPR causes us to question whether they serve the purpose of creating incentives to invent and to apply the knowledge in production. This is an important policy question especially for developing countries like Uganda where using IPR as a tool for enhancing technological innovation may not necessarily work in the same way as developed countries. The role of IP in development and related policy areas, is controversial. Although most IP instruments protect the

creator's private right, recent concerns on the right to development emphasize the cautious balancing of the private right of the creator to protection with the right of the community to access and enjoy the benefits of the IP.

Indeed the role of intellectual property in catalyzing and stimulating industrial and commercial growth has come into sharp focus in recent years ( Kameri-Mbote,1994).

Big corporate firms have taken over inventive activity from the inventors and increased their share of intellectual property portfolio as they buy the best brains and purchase patents of patentees who are not able to exploit their inventions (Drahos, 2003).

Another area in which this discussion has been raised is that of biological resources (Barton, 1995). Existing IPR regimes accredit greater value to germplasm that has been transformed through biotechnology than to land races (Wilson ed., 1988). While the latter are designated as primitive cultivars, the former are characterized as elite varieties. This characterization reflects value judgments that translate into monetary gains. The skewed valuation scale does not indicate a continuum from the raw material to a transformed product. There is thus a marked dichotomy between the valueless raw germplasm and the commoditized varieties that are processed in laboratories (Shiva, 1993; Barton & Christensen, 1988; Shiva, 1994).

Indeed the value of the above resources is lowered by the standardization of systems of production, knowledge and institutions across the world. While such standardization has its benefits, it tends to disregard the need to preserve diversity and take into account the

contribution of local knowledge and institutions in this effort (Swanson, 1995). IPR are essentially established to perform two functions namely to create incentives for innovative behavior and to help diffuse knowledge. It is presupposed that the monopoly power created by competition, which improves the availability of knowledge through IPRs is what acts as incentive to invent and innovate. The tradeoff between the incentive to innovate and monopoly power lies in the non-rival nature of knowledge (Romer, 1990, 71-102); as an economic asset, and the cheap transmission costs of information ( Arrow, 1962, pp. 609-625).

**2.2 Intellectual property policy at Makerere University**

Protection of research, research outputs and innovations has become important activity for universities all over the world. In today's knowledge economy, the importance of research and innovation for knowledge generation and technology-transfer geared at enhancing national development has been embraced in the strategic plan of Makerere University. This realization re-enforced investment in research, innovations and commercialization of products of research for the public good as well as contribute to the economic development of Uganda. Makerere University developed the IP Policy on Management of intellectual property in order to assist researchers, research managers in ensuring that they have access to best practices for the identification, protection and management of intellectual property and, therefore, to maximize the benefits and returns from public investment in research as well as drastically reduce on lost opportunities

arising from failure to protect innovations and research outputs by inventors and the institution as whole.

This means that, Makerere University re- affirmed its commitment to provide a conducive environment that supports innovation, knowledge creation and technology transfer in line with the national development agenda, it further acknowledged the importance of commercialization of products of research and innovation for the benefit of society, the inventor and the institution. For example, section 2 of the IP Policy of Makerere University provides that the aim of the policy is to stimulate and support innovative thinking among students and staff, and to enable ownership and efficient management of intellectual assets and innovations produced at Makerere. In addition, implementation of the IPM policy is envisaged to increase income arising from research activities, as well as increase the contribution of Makerere to the wellbeing of society.

Section 3.1 of the Policy provides the University shall support and promote innovative ideas that can be transformed into useful products for the public good. However, the Policy does not clearly lay strategies of increasing innovations by using the IP Policy as a tool.

### 2.3 IP Policy as a tool for innovation

There have been some attempts to define "innovation." For the OECD, for instance, innovation is "the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations" (OECD and European

Communities, 2005, p. 46). Onadera and Kim (2008, p. 112) think that innovation "is about the successful exploitation of new ideas and the invention, development and commercialization of new technologies, services, business models and operational methods. Innovation is thus related to a process connecting knowledge and technology with the exploitation of market opportunities for new or improved products, services and business processes compared to those already available on the market." In the context of this study, we think of innovation as the creative use of knowledge to allow individuals and, by extension, corporations and nation-states "to go farther, faster, deeper and cheaper" (Friedman, 1999). In most instances, innovation will involve a rise in factor productivity and hence, other things being equal, living standards. However, much as these researchers have comprehensively defined innovations; they have not gone ahead to link innovations increase to IP Policy.

According to Zhou (2008), university-industry collaboration has four primary characteristics that can be used as criteria of entrepreneurial university capacity:

(1) undergoing technology transfer and entrepreneurship based on high-tech development;

(2) sufficient resources of science and technology research and spin-over of knowledge innovation to the located regions; as well as strong influence on the regional industries and economy;

(3) entrepreneurship as widely accepted ideology and supported systematically; and

(4) considerable number of staff joining firm formation for “high-tech innovation” and spin-offs or university-run enterprises influencing strongly regional industries

According to Rowley (2000), the creation of an environment in which knowledge management activities, such as knowledge creation, transfer and use, and being prepared to relinquish the power that comes with knowledge, is concerned with adopting appropriate organizational norms and values related to knowledge. To achieve this, universities start developing intellectual property rights, spin-offs, and other market-linked products and policies. In such a context, Rowley (2000) concludes that higher education is involved in the knowledge business. I completely agree with the researcher, but still he does not clarify how an IP Policy can be used to foster innovations in the universities.

According to Santoro (2000), industry-university strategic alliances usually take place within four important components, including research support, cooperative research, knowledge transfer and technology transfer. This suggests that a university must have managerial structures supporting these four areas.

Sheen (2002) and Mets (2006) discuss that there are two main ways for commercialising the results of academic research by knowledge (technology) transfer. As the most important research and innovation strategies structures and instruments supporting institutional innovation policy Conraths and Smidt (2005) define joint projects with industry, funding policy, technology transfer and spin-off policy.

The survey of internationally visible universities in six European countries suggests that a cooperative attitude plays a leading role in taking managerial decisions seeking for institutional competitiveness. Strong partnership with business and governmental institutions has initiated establishment of innovative and creative units for research activities, technology transfer and dissemination. This is also very true but the question of how the innovative capacity can be increased in the context of an IP Policy is still not tackled.

### 2.4 Need to use IP Policies as device for innovation

Several studies have thus far investigated the effectiveness of technology transfer by universities or technology transfer offices (TTOs) (Anderson et al. 2007; Caldera and Debande 2010; Chapple et al. 2005; Debackere and Veugelers 2005; Friedmand and Silberman 2003; Macho-Stadler et al. 2007; Siegel et al. 2003; Siegel et al. 2007; Thursby et al. 2001; Thursby and Thursby 2002). However no particular study has specifically explored the effects of IP Policy as a tool to innovation in universities especially Uganda. Siegel et al. (2007) summarize recent empirical studies on university TTOs and the key factors for their performance, reporting that the performance of technology transfer is affected by university characteristics, including ownership (public or private), academic quality, local conditions of high-tech demand, and the design of licensing contract as well as TTO characteristics such as size and age, but he does not talk about IP Policy as a tool to increase innovations in universities. More recently, Caldera and Debande (2010) examined how TTO characteristics affect university's performance of technology transfer, controlling for the nature and type of technology

transfer and academic quality. Using the survey data on technology transfer activities of 52 universities in Spain over 2001–2005, they found that university's rules on the conflicts of interests between academic teaching responsibilities and external activities have a positive effect on R&D contracts, licenses, or spin-off creation. In sum, previous empirical studies suggest the importance of university IP policy for the performance of technology transfer from universities. However, the effects of university IP policy on the increase of innovations within universities have never been explicitly addressed. An overriding fact that has significant bearing on our conclusions is the following: The transfer of knowledge from the university to the commercial sector generally requires the active involvement of university inventors (Gelijns and Rosenberg 1999). The academic reward structure encourages the production of knowledge that is a useful input into other academics' research. Researchers wish to have their papers cited because this is a signal that they have established a reputation within the academic community.

There is much evidence suggesting that the production of such knowledge is a central objective of academic researchers, as citation measures are associated with higher income and prestige (Cole, 1978; Diamond, 1986; Dasgupta & David, 1994; Stern, 1999). But there is little evidence to suggest that this does increase innovations per se in the university using an IP Policy as a tool.

Although both licensing of intellectual property and spinoff creation are key contributors to the creation of new technology-based firms, they are not always equally suitable to align the incentives of universities, industry, and faculty in the quest for knowledge

transfer (Feldman et al., 2002). A key facilitator in the process of commercialization of scientific knowledge, both through licensing and spin-off creation, is the technology transfer office (TTO) that assists universities in the commercialization of scientific research by assessing the commercial viability of new technologies, managing and protecting intellectual property, fostering research partnerships with the business sector, and supporting the creation of university spin-offs (Siegel, Waldman, Atwater, & Link, 2003). The remarkable influence of TTOs on the process of technology transfer has been noted recently through several studies (Lockett & Wright, 2005; Mowery, 2005; Shane, 2001; Siegel & Phan, 2005). Another important factor is the regional context in which the university-based innovation takes place (thus R&D activities of local firms, the existence of local networks of innovation, regionally based innovation policies, etc.), which has been found not only to influence but also to interact with the transfer of new knowledge into valuable commercial usages (Fini et al., 2011). The knowledge emanating from university research reaches existing firms in the form of patents, know-how, and other forms of technology transfer. Interestingly, innovation-driven entrepreneurial activities often tend to concentrate in regions with a strong knowledge base (Audretsch & Feldman, 1996). Second, the existence within a university of an appropriate regulatory framework guaranteeing the disclosure of inventions is fundamental to encourage technology transfer (Bercovitz, Feldman, Feller, & Burton, 2001; Di Gregorio & Shane, 2003; Geuna & Rossi, 2011; Kenney & Patton,2011). Empirical studies show that the passage of the legislation regulating the ownership of intellectual property has proved crucial for the emergence of academic entrepreneurship

(Phan & Siegel, 2006; Rothaermel et al., 2007). By giving the universities the rights to exploit their research, it encouraged them to engage in commercialization activities. Thus, the number of spin-off companies has been found to be positively associated with the expenditure on intellectual property protection (Lockett & Wright, 2005). Although the existence of regulations concerning intellectual property contribute to licensing, regulations ruling the spin-off creation foster new venture creation (Siegel, Waldman, Atwater,et al., 2003). Although I agree with the authors in respect to the above principles; they have again not noted the significance of the IP Policy as a tool for innovation in the universities

Intellectual property is all about innovation and its economic rewards. Innovation is notoriously hard to pin down, measure effectively, or link to economic outcomes.Schumpeter famously identified capitalism's central mechanism as ''gales of creative destruction'' in which new products, processes, and technology swept away older, poorer methods (Schumpeter, 1950 [1940]). U.S. universities' potential for creating valuable innovations and the felt need to facilitate the transfer of federally funded discoveries from universities to the marketplace were among the rationales for the Bayh-Dole legislation, which took effect in 1981: As Mowery et al.(2004) suggest, the universities themselves were among those pushing for a simplification of the law to clarify ownership: although many individual universities had already negotiated agency-specific IP ownership agreements (IPAs) well before Bayh-Dole, the terms of these agreements varied by agency. ''Overnight, universities across America became sources of innovation, as entrepreneurial professors took their inventions (and graduate students)

off campus to set up companies of their own'' (Innovation's Golden Goose, 2002). This is also true, but it does not clearly connect with how IP can be used as a tool for innovations in the universities

IP protections are designed to stimulate innovation by granting the entities responsible for the invention of a novel product, process or design or the discovery of a material or new plant hybrid a time-limited monopoly to benefit from their work in exchange for the open publication of a description of the work (Harvard University 2009). This time-limited monopoly represents a competitive advantage that can be legally transferred through licensing agreements or sale of the IP. Therefore, IP protection can create a competitive advantage that is not dependent on secrecy. With IP protection, researchers can publish their research and still provide industrial partners with the incentive to commercialize their inventions (Conceição et al., 1998). The policies that govern the commercialization of university research are usually designed and held by universities and national governments. Some countries have federal policies that govern the commercialization of university research and these policies usually overrule any university IP policies.

For example, U.S. universities and colleges own and have an obligation to commercialize IP arising from government-funded university research regardless of the university policy (Mowery et al., 2004). Canada used not to have a federal policy governing the commercialization of university research, so the only policies governing

technology transfer in Canada are the IP policies of the universities (Atkinson-Grosjean, 2002).

A university science and technology research system is a system of productive resources aggregated within a university setting and used to produce a stream of research-related outputs. The system is comprised of at least five different sets of related, complementary resources, including: human capital, including complementary networks of people (professors, researchers, students, administrators, technicians, and other support staff); governance capital, such as rules, norms, policies and other collective constraints that guide system participants' behavior; physical capital, such as land, facilities and equipment; intellectual capital, such as knowledge, information, and ideas.I have referred to the various components of the system as capital because, aggregated together within a university, these resources are used collectively and continuously as inputs into a variety of production processes, including research, education, training, and socialization, among others. These production processes yield a wide variety of research-related outputs, which can be grouped into two major categories – intellectual capital and human capital. Intellectual capital outputs are the intangible information goods, essentially the research results, which may or may not be embedded in some artifact (e.g., equipment design), be fixated in some tangible form (e.g., written down), or simply reside in the minds of researchers. Generally, when we refer to ''innovation,'' ''technology,'' and so on, we are talking about various types of intellectual capital that are outputs from some intellectual process. These outputs are public goods with varying potential to yield positive externalities (or conversely, appropriable benefits) when

utilized productively further downstream. The types of downstream uses may vary considerably (Frischmann, 2000). As David Mowery (2005) demonstrates, universities and industry have a long history of interactions this should not be surprising. As it has become clearer that innovation is the engine driving the economy, we should expect pressure to optimize various institutions to support innovation policy.

### 2.5 Limitations of the IP Policies in universities

Some of the current IP Policies of the Universities have not significantly contributed to the increase of innovations in the universities especially because some provision do not wholly promote an environment of innovations, for example; whereas the existing Intellectual Property Management policies at higher Institutions of Learning may vary greatly, most of the University Intellectual Property Policies stress that universities own almost everything an instructor generated as part of a traditional or online course because the work is done as part of the duties of the job which tantamount to a "work for hire" condition. at the University of North Texas, the policy, "…allows faculty members to receive royalties when their courses are taught by other North Texas professors. Faculty members also receive 50 percent of the license fee paid by another institution to use the course" (Dahl, 2005).

Similarly, Section 3.2.3 (ii) of the Makerere University Intellectual Property Management Policy 2008 provides that the University owns innovations and inventions arising from any research results directed and carried out by an employee of Makerere

University using University Funds or Funds controlled or administered by the University or research results arising from an employee's duties with the University or research results that have been developed in whole or part by utilizing University facilities or resources not open to the general public. On sharing proceeds Section 3.2.4 of the same policy provides that the University shall recover all direct expenses incurred for the patenting, processing and licensing of each university invention from the proceeds before distributing the net proceeds to the inventor(s), major administrative unit and the university as a whole.

On the other hand the University of Cape Town Intellectual Property Policy provides slightly an alternative approach Section 3.2 of the Policy states that the university Intellectual Property Policy does not apply to Intellectual Property developed solely in terms of a private contract, outside of the course and scope of employment or contract of service or study with UCT, by an Employee and a third party, approved in compliance with the relevant UCT Private and Professional Work policies, provided that in the case of any potential conflict of interest (real or perceived), the Employee must notify UCT of the Intellectual Property, or possible creation of Intellectual Property In particular, should any Intellectual Property be created as part of a private contract, or private and professional work that falls within the technical scope of the Creator's employment at UCT, the Creator is bound to disclose this IP to RCIPS.

In the absence of an agreement signed by UCT to the contrary, the Intellectual Property will be deemed to be owned by UCT. However Section 6.3 of the University

of Cape Town is slightly related to Section 3.2.3 of the Makerere University Intellectual Property Management Policy. The UCT Policy provides that Employees and Students must review their work prior to any Public Disclosure to assess whether it contains any potentially protectable IP, in particular a Patentable Invention and if so to timeously disclose it to RCIPS on an IP Disclosure Form ahead of the planned Public Disclosure so that if warranted the IP can be protected. Section 7.1 provides that UCT asserts legal and beneficial ownership of Intellectual Property arising from work by Employees and Students except as otherwise agreed in writing by an authorized officer of UCT, or unless stated otherwise in this Policy in relation to Intellectual Property created by Employees, Students or Visitors, with some exceptions. Section 7.7 provides that Where Intellectual Property emanates from a collaborative research and development agreement involving one or more donor organizations, research institutions or organizations, UCT will retain ownership of IP developed by UCT's Employees or Students, or co-own where the IP is jointly developed with the collaborators

A critical assessment of the policies shows that the Makerere university intellectual property policy claims ownership of the IP produced by its employees within the scope of their duties especially where they are using the university facilities and funds controlled by the university. Meanwhile the University of Cape Town intellectual Property Policy provides an alternative approach by stating that it will not assert ownership of Intellectual Property developed solely in terms of a private contract, outside of the course and scope of employment or contract of service or study with UCT by an Employee and a

third party. However, it goes on to state that should any Intellectual Property be created as part of a private contract or private and professional work that falls within the technical scope of the Creator's employment at UCT, the Creator is bound to disclose this IP to RCIPS. This kind of arrangement can deter innovation since under some professions it is difficult to define whether one is creating an Innovation within the scope of his duties or not, this consequently discourages innovation because the innovator does not anticipate full ownership of his work. For example an employee may be assigned to do private work which does not fall under the ambit of his/her duties with the University in the first phase of the assignment, but when it actually technically falls within the scope of his/her employment with the university in the subsequent phases of his/her private work which ultimately leads to the development of the Intellectual Property. Under section 8.2 the University assigns ownership of copyright work to the employees but retains a perpetual, royalty-free, non- exclusive license to use, copy and adapt such materials within University of Cape Town for the purposes of teaching and or research . This section also clearly shows that the employees have no full ownership of their copyright. This is because an employee may enter into a contract with an outside firm that wants to have full control of the copyright for commercial purposes and yet the employee is bound by the university intellectual Property Policy to allow the university have unlimited loyalty-free access to the copyright for research or academic purposes, hence jeopardizing the employee's full commercialization of his/her copyright with the third party firm hence clearly discouraging innovation within universities basing on the IP Policy.

In summary, much as most of the above studies were carried out in other parts of the world, most of the findings clearly describe some of the current challenges in the Ugandan context. Equally, many of the studies above have identified the need for more similar studies in different contexts to generate universal findings clearly demonstrating that there still exists a dearth of research literature in particular of how to use IP Policy as a tool for innovations in universities in the developing world, of which Uganda is part. It is in acknowledgement of such need that the researcher sought to undertake this study.

# CHAPTER 3: METHODOLOGY

## 3.1 Sampling.

### 3.1.1 *Sample size:*

In order to get representative view from the Respondents, the researcher targeted Principal Investigators, PhD students and Masters Students using a non-probability purposive sampling method.

A total of 55 respondents were purposive selected as a sample and were surveyed, drawn from the following levels: 35 were Masters Students, 10 Principal Investigators and PhD students. The respondents were selected as being those with the optimum information about Intellectual Property Policy in Universities. The actual number of participants was 78 of which 23 participated in the FGD.

**TABLE 1**

| Respondents | Surveyed | 3 Focus Groups | Total | Type of Sample |
|---|---|---|---|---|
| Masters Students | 35 | 7(Sr.Researchers) | 42 | Purposive |
| Principal Investigators | 10 | 10 | 20 | Purposive |
| PhD Students | 10 | 6 | 16 | Purposive |
| **Totals** | **55** | **23** | **78** | |

### 3.2 Survey Guides

The researcher used survey guides to query respondents who were Masters Students, Principal Investigators and PhD Students. Thirty-five respondents from Masters Students were surveyed, 10 were Principal Investigators and 10 were PhD Students; in total 55 respondents were surveyed. All respondents were selected according to seniority and research experience. Whereas it was not possible to access all the top most researchers, the few who availed themselves were strategically placed both in seniority and research experience. Indeed, they patiently provided relevant and accurate information during the interviews which lasted for approximately an hour per group.

### 3.3 Focus group Discussions

Interviews of Focus Groups: Principal Investigators, PhD Students and Masters Students were surveyed in three separate focus groups as a means of determining their perceptions of how intellectual property policy can be used as a tool for innovations in universities in Uganda. The survey protocol consisted of questions specifically dealing with the perceived factors that are essential of **how IP policy can be used to promote innovations in universities** in Uganda, one question dealt with the current challenges in translating IP Policy into increasing innovations. In the Principal Investigator focus group interview, participants were asked to provide their opinion on the level of awareness about the role of IP Policy in enhancing Innovations in universities in

Uganda; in addition, participants were asked to list ways in which institutions can strengthen the linkage between IP policy and innovations in universities in Uganda.

Procedures:

Eighty survey questionnaires were distributed by the researcher to the respondents. The participants were given one week to complete and return the completed questionnaires. Fifty five completed questionnaires were returned to the researcher, yielding a 68.8 percent return rate. The researcher also conducted three focus groups—one with principal investigator, one with the PhD students and one with Masters Students. The three focus groups occurred on separate days. The proceedings of each session were recorded by the researcher writing down the key ideas from the responses. Each session lasted approximately one hour.

Out of the 78 respondents 23 were involved in the focus group discussions. The researcher held one focus group discussion with the respondents of each of the following categories:

- Principal Investigators
- PhD Students
- Masters Students

The focus group Principal Investigators were comprised of 5 female and 2 male senior Researchers drawn from different departments within the Universities. The discussion took place during lunch at a canteen next to the Office of the Vice Chancellor. The participants were relaxed and cordial; they freely expressed their ideas as they were all known to the Researcher. Some of the participants seemed very angry and discouraged at the current level of innovations within universities. Some of them discussed issues that were outside what the researcher wanted. A number of them were very disgruntled and unhappy at the way universities were mismanaging their innovations. The discussion took one hour but it could have gone on for another hour if time allowed.

The focus group from PhD Students had 6 male and 4 female respondents. The meeting took place in Kampala at a hotel where the students were attending a seminar. The meeting was warm and very informative, all the participants discussed the questions unreservedly however the researcher had to ensure the discussion remained relevant to the subject matter.

The focus group from the Master Students had 3 male and 3 female students. The meeting took place at the department of Mass Communication Makerere University. The discussion did not last for an hour like the other two it took approximately 45 minutes.

The researcher used an FGD questionnaire protocol as a guide to make short notes as the focus group discussion progressed which were later collected and analyzed to make conclusions.

### 3.4 Limitations of the researcher

Whereas the researcher had planned to survey a larger number of Principal Investigators, it became extremely difficult owing to some of them being too busy with normal office duties for all to respond accordingly.

Some of the respondents declined to participate in this study due to the anticipated fatigue that is usually associated with focus group interviews. This affected the depth and amount of information that the researcher could obtain.

# CHAPTER 4: DATA ANALYSIS AND RESEARCH FINDINGS

## 4.1 Introduction

This section presents and discusses the results of the study of how IP policy can be used to promote innovations in universities in Uganda. These results are presented in different categories and forms including in tables, charts and graphs showing frequencies and simple percentages. The findings are presented in response to the following guiding questions:

3) What strategies can be included in IP Policies to enhance innovations in Universities in Uganda?

4) What is the relationship between the observed IP policies and research innovations in the selected universities?

## 4.2 Demographic Information

### Gender Distribution

**Table 2: Analysis of Participants in FGD by sex**

| FGD | PI | PhD | MS | Totals |
|---|---|---|---|---|
| **Female** | 2(8.6%) | 6(26.1%) | 3(13%) | 11(48%) |
| **Male** | 5(21.7%) | 4(17.4%) | 3(13%) | 12(52%) |
| **Totals** | **7** | **10** | **6** | **23(100%)** |

**Source: FGD, Q1, N=23**

A majority of respondents in the Focus Groups were male constituting fifty two percent as compared to the Female participant that constituted forty eight percent, this clearly indicated that there exits gender disparity in the academics in Uganda Universities.

**Table 3: FGD Number of years in Research**

| Number of years in Research | Frequency | Percent |
|---|---|---|
| Over 15 years | 3 | 13% |
| 10- 15 years | 15 | 65% |
| 1-3 years | 5 | 22% |

**Source. Focus group Qn2 N = 23**

Over 80% of the respondents in the FGD had been involved in research for over four years. This indicates that the information provided was quite reliable.

**Necessity of IP Policy in Universities**

**Table 4: FGD Necessity of IP Policy in Universities**

| Necessity of IP Policy | Frequency | Percent |
|---|---|---|
| Necessity for innovation | 18 | 78% |
| Not a necessity for Innovation | 5 | 22% |

**Source: Focus group, Qn 3, N=23**

**Impact of increasing innovations in universities**

**Table 5: FGD Impact of increasing innovations in universities**

| Increasing innovations | Frequency | Percent |
|---|---|---|
| Better pay | 13 | 57% |
| Job security(permanent and pensionable) | 3 | 13% |
| Provision of professional development opportunities | 4 | 17% |
| Promotion | 3 | 13% |
| TOTAL | 23 | 100% |

**Source: Focus group, Qn 4, N=23**

**Ways of increasing Innovations in Universities**

**Table 6: FGD Ways of motivating innovations in Universities**

| Increasing Innovations | Frequency | Percent |
|---|---|---|
| Better pay | 13 | 57% |
| Recognition | 3 | 13% |
| Provision of professional development opportunities | 4 | 17% |
| Promotion | 3 | 13% |
| TOTAL | 23 | 100% |

**Source: Focus group, Qn 5, N=23**

**Tables 4 and 5** clearly show that, the key driver for promotion in the universities is the desire to access more privileges more so a bigger pay cheque. For instance, whereas promotion is one of the factors mentioned as a key motivator indeed it ranks far lower than better pay. This could be clear evidence as to why high levels of limited innovations are rampant in Ugandan universities.

**Table 7 : Analysis of Service Delivery of IP & TT**

| FGD | PI | PhD | MASTERS | Total |
|---|---|---|---|---|
| **Effective Service delivery (Private Sector)** | 8(34.7%) | 5(21.7%) | 6(26.1%) | 19(83%) |
| **Effective Service delivery IP & TT** | 1(4.3%) | 2(8.6%) | 1(4.3%) | 4(17%) |
| **Total** | | | | **23 (100%)** |

**Source: FGDs Interview, Q6 N=23**

Coming out of this same discussion, the FDG participants suggested some areas where the IP Office and technology transfer office could borrow good ideas and practices from the private sector, as follows: that in order to improve efficiency in Universities, it is imperative for the universities to borrow some of the principles of good practice from the private sector such as; quick decision making and dynamic approach that is adaptive to the ever changing environment**.**

**Analysis of the weaknesses of IP Policy in the Universities**

**Table 8: FGD Weaknesses of IP Policies in Universities**

| Weaknesses of IP Policies in Universities | Frequency | Percent |
|---|---|---|
| Poor pay | 13 | 57% |
| Poor working environment | 2 | 9% |
| Lack of professional development | 3 | 13% |
| Lack of Promotion | 2 | 9% |
| Limited Supervision of innovations | 1 | 4% |
| Uncertainty innovation success | 1 | 4% |
| Bureaucracy before commercialization | 1 | 4% |
| TOTAL | 23 | 100 |

**Source: Focus group, Qn 7, N=23**

**Analysis of ways of increasing innovations in universities using IP Policy**

**Table 9: FGD How innovations can be increased in universities**

| How innovations can be increased | Frequency | Percent |
|---|---|---|
| Better pay | 16 | 70% |
| Job security(permanent and pensionable) | 3 | 13% |
| Provision of professional development opportunities | 4 | 17% |
| TOTAL | 23 | 100% |

**Source: Focus group, Qn 8, N=23**

A good percentage of the respondents in the FGD appreciate the need to increase innovations in universities. What is surprising though is that, most of the respondents

seem to view better pay as the major form of strategy for increasing innovations in universities. For instance in **table 7**, about 57% indicate poor pay as the major demotivating factor contributing to the low productivity of innovations while 70% percent **(table 8)** mention better pay as the best avenue for motivation of research creativity and output in Universities.

**Analysis of the period involved in University Research**

**Table 10: Period of being involved in university Research**

| **Period involved in research** | **Frequency** | **Percent** |
|---|---|---|
| Over 15 years | 4 | 8% |
| 10- 15 years ego | 35 | 77% |
| 1-3 years ego | 6 | 15% |

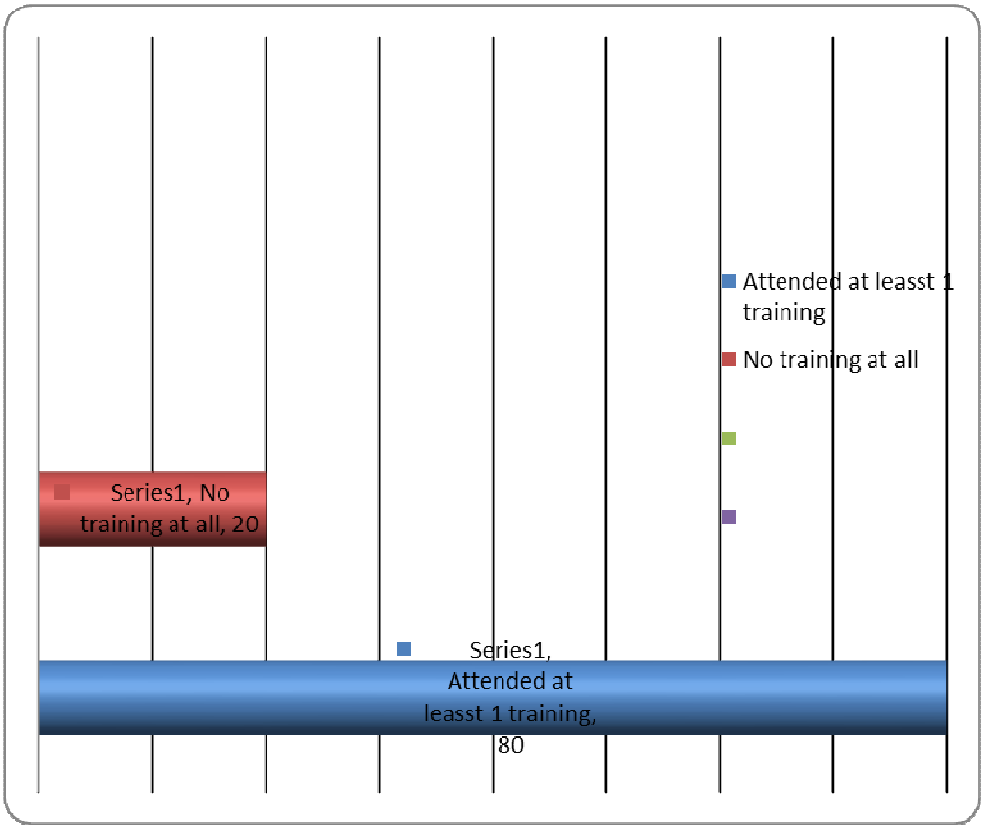
**Source: Survey Qn 1 N = 45**

Meanwhile under **table 9** eight percent indicate that they have served in research for over fifth teen years , significantly a very lower percentage compared to seventy seven percent that have been involved in research between ten and fifth teen years, yet fifteen percent acknowledge to have been involved in research for a period not exceeding three years. This clearly shows that the respondents had a lot of experience in research hence providing credible responses

**IP training**

The study further sought to find out whether Researchers had received any kind of training in IP since they started researching. Figure 1 below shows that universities puts priority in the sensitizing their staff

**Figure 1: Analysis of training opportunities for researchers in IP**




Eighty percent of respondents interviewed had attended at least one short course or some kind of training in IP, while 20 percent had not attended any training since they had started research. These findings indicate that universities put a lot of emphasis in IP sensitization and most researchers do benefit from sensitization.

The analysis above indicates that researchers in Uganda are highly educated with all respondents interviewed having at least one degree. Besides, 40 percent had attained some level of training in IP.

### 4.3 Current level of motivation and commitment to commercialization of research

In a bid to establish the current level of commercialization of research in universities the researcher surveyed 55 respondents concerning the level of motivation and commitment to commercialize research in universities. The findings indicated that commercialization of IP in the universities is very low and highly inefficient and almost all the respondents disagreed to the statement- "the universities in Uganda are efficient at commercializing research," as in indicated in the table 10 below

**Level of commitment to commercialize research in universities**

**Table 11: Level of commitment to commercialize Research in Universities**

| Commercialization of Research | Frequency | Percent |
|---|---|---|
| Agree Strongly | 0 | 0 |
| Agree | 0 | 0 |
| Uncertain | 0 | 0 |
| Disagree | 10 | 22% |
| Disagree strongly | 35 | 78% |

**Source: Survey, Qn 2. N = 45**

In table 10 above, all respondents surveyed unanimously agreed that universities in Uganda are not motivated and not committed to commercialization of research. Both

focus group discussants and individual respondents decried the lack of motivation and commitment in the universities which they attributed to poor terms and conditions of service. Some respondents observed that the commitment to commercialize research that we see in the universities is artificial and is not well coordinated.

**Effects of a well-motivating IP Policy to increase innovation**

**Table 12: effects of a well-motivated IP Policy to increase innovation**

| Effects | Frequency | Percent |
|---|---|---|
| Efficient nurturing of ideas | 18 | 40 |
| Prompt responses to disclosing innovations | 8 | 17.8 |
| Quick development | 10 | 22.2 |
| Positive attitude to research | 9 | 20.0 |
| TOTAL | 45 | 100 |

Source: Survey, Q3, N=45

**Analysis of de motivating factors of IP Policy**

**Table 13: De motivating factors**

| Factor | Frequency | Percent |
|---|---|---|
| Poor incentive | 28 | 62.2 |
| Too much university control of innovations | 6 | 13.3 |
| Lack of professional development | 6 | 13.3 |
| Slow Promotion | 2 | 4.4 |
| Bureaucracy | 3 | 6.6 |
| TOTAL | 45 | 100 |

Source: Survey, Q4, N=45

Indeed the findings from the other respondents surveyed were in total agreement with those from the FGD as indicated in the **table 11** with poor pay again reverberating as the key de-motivator, such that if addressed would lead to effective increase in innovations as illustrated in **table 12**

### 4.4 Promptness of IP Service Delivery

This study revealed that universities did not deliver IP services promptly to the public and didn't exhibit excellence in their work. The researchers noted that it was very hard to do business with universities on issues of IP as the rules and procedures were very bureaucratic and time wasting and it takes a long time to get a service. One of the respondents who is a senior researcher emphasized that "the biggest threat to the development of this country is the universities lacking a functional and motivating IP Policy"

**Analysis of the Level of Efficiency of IP Policy in increasing innovations**

**Table 14: Efficiency of service delivery**

| Level of efficiency in service delivery | Frequency | Percent |
|---|---|---|
| High efficiency | 0 | 0 % |
| Most efficient | 0 | 0% |
| Somewhat efficient | 15 | 33%- |
| Non efficient | 30 | 67% |

**Source: Survey Qn.5. N = 45**

Over 67 percent of the respondents said there is no efficiency in service delivery by the universities; meanwhile only 33 percent acknowledged that universities' IP Policies are efficient in motivating innovations. Meanwhile 40 percent indicated that more

sensitizations about IP would contribute to motivation increase of innovations in universities as shown in **table 14** .

**Analysis of efforts taken by Universities through the IP Policy to promote innovations in the Universities**

**Table 15: Effort taken previously by Universities through IP Policy to promote innovations**

| Effort taken | Frequency | Percent |
|---|---|---|
| Trainings | 18 | 40 |
| Incentives | 12 | 2<br>6.7 |
| Protection of innovations | 15 | 33.3 |
| TOTAL | 45 | 100 |

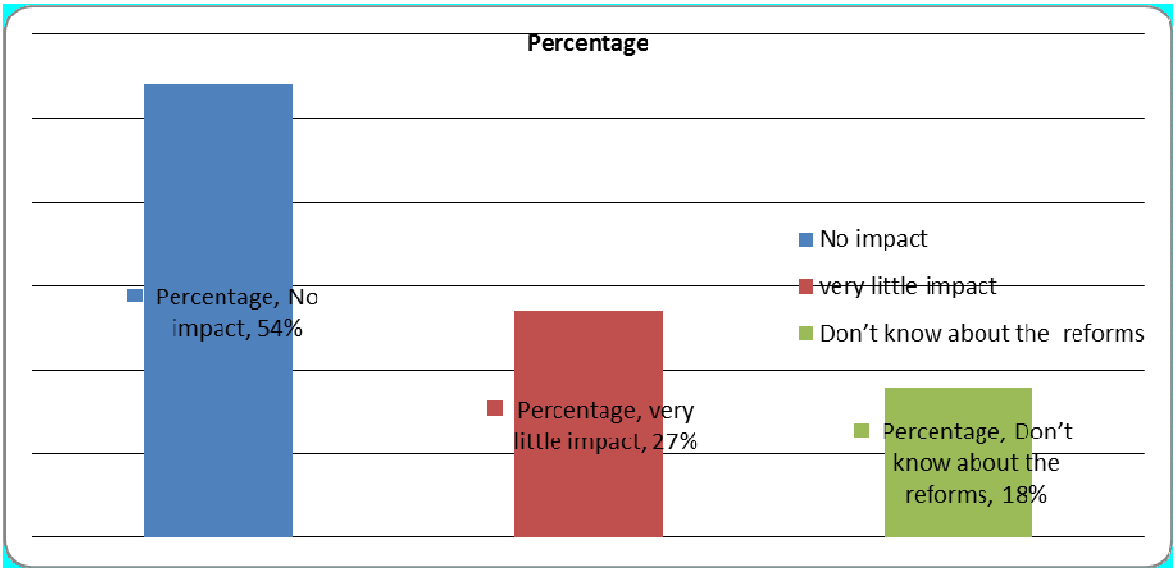
Source: Survey, Qn.6 N=45

**Impact of IP Policies in Universities**

The study sought to establish the impact of the current IP Policies of universities in motivating innovations in universities in Uganda as a whole. The Figure 2 below shows details of the analysis that, the current IP Policies might not have tackled the issue of

motivation of innovations and commitment of researchers and it is disheartening to note that a majority of researchers were not familiar with the current IP Policies. The situation is further exuberated by the fact that, even the section of researchers who were knowledgeable about the IP Policies argued that they had no impact on their individual motivation to produce more innovations.

**Figure 2: Analysis of the impact of current IP Policies on individual researchers**




Fifty four percent of respondents felt that the current IP Policies did not address issues of staff motivation and commitment to produce innovations and therefore had no impact on individual motivation because the IP Policies focused on protection of IP assets of the university and running of an Intellectual property and technology transfer Unit within

the university. Only twenty seven percent of respondents acknowledged there was very little impact of the IP Policies on individual motivation to produce more innovations because after commercialization of research, there was slight hope of getting financial loyalties although after commercialization of that research which is indeed after a very long period and after the university has removed all its expenses. Meanwhile, Sixteen percent of respondents indicated that they did not know about the current IP Policies and their related reforms to increase innovations. This seems to suggest that, whereas the universities might be implementing their Intellectual Property Management Policies within their institutions the mode of implementation is not well streamlined and clearly targeted towards increasing innovations within the universities making it difficult for the beneficiaries who are the researchers to appreciate such efforts.

**Analysis of the Levels of interaction with IP Office**

**Table 16: Level of Interaction with IP Office**

| **Number of times for interaction** | **Frequency** | **Percent** |
|---|---|---|
| Over 10 times a month | 5 | 10% |
| 5- 9 a month | 30 | 60% |
| 1- 4a month | 10 | 30% |

**Source: Qn. 8 N = 45**

**Analysis of the Level of satisfaction with IP Policy on promotion of Innovations**

**Table 17: Level of satisfaction with the IP Policy on promotion of innovations**

| Level of satisfaction | Frequency | Percent |
|---|---|---|
| Excellent | 0 | 0 |
| Satisfactorily | 0 | 0 |
| Not Satisfactorily | 5 | 20 |
| Very poor | 40 | 80% |
| | | 100% |

**Source: Survey Qn. 9 N = 45**

**Level of clarity of IP Policies of universities**

**Table 18: Level of clarity of IP Policies of universities**

| Level of clarity of IP Policies | Frequency | Percent |
|---|---|---|
| Completely clear | 0 | 0 |
| Somewhat clear | 5 | 20% |
| Somewhat unclear | 20 | 40% |
| completely unclear | 20 | 40% |
| | | 100% |

**Source: Survey, Qn. 9. N = 45**

**Analysis of the relevancy of IP Policies on innovations**

**Table 19: Level of Relevancy of IP policies on Innovations**

| Level of Relevancy of IP Policies | Frequency | Percent |
|---|---|---|
| Very Relevant | 10 | 30% |
| Not Relevant | 35 | 70% |
| | | 100% |

**Source:Survey. Qn. 10 N = 45**

**Level of prompt handling of IP assets by IP Office**

**Table 20: Level of Prompt handling of IP assets by IP Office**

| Level of Prompt service Delivery | Frequency | Percent |
|---|---|---|
| Very Prompt | 5 | 10% |
| Not prompt | 40 | 90% |
| | 45 | 100% |

**Source: Survey: Qn. 11 N = 45**

**Analysis of willingness by the Researchers to disclose their innovations to IP Office**

**Table 21: Level of willingness to disclose innovations to IP Office**

| Willingness to disclose innovations | Frequency | Percent |
|---|---|---|
| Yes | 10 | 40% |
| No | 35 | 60% |
| | 45 | 100% |

**Source: Survey: Qn. 12 N = 45**

Whereas the respondents recognize the role of the universities as the providers of innovations, as illustrated in **table 15**; most of the respondents clearly expressed their dissatisfaction with the production and handling of innovations citing, lack of customer care and clarity of IP Policies indicated in **tables 16 and 17**, limited relevancies of IP Policies and slow prompt service delivery, illustrated in **tables 18 and 19**. And that is why there is great hesitation to disclose innovations to the universities by the researchers and innovators as illustrated under **table 20** translating into low Staff motivation and slow Effective Service delivery and hence limited innovations.

The above scenarios as reflected in the responses from the respondents are a clear manifestation that the dissatisfaction expressed by the researchers translates into actual limited production of innovations in universities.

This is quite unfortunate, given the fact that, the Ugandan economy is now liberalized hence very competitive and it is heavily relying on the universities to translate its economy a testimony being supported by the recent strategy by the government to support innovation Centre at Makerere University. Unless the universities improve their conditions of service within the IP Policies it is bound to lose the already well researched ideas and innovations as evidenced by the levels of over publication of innovations in the Ugandan media before effective protection has been secured. In the next chapter the general conclusions from this study are presented

# CHAPTER 5: CONCLUSION

The central guiding question for this study was: How an IP Policy can be used as a tool for innovation in universities in Uganda

The study revealed that there is very low production of innovations and commitment in universities. The IP Policies are characterized only by protection, benefit sharing and bureaucratic procedures of commercialization of research among other issues in Universities

The study has also shown that there are three major factors that may increase innovations in universities like better benefit sharing, job security, promotions, access to training opportunities. The study revealed several factors hindering innovations and these include poor remuneration, inadequate reward and recognition system, bureaucratic procedures and processes that kill creativity and innovation and slow career growth as the promotions take long to come.

The study has shown that the IP Policies in Ugandan universities did not contribute to increase and motivation of innovations among universities as it addressed other aspects like issues dealing with university IP asset protections and loyalty benefit sharing. This study has revealed that IP Policies that will highly motivate and increase innovations in Ugandan universities must address salary scales, the bureaucratic systems and procedures that stifle innovation and creativity among researchers among other factors.

The findings of this study indicate that IP Policies that will increase and motivate innovations in the universities must address the intrinsic factors such as achievement, recognition and appreciation. Researchers and innovators must have to feel valued and fulfilled.

**Recommendations**

The findings in this study have revealed some of the challenges that are still faced in the universities specifically in terms of production of innovations. Given the recurrent resource scarcities that characterize many developing nations, costly options for increasing innovations in universities in Uganda such as salary increments must be done with a lot of prior planning. Such planning cannot start anywhere else other than with the proper exposition of the officers to other forms of intrinsic strategies of increasing innovation as opposed to extrinsic ones only. Clearly, the study has shown that production of innovations is very low as evidenced by the inefficient and poor protection of innovations on national, regional and international protections. It is also evident that the current IP Policies of the universities have had little or no impact on the increase and motivation of innovations in universities and therefore several strategies using IP Policies need to be instituted and these should take into account the intrinsic factors that motivate different individuals to innovate. The following recommendations are therefore proposed

### 5.1 improve welfare of the researchers and innovators

To ensure increase of innovations in universities, Government and universities need to urgently revise the salary scales of researchers and innovators to match the standard of living and the human resource market in general. This will not only motivate them but it will also help them to concentrate on breeding and creating innovations.

### 5.2 Reduce the bureaucratic procedures

The study recommends that the service should overhaul its systems and procedures to allow for innovation, creativity and quick decision making. Most of the procedures, rules of the service are too rigid and leave no room for innovation, universities using their IP Policies should therefore focus on reviewing, re- engineering of the current processes and procedures by putting away what does not add value and what is simply time wasting while handling innovations from the laboratory stage to the market place.

### 5.3 Streamline reward and promotion systems in the service

Most respondents considered the process of promotions too slow and not free and fair. This study therefore recommends that unless one is incompetent, in disciplined he should grow in the system, one should not stay at the same rank for over five years as long he/she is innovating. Where there is no vacancy to which a person should be elevated, a desk promotion should be effected to avoid the kind of stagnation which is currently rendering creating innovations unattractive in universities.

### 5.4 Improve the working environment

This study recommends an improvement in the working environment for academicians and researchers. Adequate outputs and outcomes are never realized if tools and inputs are insufficient. All efforts should be made to provide adequate facilitation for researchers to do their work. Researchers and innovators should be availed with the necessary tools, equipment and inputs requisite for the proper discharge of their duties and their workplaces should also be comfortable enough and their environments free of stress. This will make the researchers think better and enhance its capacity to be more creative and focused, and thus increase innovations.

### 5.5 Universities should first of all know what Researchers want before implementing the IP Policies in their Universities

President Eisenhower said, "Leadership is the ability to get people to do what you want because they want to do it". A key concept of management is **"**to find out what a man wants and make a deal with him"[1].This study recommends that universities should not just assume and come up with IP Policies but should find out what researchers and innovators want and make a deal with them. This study revealed that all the current IP Policies much as they touched important aspects of IP asset management, they did not handle aspects and strategies of using them to increase innovations in universities. The study recommends for a number of measures which government and universities should implement in order to increase innovations within universities such as;- improvement of

salaries and general welfare of the researchers, as well as reviewing the bureaucratic procedures and processes that have crippled our Ugandan universities.

**Concluding remarks:**

While it remains widely believed that universities should provide innovations efficiently and effectively, provision of motivating conditions for researchers and innovators remains vital. Generally, as developing countries like Uganda aspire for effective and efficient delivery of innovations by universities, critical focus to de motivating factors as those revealed in this study will remain central to unraveling and supporting the complexity of motivating researchers and innovators on meager budgets in the future. Specifically, making effective choices about when, when not and how to motivate researchers and innovators, will remain a crucial issue in how the universities can harness the productivity of its workforce effectively by producing innovations in Uganda.

Further research about this study using more longitudinal methods involving researchers and innovators at various stages of their work-life in universities and other tertiary institutions may be needed. Such a study should aim at the development of models on successful strategies for using the IP Policies to change and motivate researchers and innovators as they rise through the different levels of research and innovation, this will probably aid the government and universities on the appropriate methods of motivating the different categories of researchers and innovators in continuously producing innovations in universities.

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