

# Technology Protection Initiatives of Samar State University for Potential Revenue Generation

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## Abstract

*Samar State University (SSU) was established in 2004. As a university, it was expected to lead in the generation of technologies among others as a major product of a university. Through the guidance of the university R&D roadmap, SSU was able to enhance its R&D culture that lead into increased R&D productivity where technology innovation is given much importance. This paper looked into SSU's initiatives in protecting its technological innovations for possible revenue generation which can be derived through commercialization. It also determined the innovation patterns of each science areas and whether these innovations are viable or not. SSU protects its technologies in its aim to generate income from it and be able to augment the very meager funds it receives from the government. This goal is yet to be attained as it has not generated much from its technologies developed. There is a need for SSU to re-examine its research thrust and priorities to make the goal of generating income from intellectual products, specifically technology.*

Keywords: Income generation, technology protection, intellectual production, property, university IGP

## I. INTRODUCTION

The impact of research and development on national economic performance and economic growth is very evident. Various studies have shown that economic progress is driven by innovation and application of new technologies. It is one of the measures of innovation performance and source of productivity growth and stability (Aghion and Howitt, 1992; Griffith, Redding and Van Reenen, 2004; Griliches, 1981; Jones and Williams, 1998). Further, research and development produces new ideas and highly valued inventions that could be a potential revenue generation.

Hence, first world countries such as the United States of America invest the largest share in the world in R and D capital (Zinberg, 1986).

Obtaining the proper protection for intellectual property (IP) is critical. IP protection is a lifeline to high technological industry development (Haiyan, 2010). Failure to understand the value of IP protection could lead to serious threat to an organization such as reduction of potential

profits and incentive for further innovation (Falvey & Foster, 2006). On the other hand, protection of technology reduces the competitors in the market and can generate revenue from licensing.

In the Philippines, patent filings over the last five (5) years from 2009 to 2013 have seen a slow growth wherein patent filings from non-residents rose to 3,074 in 2013 from 2,825 in 2009; while resident applications rose to 214 from 2013 from 172 in 2009. Patent grants on the other hand, rose to 1,906 in 2013 from 1,657 in 2009 for non-resident applicants; conversely resident applicants were down to 7 in 2013 from 22 in 2009 (IPO Annual Report, 2013). Data also showed that protection activities are still dominated by foreign applicants who want to protect their inventions in the country.

With the creation of the Innovation Technology and Support Office (ITSO) network which aim is to strengthen the capacity of local institutions to access patent information and use the patent system in 2012. However, it is hope that the state of the Philippine Patent System will improve in the next years.

On March 16, 2012, Samar State University (SSU) signed a memorandum of agreement (MOA) with the Intellectual Property Office (IPO) to host a patent library called the Innovation Technology and Support Office (ITSO) and became a member of the network. This step has opened new doors for protection and innovation of its valued technologies and begins its venture for commercialization.

At present, three of the SSU utility model applications have already been granted. One of which won the 2013 Regional Invention Contest and Exhibit (RICE) of Region 8 as the Best Utility Model (Process of Fermenting Rock Oyster) and qualified for the 2014 DOST National Invention Contest and Exhibits. Another

application, though not yet granted also won 2<sup>nd</sup> Prize of the Outstanding Student Creative Research (Sibol Award) and the 1<sup>st</sup> from the PhilDAF Special Award in the 2012 National Invention Contest and Exhibits (NICE) with the project "Smart E-Loading Machine." The university has now a total of four patents and fifteen utility model applications since 2012.

## **II. SAMAR STATE UNIVERSITY DEVELOPED TECHNOLOGIES**

The following are the SSU protection initiatives filed at the Intellectual Property Office:

**Portable Fruit Slicing Machine**  
(Application No. 1-2012-000031;  
Published at E-Gazette VOL XVII No. 36 on 31/03/2014)

This invention relates generally to fruit slicing machines. This invention provides a mechanized fruit slicing machine for efficient performance in longitudinal slicing of raw peeled banana to be processed into banana chips. This technology was developed to address the banana chips industry technology problems in the locality, thereby increasing productivity of banana chip entrepreneurs and eliminate, if not reduce, the risks faced by workers using a similar manual banana slicing technique.

**Bamboo Tray Module**  
(Application No. 1-2012-000383;  
Published E-Gazette VOL XVII No. 73 on 30/06/2014)

The invention discloses a new farm model bamboo tray module innovated for mussel culture/farming. The primary object of this innovation is to develop a mussel farming model that has high allocation efficiency in the use of bamboo poles as mussel larvae settling habit. It has been found that the allocation efficiency or the efficient use of bamboo poles when submerged in the

water column as mussel settling habit can reach up to 96.44% of the total surfaces compared to only 53.33% in wigwam model and 58.03% in staking model.

**Organic Piscicide from *Lantana camara* and *Adenium obesum* leaves  
(Application No: 1-2013-000308)**

This invention relates to an organic piscicide comprising *Lantana camara* and *Adenium obesum* leaves for controlling fish species population. It has been found out that combining the two leaves is an effective toxicant for controlling undesirable fish populations. The invention also provides a process for making an organic piscicide that is environment-friendly and degrades readily.

**Method for Making Smoked Squid  
(Application No: 1-2013-000309)**

This invention relates to a method for making smoked squid having new and pleasing flavor and tenderness. The smoking technology was developed using the squid or “bakag” as raw material to improve the existing squid technology and to enhance nutritional quality and safety of the product.

**Process of Fermenting of Rock Oysters  
(Registration No: 2-2012-000067;  
Granted 15/02/2013)**

This process relates to the fermentation of rock oyster (*Saccrostrea cucullata*). This technology was developed to improve the current technology used in the locality in fermenting rock oyster. It was found out the current technology was primitive, unhygienic and of poor quality.

**Method for Making Pandan (*Pandanus amaryllifolius*) Gel Cockroach Repellent  
(Registration No: 2-2012-000074;  
Granted )**

This utility model relates generally to an insect repellent and more particularly to a non-toxic cockroach repellent from pandan (*Pandanus amaryllifolius*) gel. The object of the present utility model is to maximize the benefits of *Pandanus amaryllifolius* into more lasting, non-toxic and safe cockroach repellent by turning it into gel.

**Process of Making Biodegradable Plastic  
(Registration No. 2-2012-000074; Granted  
15/02/2013)**

This utility model relates generally to the process of making biodegradable plastic materials made from glycerin, vinegar, powdered agar and cornstarch.

**Rock mounds as oyster beds  
(Application No: 2-2013-000498)**

This utility model relates to a method of constructing artificial bed for easy harvest of oysters. The rock mound is a structure constructed comprising of sedimentary rocks (limestone) for the purpose of forming an artificial bed or a growing cultch for small rock oysters. This was conceived as a simple aquaculture technology in order to test and to grow small rock oysters so as to provide a source of food protein and income.

**Method for Making Camote Tops Ice Cream  
(Application No: 2-2013-000502)**

This utility model relates to a method for making healthy ice cream, particularly an ice cream containing young camote (*Ipomoea batatas*) leaves and an ice cream made according to this method.

**Method for Producing Glycogen  
from Green Bay Mussel (*Perna viridis*)  
Liquid Stock (Application No: 2-2013-  
000503)**

This utility model relates to a method

for producing glycogen from green bay mussel (*Perna viridis*) liquid stock. It is the object of this technology to utilize the liquid stock generated in the processing of green mussel products that is put into waste and utilized into more useful glycogen.

#### **Ethernet-Based Room Attendance Monitoring System** (Application No: 2-2013-000499)

This utility model relates to attendance monitoring system using fingerprint scanner to verify users and Ethernet technology for broadcasting attendance in a local area network (LAN) or Internet. It is the intent of the present utility model to monitor and to record the attendance of every room user using biometric scanner wherein the data is accessible through the local area network.

#### **Automated Mosquito Attractor and Killing System** (Application No: 2-1013-000497)

This utility model relates to an automated system for attracting and killing insects, more particularly using combination of attractants and using electricity for killing mosquitoes. It also aims to provide a mosquito attractor and killing system that has a higher chance of attracting mosquitoes with wireless automation feature using mobile phones as a remote control.

#### **Air Quality Monitoring System** (Application No: 2-2013-000504)

This utility model relates to a monitoring system using radio frequency (RF) technology to monitor air quality of a particular area. The objective of the utility model is to provide low-cost and purely embedded system that may be used for remote monitoring using wireless technology.

#### **CMOS-based and SMS-featured AC Power Outage Monitoring System** (Application No: 2-2013-000500)

This utility model relates generally to a monitoring system for power outage, but more particularly a non-contact C-MOS based and SMS-featured monitoring system. This appertains to the monitoring system in a power distributing company and can potentially increase the reliability and functionality of its monitoring and minimize cost of materials and operations.

#### **High/Low Voltage Circuit with Time Delay Circuit** (Application No: 2-2012-000066)

The utility model relates generally to an appliance protector featuring high/low voltage cut-off with time delay, voltage monitor and short circuit protection. It is the object of this project to safeguard not only the life of the appliances but also for the homeowner. The under/over voltage protection circuit with time delay presented here is a low-cost and reliable circuit for protecting such equipment from damages. Whenever the power line is switched-on, it gets connected to the appliance only after a delay of a fixed time. If there is hi/low fluctuations beyond set limits the appliance get disconnected. The system tries to connect the power back after the specific time delay, the delay being counted from the time of disconnection. If the power down time (time for which the voltage is beyond limits) is less than the delay time, the power resumes after the delay if it is equal or more, then the power resumes directly.

#### **Smart E-Loading Machine** (Application No: 2-2012-000257)

The utility model relates generally to an electronic loading machine, but more particularly to a do-it-yourself prepaid mobile phone loading system. Smart

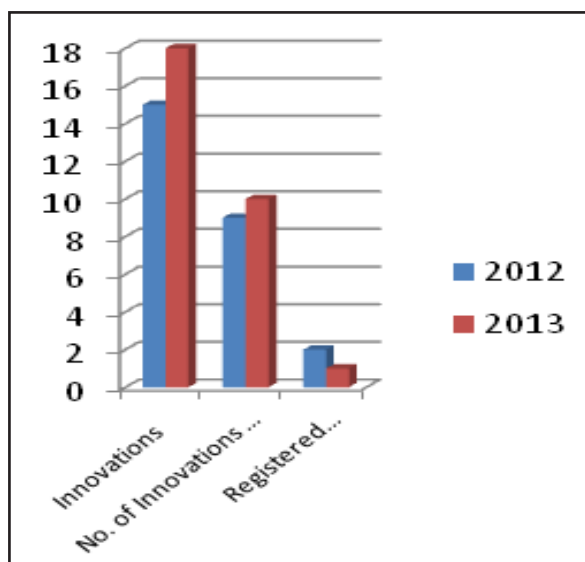


Figure 1 SSU no. of innovations per year

e-loading machine system provides a new method of prepaid reloading mechanism which is a do-it-yourself service since it is a stand-alone machine. With this machine, the costumer can easily load on their own without the hassle of divulging their numbers with the load retailer and ensuring additional security for their privacy.

#### **Turning Tool for Lathe Machine (Application No: 2-2012-000068)**

This utility model relates to a machine tool attachments but more particularly to a turning tool for the lathe machine used to carve curvatures and circular formations to metals. This technology provides a turning tool that facilitates the loosening or tightening of sprocket, nuts or bolts, which is easy to manufacture, easy to use and inexpensive.

#### **Student School Attendance Monitoring System (Application No: 2-2012-000065)**

This utility model generally relates to monitoring systems but more particularly to a student school attendance monitoring system using fingerprint-based school entrance/exit logging device and short message service (SMS) enabled system.

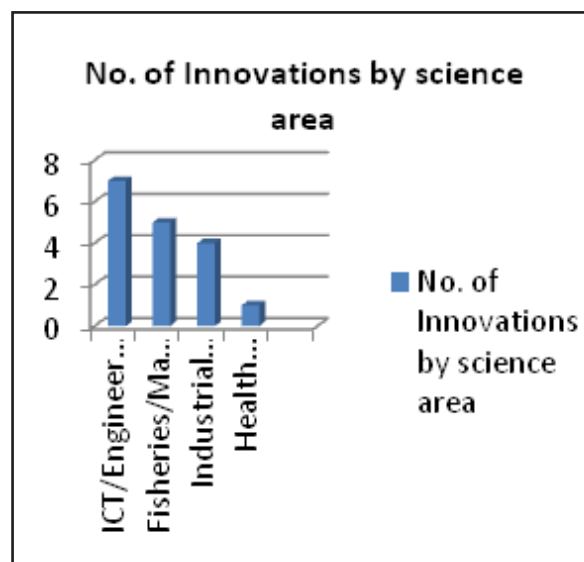


Figure 2. SSU Innovations by science area

#### **SMS Controlled Electronic Display Board (Application No: 2-2012-000258)**

This utility model relates generally to an electronic display board, but more particularly to an SMS-controlled electronic display board. The advantage of this device to other electronic display board is that this device can be controlled using SMS. In other words, messages can be posted anytime and anywhere as long as network signal is present.

### **III. RESULTS AND DISCUSSION**

Figure 1 presents the number of innovations claimed by SSU which are being applied for patents and the number that are registered for each year since 2012. In 2012, there are about 15 innovations, eight of which were applied for patent and utility models. Out of nine, two are already granted while one patent is already published on the IPO e-gazette and the other six still await for examination report from IPOPHIL. In 2013, there were about 18 innovations and 10 of them were applied for protection. One of the utility models was already registered while the other nine (9) stills awaits for amendments and approval.

It could be noted that there is an increase



of innovations produced by the University every year.

Figure 2 categorizes the innovations in the science area. It could be gleaned on the figure that ICT and engineering innovations dominate in SSU with seven or 39% applications while health science having the least innovation with only one (1) or 5% of the total innovations applied.

Based on the data, most of the SSU applications are inclined on ICT/engineering and fisheries/marine sciences areas. Twelve (12) out of 19 applications falls into these areas mentioned. Other technological applications include the production of glycogen from green bay mussel which is pharmaceutical/health in nature.

#### IV. CONCLUSIONS

With all the technology developed by SSU and other universities in the Philippines, the challenge now lies not on the number of technologies protected but how Philippine universities could generate revenues from these protected technologies and what technologies should be developed to generate revenues.

In the international arena, the Association of University Managers did a survey in 2006 which tracks university-born patents and licensing revenues. The study revealed that most of the technologies that generated revenues are credited to the development of drugs. On top of the lists is New York University which pulled \$157 million with 75% ROI on Remicade, a rheumatoid arthritis drug developed along with Centacor and Johnson and Johnson. Ohio University earned 3.26 million with 13% yield on Somavert, a drug marketed by Pfizer to counteract the effect of the body overproduction of growth hormones. On the other hand, University of Minnesota generated 56 million or 9.4% yield on Ziagen, an HIV drug marketed by

Glaxo Smith Kline while royalty revenues of University of Massachusetts spike up to 27.2 million when they discovered a gene silencing technology to treat obesity and Type 2 diabetes-related diseases ([www.forbes.com](http://www.forbes.com)). Locally, according to IPR Head Atty. Anunciacion Ayo, the University of the Philippines-Manila researches on sambong and lagundi have already earned P15 million by way of royalties from licensee pharmaceutical companies (IPPAO, online).

#### V. RECOMMENDATIONS

Surprisingly, most of the revenues generated worldwide came from new drug developments or medical treatments. The revenue generated from these areas is overwhelming. Perhaps SSU should think of investing in discovering medicinal products specifically from marine life since the locality is rich in natural marine resources.

With the increase of technologies produced by the university each year, the University should consider different exploitation mechanisms of their technologies such as spin-offs, licensing and IP sale. The University should therefore maximize the value of their R&D.

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