

**ASSESSING THE CHALLENGES OF PATENT AND RESEARCH EXEMPTIONS ON RESEARCH CAPACITY  
AND UTILIZATION IN UNIVERSITIES, RESEARCH INSTITUTIONS AND INDUSTRY IN BOTSWANA**

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## **ABSTRACT**

The study analyzed the opinion of a stratified sample of 366 people from universities, research institutions and industry in Botswana on how patent regime and research exemptions impact on their research capacities and utilization of research outputs. The results of the study showed that although awareness of the use of patent rights to protect their invention was low (67%), the utilization of patent was extremely very low (8%). In addition, over 75% of the respondents were convinced of the need of granting universities and research institutions statutory research exemptions. In their view, granting such exemptions will enhance the researchers' abilities to verify the truthfulness and accuracy of patent claims, and be able to compare old and new technologies. The study therefore recommends that (i) the IP Unit in the relevant ministry needs to adopt a more proactive role by sensitising people, especially those whose activities may result in inventions, about their IP rights, how these rights can be protected, the advantages of protecting their rights to inventions through patents and the patent procedure. Information literature contained in leaflets and other types of flyers should be widely used; (ii) The Tertiary Education Board, which is the supervisory body for education in the country needs to formulate an IP policy which should guide all the tertiary institutions in the country; (iii) The existing legal framework on patent rights and research exemptions in Botswana need to be made more effective; (iv) The Government, tertiary institutions and industry must be compelled to allocate funds for research and innovation; (v) Financial incentives, possibly through a 50/50 sharing of royalties from patents should be introduced; and (vi) Academic institutions should device well-publicised schemes to recognise and reward innovative initiatives by staff.

**Key words:** Patent, Research Exemptions, Intellectual Property, Awareness

## **The Research Problem**

This study focuses on the patent system and research exemption in Botswana. Patenting is a key tool in promoting research and innovation. Article 24(3) a(iii) of the Botswana's Intellectual Property Act 1996 as amended by the Industrial Property (Amendment) Act 1997 has provision for patent and research exemption. However, the level of awareness and knowledge researchers in the country have of this provision in the Act and its application to

promoting research and innovation is very unclear. An empirical study to determine researchers' level of awareness of patent and research exemption is, therefore, critical in developing interventions that would improve researchers' motivation to innovate for development and influence positively the trend in research capacity and utilization of research outputs in the country. This study, therefore, assesses the challenges of patent and research exemptions on research capacity and utilization in universities, research institutions and industry in Botswana.

## **Objectives**

The general objective of this study is to determine how patenting and research exemption have impacted on research capacity and utilization of research outputs in the universities, research institution and industry in Botswana

The specific aims and objectives are:

- (1) Determine the extent of patenting in the universities and research institutions in Botswana, and their interrelationship with industry and firms in Botswana;
- (2) Assess how patenting and research exemptions have impacted on the quality and quantity of research output and utilisation in the universities and research institutions;
- (3) Examine the extent of usage of research exemption in Botswana; level of support given to research and research development in Botswana by both the public and private sectors; and the challenges researchers are facing as a result of the patent laws;
- (4) Review the decided cases on the violations of patent rights in Botswana since independence in 1966 and the interpretations of the clauses in the Industrial Property Act 1996 by the courts; and
- (5) Make recommendations to the Government of Botswana, researchers and other stake holders based on the findings.

These objectives were attained in the study. For instance, the results of the analysis showed that utility of patent was very low (8%) due to low awareness of the patent regime and its utility to improve researchers' income base and innovation. Only a small percentage of researchers knew that they could conduct researches on patented invention without infringing

on the right of patent owner by invoking research exemption. There were no cases of violations of patent rights in Botswana since independence in 1966 and a review of all registered patents in Botswana showed only 0.5% of the local population had ventured into registering any patent. The level of support for research by Government of Botswana, the private sector and the institutions was very inadequate and researchers were very dissatisfied with the level of funding. Recommendations have been made through seminars.

## **Methodology**

The study targeted the researchers in all the higher educational institutions, the research institutions, companies and industries in Botswana. It involved a visit to the Department of Registrar of Companies where the records of all registered patents in Botswana, before and after independence in 1966 are kept. In addition, two Focus Group Discussions were conducted to gain more in-depth information on the responses to the quantitative research component of the study.

A total sample of 572 researchers was determined for the study using Raosoft (2004), a sample size calculator, with 99% confidence interval (allowing an error of plus or minus 5%) (See also, NCS Pearson, 2004). The proportionate stratified random sampling method was employed in this study. This sample was allocated to the different strata representing the various institutions, industries and companies using probability proportional to size. This method ensured better representation of all sub-groups of the population in the sample and more statistical precision than the simple random sampling.

The purposive sampling method (a non-probability sampling method), whereby only those possessing the particular and desired characteristics are selected, was employed in identifying members of the sample from the science-and engineering-based units of the population. This ensured that those to be captured would have been involved in some form of research that might lead to some type of inventions. The snow ball technique, whereby a researcher interviewed is also asked about his/her knowledge of any other researcher who has made some in-route into technology, was also employed in the study.

The study used three research approaches, namely: documentary analysis/evidence, questionnaire and focus group discussion (FGD) to collect data. The documentary analysis, a qualitative approach, reviewed existing literature on patent and research exemption as

applicable to Botswana and internationally. Furthermore, it reviewed the records of reported cases to identify any cases dealing with the infringements of patents rights within the country since independence in 1966. The current law as contained in the Industrial Property Act 1996 and related documents were analysed in the light of provisions made to protect researchers from infringement on IP.

The questionnaire had 5 parts; Part 1 of the questionnaire solicited general information on the researchers including the type of organizations they were working for. Part 2 contained 16 questions on patent awareness, patent applications, and types of inventions, how patent has affected research motivation and problems with patent application and processing. Part 3 contained 8 questions on IP rights management. Part 4 contained 17 questions on research exemptions: its awareness, procedure and reasons for invoking research exemptions, and effect of research exemptions on research capacity and utilizations. Part 5 contained open-ended questions which solicited from the researchers their opinions on best practices to prevent a drop in research motivation and the circumstances under which the negative impact of patent monopoly can be mitigated by research exemption.

The questionnaires were administered on the researchers by trained research assistants who ensured that all the relevant ethical considerations were taken into account. They ensured that all potential participants in the study were contacted at their work place. The nature of the study was explained and each individual had an opportunity to decline or participate in the study. For those who volunteered to participate, the research assistant administered a questionnaire in English. Confidentiality was maintained by assigning a code number to each questionnaire. The participants were informed that there was no payment for participation. At the end of the data collection, a total of 366 questionnaires were returned giving a response rate of 70.4 percent. This response rate is very much higher than those of Hansen et al (2004), in a similar study conducted on American Association for the Advancement of Science Community in United States of America.

The questionnaire was validated for content, ambiguity, clarity, data quality and time needed for the survey by testing it on a representative population, as those being studied and drawn from the University of Botswana, before being used for the main study.

Two focus group discussions (FGD) were organized, one at Maun in the northern part of Botswana and the other at the University of Botswana in the South Eastern part of the

country. The FGD provided an in-depth understanding of answers to some of the questions in the questionnaire and a better understanding of why people were not making use of the available facilities to register their inventions and how the negative effects of patent monopolies on research can be reduced through invoking research exemption.

Data were captured and analysed using the SPSS programme while the qualitative data were captured through recorders, tapes and later reviewed. The data analyses used descriptive and inferential statistics.

### Project Activities

The activities conducted with the resources provided are summarized in Table 1, which also shows the time lines.

**Table 1: Key activities and time lines**

Item	Key Activity	2008												2009			
		Jan.	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct.	Nov	Dec.	Jan	Feb	Mar	
1	Application for research permit	■	■	■													
2	Consultation with relevant ministries/publicity		■	■													
3	Recruitment and training of research assistants/data entry clerks			■													
4	Identification of Study Sites/mapping			■	■												
5	Pilot Survey/Analysis/				■												
6	Key informant interviews					■	■	■									
7	Literature Review	■	■	■	■	■											
8	Data collection						■	■	■								
9	Data entry/editing									■							
10	Data Analysis										■	■	■				

11	Report writing																		
12	Presentation of preliminary Report																		
13	Finalizing the report and submission of report																		

The project took the research team to various parts of the country, research institutions and industries. It offered us an opportunity to interact with individuals, institutional heads, and researchers on the issue of patent regime and research exemption. At the diamond mine in Jwaneng, Botswana, for instance, the research team gave a presentation to the team of researchers in the mine on patent and research exemption before administering the questionnaire. At the end of the talk they became more conscious and aware of how they could utilize their inventions to advance their economic base and those of the institution. The Focus Group Discussions further gave the team of researchers a firsthand opportunity to find out what people really know about patent and research exemptions. The series of discussions that went on during the meeting further developed participants’ knowledge on the patent regime and research exemptions. The study also expanded the researchers’ ideas on the topical issues. The study has revealed that although researchers are aware of the existence of patent regime yet it is not being utilized. Public education on the utility of patent to researchers would be a viable direction to move in the study.

**Project Outputs**

1. The project report has been submitted to IDRC, reviewed and corrections effected and will be resubmitted along with this technical report.
2. Two papers have been written and sent to journals for publication and the reviewers’ reports are being expected.
3. A paper was presented at the Science with Africa conference in Addis Ababa, Ethiopia, 23-25 June 2010 titled “Awareness, knowledge and utilization (AKU) of patent and research exemptions in academic institutions and industry in Botswana”.
4. As part of the dissemination process, the results of this study will form a chapter of a book due to be published by IDRC.

5. 15 undergraduate students who took part in the data collection were trained on patent and research exemptions, data collection process and research ethics. Many researchers benefitted on the explanation of the patent and research exemption concepts during the data collection.

### **Project outcomes**

The study took the researchers to various institutions and industries throughout the country. It is our belief that many researchers have benefitted from the research as they have better understanding of the patent regime and research exemption through our interactions with them. For those who participated in the study, there is greater awareness. It is expected that the recommendation on education of researchers on the patent regime and its utility, if applied, would create yet greater awareness on the part of the researchers and improve their research base and capacity.

### **Overall Assessment and Recommendations**

This project has further broadened our research base and brought us closer to IDRC and other researchers in Canada. IDRC has so far funded us on a number of dissemination trips, namely the meeting of researchers, 21-22 October 2009 at Ottawa, the Science with Africa Conference in Addis Ababa, Ethiopia, 23-25 June 2010, and the Book writing Workshop at the University of Botswana, 28 June -2<sup>nd</sup> July 2010. Several research options are now open to us.

We sincerely appreciate and thank IDRC for all they have done for us so far using this project as base and hope that they would release fund for district dissemination of the results of the research. We actually plan to move to the 9 districts where this study was conducted and brief them on the outcome of the project. This cannot be accomplished without additional funding and we propose that a budget of CAD 10,000.00 will accomplish this. This would cover travels, feeding and accommodation for the research team and production of materials for dissemination.