MANUAL OF OPERATIONS

Research

Stakeholders

Innovation

Extension

PANGASINAN STATE UNIVERSITY
PILIPINAS
1979

OFFICE OF THE VICE PRESIDENT FOR RESEARCH, EXTENSION AND INNOVATION

Message from the University President

DEXTER R. BUTED, DBA

To be recognized as an ASEAN Premier State University is Pangasinan State University's indelible drive to steadfastly strive to become what it envisions. Amidst the odds, we have remained unmoved and committed towards achieving the apex of our goals' realization.

The Research, Extension and Innovation Manual of Operations is a tangible manifestation to this commitment. Our beloved university adheres to instituting research, extension and innovation relevant to national development.

The Research, Extension and Innovation (REI) agenda are anchored on the major functions of the university and research thrusts articulated in the National Higher Education Research Agenda 2 (NHERA 2) 2009-2018 of the Commission on Higher Education (CHED) which are central to technology development, economics business and marketing, computing, data banking and SMART analytics, health and food safety, nature, disaster and environment management, open and flexible education, lifelong learning and socio-cultural diversity, organization, industry and community involvement, governance and policy, youth, gender, adult, and indigenous group empowerment.

The University gears up to strengthen its capability in Research, Extension and Innovation to ensure that results are utilized for community development-strong research culture and technology transfer being one of its salient strategic goals.

To invigorate the efforts of the institution to build a Strong Research Culture, improvement of research generation has diligently been given due emphasis by empowering a network of REI Centers to produce quality and relevant outputs along Hydrology, Aquamarine, Natural and Ocean Sciences, Machine Automation and Technology Innovation Center, Integrated Agriculture Research and Development, Statistics and Computing Sciences, Data Analytics, Business, Economics and Tourism, History, Culture, Arts, Languages and Innovative Education, Health, Disaster, Risk-Reduction and Environment Management, Food Innovation and Human Welfare, Policy, Governance and Community Development thus encouraging interested researchers to engage in research presentations in the national and international conferences and publish their outputs in CHED Accredited journals, and ISI/SCOPUS/ASEAN citation-indexed publications.

Complementing the research competencies of the university, the Extension services Unit sustains and improves the conduct of training and professional avenues for extension implementers by spearheading benchmarking activities to other extension service providers and establishing more Techno-Demo facilities to reach out more beneficiaries including industries.

In order to keep paced with the demands of innovation in the 21st century, the university also worked on the establishment of the Innovation and Technology Support Office (ITSO) to facilitate access to global science and technology information – providing skills in patent search and drafting and other patent Intellectual Property (IP) information such as IP protection and utilization.

As to date, the Research, Extension and Innovation Division presses on actively delivering effective, efficient, sustainable, development-oriented, and high impact initiatives to improve and alleviate the quality of life of its stakeholders.

It is my sincerest hope that the university's role in the context of research, extension and innovation considering the growing demands of knowledge and technology in the regional, national and international arena, propel us to become better and eventually be at our best as a lead producer and provider of appropriate, breakthrough-knowledge and competitive technologies in the global community.

Message from the Vice President for Research, Extension and Innovation

PAULO V. CENAS, PhD

I want to extend my warmest congratulations to the men and women of the Research, Extension, and Innovation Team for the timely and relevant publication of the VPREI Manual of Operations which serves as the basic foundation of all the research and extension services of our beloved University. This manual, more than anything else, is a testament of our commitment to pursue excellence in whatever we do and perform our research functions correctly and efficiently.

By coming up with an integrated operational manual, excellent quality management is ensured which, in turn, allows our unit to achieve greater consistency in performing research activities and delivering extension services to the community. It helps us to realize our primordial task of pushing the frontiers of knowledge across disciplines and putting this knowledge into utilization. Moreover, this manual significantly helps us to avoid some operational lapses that may cripple the excellent performance of our duties and smooth delivery of our services. Above all, this manual demonstrates the interdependency and inseparability of the operations of the three core components of our unit: research, extension, and innovation. Though there are ten (10) research centers in the University, their operations, however, are standardized through this integrated manual that defines the best and most reliable practices and procedures that need to be carried out in the conduct of research and extension activities. Very soon, these ten research centers, which are closely linked with one another, will also have their manual of operations patterned after this REI Manual of Operations.

Guided by our mantra, we, at the Office of the Vice President for Research, Extension, and Innovation, commit our expertise and resources in the conduct of innovative research for extension. We recognize that the end goal of all our research undertakings in the University is to use them in practice in order to facilitate innovative changes that provide positive impact in the society as a whole.

With the newly-crafted Manual of Operations, I am confident that the researchers and extensionists in the University will be able to perform their tasks more efficiently and effectively.

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CHAPTER I
OVERVIEW OF THE RESEARCH, EXTENSION AND INNOVATION SYSTEM

1.1. Legal Bases of Research, Extension and Innovation

The role of Research, Extension and Innovation is deemed vital for in the general progress of any industrializing country like the Philippines. As per Article XIV, Section 10, of the Philippine Constitution, Science and Technology are essential for national development and progress. The State shall give priority to research and development, invention, innovation, and their utilization; and to science and technology education, training, and services. It shall support indigenous, appropriate, self-reliant, scientific, and technological capabilities, and their application to the country's productive systems and national life. Further, Section 12 of Article XIV stated that the state shall regulate the transfer and promote the adaptation of technology from all sources for the national benefit. It shall encourage the widest participation of private groups, local governments, and community-based organizations in the generation, promotion and production, utilization and commercialization of knowledge and technology.

Republic Act (RA) No. 8292 also known as the "Higher Education Modernization Act of 1997" mandates the governing board of the State Universities and Colleges (SUC) to establish research and extension centers of the SUC where such will promote the development of the latter (Section 4-m). Moreover, pursuant to RA No. 7722, and as reiterated in Commission on Higher Education (CHED) Memorandum Order No. 52, Philippine higher education institutions (HEI's) need to become platforms for research, innovation and extension in pursuit of inclusive social and economic development.

The innovation initiatives particularly of the DOST are supported by the enactment of RA No. 11293, known as the "Philippine Innovation Act" boosting the Philippines' global competitiveness by harnessing the power of science, technology and innovation. It also paved way for the establishment of the National Innovation Council (NIC) that works on a whole-of-government approach involving the coordination and collaboration of the different agencies of government to greatly improve the country's innovation governance and create synergy. As stated in R. A.8293, the "Intellectual Property Code of the Philippines, the state recognizes that effective intellectual and industrial property system is vital to the development of domestic and creative activity, facilitates transfer of technology, attracts foreign investments, and ensures market access for our products. It shall protect and secure the exclusive rights of scientists, investors, artists and other gifted citizens to their intellectual property and creation, particularly when beneficial to people. R.A. 10055 known as the "Philippine Technology Transfer Act of 2009", aims to promote and facilitate the transfer, dissemination and effective use, management, and commercialization of intellectual property, technology and knowledge resulting from Research and development by the government for the benefit of national economy and taxpayers. In view of the foregoing premises, research, extension and innovation are mandated function for institutions of higher education/learning to realize national development goals.

Pangasinan State University (PSU), inaugurated under Presidential Decree No. 1497, adheres to instituting research and extension and alleviate in the provision of advanced instruction in the arts, agricultural and natural sciences as well as in technological and professional fields. PSU is also mandated by the constitution to establish and maintain a complete, adequate, and integrated system of education relevant to the goals of national development and further prescribes that all educational institutions shall aim to develop scientific, technological, and vocational efficiency.

1.2. AGENDA OF RESEARCH, EXTENSION AND INNOVATION

The Pangasinan State University's Research, Extension and Innovation (REI) agenda are anchored on the major functions of the University and Research thrusts articulated in the National Higher Education Research Agenda 2 (NHERA 2) 2009-2018 of the CHED. The agenda form the acronym **TECHNOLOGY** which is the primary focus of REI.

1.2.1. Technology. Technology is the application of scientific knowledge for practical purposes particularly in industry or in our everyday lives. Basically, there are four processes in technology development such as invention, innovation, and, diffusion of technology. It covers the invention of technologies and even its commercialization through R&D, the constant development of technologies, and the diffusion of technologies throughout the industry or in society.

Technology Development supports the university's REI centers and the research and extension priorities of the university. To be developed are mostly focused on the emerging technologies such as robotics, industrial automation, mechanization, and digital fabrication that will definitely revolutionize the industry structure through provision of a shorter value chain, cost, and

time reductions resulting to the elimination of assembly steps, greater customization and design freedom, and minimal waste.

1.2.2. Economics, Business and Marketing. Economics study provides a systematic framework for analyzing, researching, writing, and teaching about a wide array of economic variables and issues. Understanding economic concepts, theories and their practical applications is aided with methodologies to make sense of the complex environment. Economic research is a way to better understand the working of the economics as a distinct discipline.

Economics research is relevant, timely and vital for undertaking sound socio-economic policies to achieve macro-economic goals such as lower inflation rate, higher employment rate, economic growth and economic development. This is removing barriers of freedom, sustenance and self-confidence, in simpler terms. Collecting and analyzing data to generate knowledge and information will help improve our understanding of economic trends to explain a wide and expanding array of activities on the various sectors of the economy such as agriculture, mining and other natural resource industries, manufacturing, construction and engineering, service industries, intellectual activities in education and research and for high level decision makers in the government or executives in the industry.

Both theoretical and empirical in nature, economic analysis can generate important insights from individual actor of the economy to aggregate behavior and relationships, and aid in society's efforts to utilize the limited resources in a more efficient manner that will benefit the majority of the people. And with a dynamic and rapid integration of economies in our region, business and marketing researches are indispensable components in shaping a better economy. Helping companies to understand the demand and supply of the market, business research will help firms to efficiently manage their resources, reduce costs, and create solutions or products that are targeted to what is demanded in the market. How customers and potential customers view a business can be determined with marketing research. Gaps can be easily known; thus, corrective actions to achieve high customer satisfaction can be done in the process. Strategies can be developed to appropriately address problems. Further, better knowledge on the organization, the markets, the economy, finance, and sales can be acquired with a business research. This in turn will generate innovation, higher employment, and stronger economy.

The partnership of the government, of the private individuals, businesses, state colleges and universities and the interdependence of economic and non-economic institutions play imperative part in achieving the ultimate goal, i.e. to improve the quality of all human lives and capabilities by raising people's levels of living, self-esteem and freedom.

1.2.3. Computing, data banking and SMART Analytics. Information Technology is central to our economy and to our society. It drives many of today's innovations and it offers enormous potential for further innovation in the coming decades. Moreover, Information Technology and the

information industry are driven forward in large part by the ideas and people that flow from programs of fundamental research in support of strategic directions.

Research Computing refers to the advanced computing resources, software, hardware, and personnel, which are required by researchers from any discipline. In the past this was often referred to as "supercomputing", but in today's university the requirements for supporting research go far beyond just providing a very fast computing platform. It is important that research in computing, information, and communications not be caught in the middle of a misguided debate over "basic" versus "applied" research.

However, in this data-driven world, Data Analytics has become vital in the decision-making processes in the Banking and Financial Services Industry. In Investment banking, volume, as well as the velocity of data, has become very important factors. Big Data Analytics comes into the picture in cases like this when the sheer volume and size of the data is beyond the capability of traditional databases to collect.

Today, data analytics practices have made the monitoring and evaluation of vast amounts of client data including personal and security informant data-driven and other financial organizations much simpler. Big Data is also used for personalized marketing, which targets customers based on the analysis of their individual buying habits. Here, financial services firms can collect data from customers' social media profiles to figure out their needs through sentiment analysis and then create a credit risk assessment. This can also help establish an automated, accurate and highly personalized customer support service. Big Data also helps in Human Resources management by implementing incentive optimization, attrition modeling, and salary optimization.

The list of use cases implemented in the workflows of the Banking and Financial sector is growing day by day. The huge increase in the amount of data to be analyzed and acted upon in the Banking and Financial Sector has made it essential to incorporate increase the implementation of Big Data Analytics. In the education sector, data on students' profile, customer satisfaction, variables affecting board passing rate and the like can be processed to come up with better educational polices or students' code.

Knowing the importance of data science is crucial in these sectors and should be integrated into all decision-making processes based on actionable insights from customer data. Big Data is the next step in ensuring highly personalized and secure banking and financial services to improve customer satisfaction.

The ability to use data to better understand the customer journey is imperative to creating an optimal customer experience. With the right technology, infrastructure, and analytics in place, it is now possible to unlock the full potential of this data for beneficial business outcomes.

1.2.4. Health and Food Safety. Everyone wants to be healthy and safe. We want to be in a good physical and mental condition, we want to have this state of being free from illness or injury. To maintain and promote good health, access to sufficient amounts of safe and nutritious food is key to sustaining life and promoting good health. This requires food safety. Food safety refers to routines in the preparation, handling and storage of food meant to prevent food-borne diseases and injury. From diarrhea to chronic disease such as cancer, food products are safeguarded from farm to factory to fork. Unsafe food containing harmful bacteria, viruses, parasites, or chemical substances can cause numerous diseases.

As a scientific discipline, studies on an effective handling, more efficient preparation, and storage of food in ways that prevent food-borne illness are researchable areas. Are protocols of canning or bottling goods are responsibly adhered to by manufacturer or home-made producers? Are the five keys to safer food such as keeping clean, separating raw to cooked, cooking thoroughly, keeping food at ideal temperatures and using safe water and raw materials being done responsibly?

Determining the causes of various types of food contamination such as chemical, microbial, physical, and allergenic contamination through data collection and laboratory tests may aid in avoiding these health hazards. Challenges in maintaining food safety such as food production and supply changes, considering more imported goods, climate change which can lead to food contamination, detection of multistate outbreaks, new and emerging bacteria or toxins are some researchable areas under "health and food safety".

In the food services industry, the effects of problems encountered to maintain food safety such as time pressure in restaurants, limited equipment and resources, ineffective management of workers in the food service industry, adequacy of training in food handling are some worth-considering to study. Are health protocols and compliance to government requirements to health and sanitation being complied by restaurants or *carenderia*? Are consumers satisfaction met by these food services?

In the workplace, health and safety is important as it protects the well-being of employers, visitors and customers. Workplaces which neglect health and safety, may lose staff, and may increase costs and reduce profitability in the process.

In biology, ethnobotanical studies may lead to scientific confirmation of tradition practices of treating diseases in the rural communities. Reviews of the treatment of bacteria- or virus-causing diseases can provide better perspectives for readers to ensure comprehensive understanding of the nature of diseases that may affect their lives, their families and love ones.

1.2.5. Nature, Disaster and Risk Management. Floods, forest fire, earthquakes, tsunami, cyclones, volcano eruption, spread of deadly virus, among other natural events are happening around us. Man-made disasters such as gas leakages, oil-spills, fire accidents, vehicle crashes occur due to accidents, technological mishap, terrorism and other factors.

Disaster Management can aid in mitigating these extreme events. Efficient management of resources and effective carrying our responsibilities for dealing with all humanitarian aspects of emergencies, in particular preparedness, response and recovery in order to lessen the impact of disasters.

Studies on the proper classification, good recording, and better analysis of disasters are researchable areas we can focus on. Identifying and assessing risks to control the threats these risks pose may help an organization to achieve its goals and objectives without sacrificing its quality service delivery to its stakeholders. Risk management, therefore, solicits strategic management approach in analyzing the risks identified, needs collaborative planning in evaluating, treating and monitoring the risk responses.

Efforts in the preservation and conservation of the environment by the government agencies, corporate firms, NGOs and private individuals can be documented on broader perspective and come up with a comprehensive assessment on its environmental impact—how are the initiatives help in lessening the impact of disasters; how the environment is preserved; how is the nature protected? Sustainable projects conducted in other countries can be benchmarked for adoption for better environmental management.

1.2.6. Open and Flexible Learning. Flexible Learning refers to the systems in which students may choose to complete some of their learning on-campus and some of their learning off-campus. A broad term used to describe the design and delivery of programs, courses, and learning interventions to cater to the demand of student for variety, access, recognition of diverse learning styles, and student control over and customizability of the learning experience. It is often incorrectly used in an interchangeable manner with other terms such as “distance learning,” “work-based learning,” as well as “e-learning,” which are all instances or forms of flexible learning in that they provide flexibility to the student in terms of time/pace, place, access, content, and/or delivery mode. This term describes a learning design perspective deeply rooted in the needs of students, with the main objective of providing them with the most flexibility about the learning content, schedules, access, and learning styles as possible. A flexible learning design customizes learning environments to meet the needs of learners, using both technological and non-technological tools. It is closely related to Blended Learning and Distributed Learning. This enables teachers and students to adapt to teaching and learning requirements at any given moment. Students can modify their learning environments to fit a variety of learning styles and activities ranging from individual to group exercises.

Today’s effective approach should be being that the teachers serve as mere facilitators promoting more of learner- centered activities. It is indeed an additional challenge on how to engage the child to participate actively in the lesson for the day. And as based on the difficulties or problems encountered by teachers of the new normal approach is to cope up new learning modalities, congruent with the learning competencies, program standard and performance standard. Within the new normal, the situation presents a unique challenge to every educational leader’s decision-

making process thus the topics on flexible learning is a priority for the research agenda to help stakeholders to cope up with the new normal. Meanwhile, the focus of open learning and distance education system is on open access to education and training. This is aimed at freeing the learners from the constraints of time and place; thus, it offers flexible learning opportunities to individuals and groups of learners.
Research on open and flexible learning is a pivotal tool to provide inputs for curriculum enhancement, better service delivery of educational institutions and inputs to educational policy making.

The extent of effectiveness of flexible learning may be measured on the self-efficacy of students as they are given more freedom in how, what, when and where they learn. Researches on how to best support students' flexibility can be a new area of study given the new normal we are facing due to the pandemic. Instead of a standstill, online learning becomes a trend in the education sector. The safety and pitfalls of synchronous and asynchronous ways of online teaching can be explored. The level of emotional intelligence required to adapt the new trend of teaching-learning process on the part of educators and learners can be looked into. Educational researches that focus on the process, output, outcomes and implications of open, flexible, distance and blended teaching and learning can be motivating to study.

Carrying out the tasks and playing the role of educators, teachers or tutors to spark inspiration and guidance to his/her students, pupils or tutees, may be enhanced with educational research. Better approaches, strategies or techniques are determined with collected and processed data that provides meaning. Gaps can be identified, so approaches or strategies can be modified to bridge these gaps to enable and reinforce our learners to broaden, develop and motivate themselves to achieve improvement in their lives.

1.2.7. Lifelong learning and Socio-cultural diversity. Personal development is the focus of lifelong learning. Lifelong learning can be referred to the learning that occurs outside of a formal educational set up, either of a school, university or corporate training. It can be self-initiated then. Deliberate and voluntary in nature, the momentum of self-learning is intrinsic because an individual wants to learn because of the motivation that better opportunities await and thus, improve his/her quality of life.

Researches on lifelong learning may include apprenticeships, teaching self with new language, studying a new subject of interest, learning to use a new technology, exploring a new game or sport, learning new sets of skills while employed. Areas to be explored in this may include the self-efficacy gained by group of individuals, how activities cope up with stress, how these affect their optimism and beliefs, how the learned new skills keep sound mental health, how are they utilized for leisure, how practical skills are relevant to improve quality of their lives.

On the other hand, the presence of diverse groups in a society or an organization defines a system of beliefs and behavior that recognizes and respects differences. This is culture diversity. In an inclusive cultural context, acknowledging and valuing socio-cultural differences can empower all within the organization.

Studies on multi-lingual in an organization, age and religion differences, gender studies, values and beliefs, the divergence of experience and knowledge and how these converge towards the

attainment of organization goals and objectives can be worth examining. The level of problems by which cultural diversity may bring such as miscommunication, barriers creation, ineffective adaptation behaviors and the like can be determined. Solutions can then be proposed as a result of gap analysis.

The increasing cultural diversity in our school, workplace and country, brought by migration, by globalization, by integration of economies, by foreign cultural differences, introduction of new technologies, among others, is a very interesting subject to study.

1.2.8. Organization, industry and community involvement. An organization is a group of people working together with the end goal of achieving its goals and objectives. A common goal unifies employees or members of the organization, since this helps everyone understand the direction of the organization. In an organization, there is a system and flows such as the organizational structure with people who are guided with their job description or functions to take. In the operation of an organization, there are processes to follow designed to standardized procedures to keep order in the system. Departmentalization, chain of command, span of control, centralization or decentralization, work specialization and the degree of formalization are elements of organization. Each of these elements features how workers engage with each other, manage their jobs and contribute to achieve the employer's goals. Leadership is essential in the organization. Effective leaders can effectively communicate policies towards attaining goals.

Researchable areas in organization such as the leadership styles, utilization of artificial intelligences, compliance to quality assurance mechanisms, effective use of contractors, office design and productivity, e-governance, corporate culture and globalization and ethics and corporate responsibility are not untimely to study. Corporate Social Responsibility integrates social and environmental concerns in their business operations and interactions with stakeholders. The effect of philanthropism, environment conservation, diversity and labor practices, and volunteerism as part of the CSR of established business can be interesting to study.

In an organization, leading the tasks of a team to achieve goals and meet key results area is a function of project management. Project development experts suggest various phases of project management form conception and initiation, planning, execution or implementation, monitoring and evaluation, and closing the project. Corporate social responsibility efforts for businesses, public services for government agencies or extension for state universities and colleges, needs assessment and impact assessment are researchable areas which aimed at determining what is needed in the community and knowing the benefits of the activities provided to community in terms of economic impact, social or environmental impact.

For Pangasinan State University, priority researchable areas for the main products of the province such as salt and nipa, as well as moringa are being explored on. As provider of technical expertise and extension services, the University has planned to conduct community organizing, product

development, laboratory activities, among others after it has visited communities profiling of salt and nipa farmers as well as moringa farmers.

1.2.9. Governance and Policy. To effect stronger and better economy, the role of the government to provide public services among its citizens is a central idea of governance. The construction of policy brief, action plan and development plan as an offshoot of researches related to governance with an end view of enticing the legislators and administrators of public and private institutions to building stronger and self-reliant communities are hoped to achieve with socio-political research.

The emphasis of this is on the dynamic structure, management of resources, and program/project development and implementation of an institution that needs policy recommendation.

1.2.10. Youth, Gender, adult and indigenous group empowerment. There is a clear strong potential in our youth. Investing in them through education and health services count result better tomorrow of their families or to the society where they belong.

However, enhancing the access to quality education remains a major problem in the country. Data says Filipinos aged 6 to 24 years old are not in school. In ratio, this is 1:10, with an alarming aggregate count of 3.6 million out-of-school children and youth in 2016.

Studies on the prevalence of the various problems causing OSY to flourish such as low quality of life, lack of life skills and social skills, and behavior problems, poverty, low achievement in school, and behavior issues which cause dismissal from school can be pondered on to recommend policies to better their status. Other factors such as child labor, disabilities, family problems and danger on the way to school are worth discerning.

For out-of-school adult, making them functional literate is a challenge. Programs of the country such as the ALS or the alternative learning system can be assessed if its objectives are met, or what level are the objectives met. Profiling the employment status of the ALS graduates can be pivotal point in reviewing policies pertaining to the alternative learning system.

Mainstreaming gender on various socio-political, economic, and environmental and in global arena is what should we done to measure the value of women as partners of men in nation building. Important goal in the SDG is Gender Equality. The Global Gender Gap Report reports the Global Gender Gap Index of different countries as a yardstick to measure gender equality. Four key areas such as health, education, economy and politics are used to measure the state of gender equality per country.

Researchable areas to gender studies are but not limited to economic participation and opportunity, educational attainment and political participation. Issues on gender inequality are also worth discerning. Some of these are unequal pay, sexual harassment, racism and less promotion among women.

First peoples—this is what we call for the ethnic groups that are the earliest or original known inhabitants of an area of land. We call them today as indigenous peoples, who account six percent

of the world's population according to statistics. The Indigenous Peoples' Right Act of 1997 aims to 'recognize, protect and promote the rights of Indigenous Cultural Communities/ Indigenous Peoples (ICCs/IPS) in the country.

Studies on IPs include anthropological, sociological and historical aspects of their lives. The economic contribution of IPS is an equally important area to consider. Respect to indigenous culture is paramount in conducting IP studies. The study of culture, politics and structures of IPs, their intellectual and artistic traditions, their alternative medicine, gender roles, and civil rights can be remarkable. IPs languages for example can be intriguing to know because with decades of colonial rule and migration of mainstream group of inhabitants, their languages are still maintained and some of their ways un-fractured.

Utilization of IP studies can be beneficial for more policymaking, for more assistance to these groups as they are marginalized in many ways. Indigenous studies can even save lives. Awareness promotion about IPs has recently raised concerns over the pandemics disproportionately affecting IPS in other parts of the world. Studies on the political representation of IPS, access to health, education and social services are patriotic act to do with the goal of raising equality among our fellow

1.3. Research, Extension and Innovation Framework

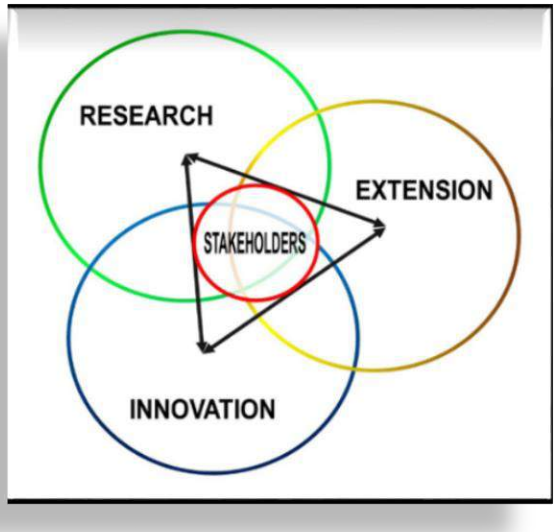


Figure 1. Framework for the Research, Extension and Innovation Agenda

The Pangasinan State University, in consonance with the country's plans and AmBisyon Natin 2040, gears up to strengthen its capability in Research, Extension Innovation, resulting in a new REI paradigm. The framework is premised on the University's REI agenda to ensure that results are utilized for community development.

Research, Extension and Innovation are three entities interlinked within the boundaries of PSU's mandate. They have distinct domains and responsibilities but share common goals that represent the continuum between and among them. Both ends of the arrows symbolize two-way communication between and among REI entities where the responsibilities are centered on stakeholders. The stakeholders are encouraged to participate in decision- making particularly on matters that mostly affect them. REI services are expected to work toward this end.

1.4. PRIORITY PLANS OF THE PSU PRESIDENT IN RESEARCH, EXTENSION & INNOVATION

The Six-Point Strategic Goals of the University under the administration of Dr. Dexter R. Buted, 6th and current President of Pangasinan State University, serve as spring board in realizing the vision of the university to be an ASEAN premier academic institution. Strong Research Culture and Technology Transfer is one of the said strategic goals. With his formidable team in the REI division, the university's Research, Extension and Innovation Plans were crafted.

1.4.1. Research Priority Plans

To revitalize the efforts of the institution to build a Strong Research Culture, Dr. Buted focuses on the improvement of research generation. To realize this, the President empowered all different research centers to produce quality and relevant outputs as contained in (SDP). To date, the institution has the following centers headed by competent professionals, to wit: 1. Center for Hydrology, Aquamarine, Natural and Ocean Sciences (CHANOS); 2. Machine Automation and Technology Innovation Center (MATIC); 3. Integrated Agriculture Research and Development Center (IARDC); 4. Center for Statistics and Computing Sciences $(CS)^2$; 5. Data Analytics Center (DAC); 6. Center for Business, Economics and Tourism (CBET); 7. Center for History, Culture, Arts, Languages and Innovative Education (CHCALIE); 8. Center for Health, Disaster, Risk-Reduction and Environment Management (CHDRREM); 9. Food Innovation Center (FIC) and 10. Center for Human Welfare, Policy, Governance and Community Development (CHWPoGCoD).

Dr. Buted has inspired all faculty members to engage in research presentations in the national and international conferences. He has supported publications of research outputs in CHED Accredited journals, and ISI/SCOPUS/ASEAN citation indexed publications. He invests on research capability-building of the employees through their participation and involvement to research-related activities in the country and abroad.

Utilization and commercialization are the keys in the full appreciation of the relevance of research. Along these areas, the President instituted measures for research outputs to be utilized through community adoption and industry partners. Among others, the following are given importance: citations in articles published by other researchers in refereed international and national journals (e.g., Elsevier, Scopus, Thomson Reuters Journals and CHED-Accredited journals); and intellectual property application. Undergraduate and graduate researches are also in the list of priorities of the President. The graduating undergraduate and post-graduate students are given the privilege and financial support to present their research outputs in Institutional and other external fora and be able to publish and apply for intellectual property.

1.4.2. Extension Priority Plans

The extension unit plays a vital role in every institution. The Extension services shall be carried out to complement the Instruction and Research functions of the University.

In achieving this goal, the President sustains and improves the conduct of training and professional avenues for the institution's extension implementers including the coordinators and project leaders for more productive outcomes, conducts benchmarking activities to other extension service providers, and establishments of more Techno-Demo facilities to reach out more beneficiaries including industries.

Further, Dr. Buted supports extension programs consistent with the State Universities and Colleges' (SUC's) mandated and priority programs particularly on innovative and creative research outputs, and projects that entail business marketing strategies that lead to sustainable community development.

The head of the agency maintains continuously the partnership in the local, regional/national and international industries, NGOs, NGAs SMEs and other stakeholders like SUCs and other academic institutions for extension services.

1.4.3. Innovation Priority Plans

Innovation is the driver of economic progress and competitiveness. Global Innovation Index is a leading reference for measuring the economy's innovation performance. The Philippines rose to rank 50th in the Global Innovation Index 2020. In support to the innovation undertakings of the university, Dr. Buted worked on the establishment of the Innovation and Technology Support Office (ITSO). This office serves as a bridge to fill the gap between local, national and international linkages and Research and Extension. The major concern of ITSO is to facilitate the access to global science and technology information by providing skills in patent search and drafting and other patent Intellectual Property (IP) information. Furthermore, IP protection and IP utilization are another vital concern. It also increases the initiatives in having connections and collaborations with different ITSO communities in the country.

1.5. TECHNOLOGY AND KNOWLEDGE DEVELOPMENT: INNOVATIVE RESEARCH FOR EXTENSION (IR4.e)

1.5.1. History of the Development of University Research, Extension and Innovation Programs

Since its operation in 1979, the Pangasinan State University (PSU) Research and Extension Services have been in operation. In 1986, a major change in the organizational set up of PSU gave way to the creation of the Office of the Vice President for Research and Extension. The University's Research Council was created to act as a policy-making body for the Research & Development (RD) programs of the University.

Subsequently, in 2001, a new organizational structure was made. The University Research, Extension and Auxiliary Services were merged into one unit. In 2004, the function of the Auxiliary Services was turned over to the Vice President for Planning and Administration whose office was transferred from PSU Lingayen to PSU Sta. Maria, Knowledge Center.

In 2007, the University Research, Development & Extension Services Division was transferred back to PSU Main and the Auxiliary Services function was returned to the Office of the Vice President for RDE.

In 2007-2014, the Research and Development Services Office, in consonance with the 10-point agenda of then University President, Dr. Victoriano C. Estira, was mandated to enhance the effective delivery of effective, efficient, sustainable, development-oriented and high-impact programs/projects to improve the quality of life of the people it serves.

In 2015 Dr. Dexter R. Buted fused the functions of the Office of Academic Affairs and Research while Support to Students was fused with Extension and Training. However, with the suggestions of ISO Assessors in 2016, a reorganization was done. Research was put under the office of Vice President for Research and Extension.

Before the creation of the Innovation Office, Patenting and Research Utilization was established in 2017. Eventually, this was renamed to Intellectual Property, Research Utilization and Ethics as Ethics was proposed to be a sole entity following the National Guidelines issued by the Philippine Research Ethics Board and was approved with Resolution No. 50 s. 2017. In 2019, the University applied at the Intellectual Property Office of the Philippines (IPOPHL) to become a part of the Innovation and Technology Support Office (ITSO) community. In March 2020, the partnership between PSU and IPOPhil was sealed with a Memorandum of Agreement and ITSO was established in the university system as a part of the Research, Extension and Innovation Division, as reflected in the new organizational structure approved by the Board via Resolution No. 66 s. 2020. The establishment of the ITSO strengthens the institutions' capacity to access patent information and make use of the patent system. The ITSO conducts trainings on patent search and drafting and other capacity-building initiatives and commercialization.

At present, Research, Extension and Innovation is mandated to actively deliver effective, efficient, sustainable, development-oriented, and high impact programs/projects/studies to improve the quality of life and alleviate poverty of the people it serves.

1.5.2. Research, Extension and Innovation Vision

To be recognized as a lead producer and provider of appropriate, breakthrough-knowledge and competitive technologies in ASEAN community

1.5.3. Research, Extension and Innovation Mission

To pursue a harmonized and holistic research, extension and innovation agenda towards sustainable generation of appropriate knowledge and technologies that complement the other basic functions of the University to improve the quality of life of its stakeholders.

1.5.4. Research, Extension, and Innovation Goals

The University REI programs focus on initiatives alongside the following areas of concern:

(a) generation of credible, relevant and gender-sensitive technical knowledge;
(b) protection of intellectual property;
(c) efficient utilization of research output for community development.

Research, extension and innovation initiatives are primarily geared towards generation of appropriate knowledge and technology breakthroughs for higher productivity that are relevant to the needs of the stakeholders.

1.5.5. Research, Extension and Innovation Thrusts and Concerns

In support to United Nation's Sustainable Development Goals, national, regional, and university REI agenda, these future thrusts are formulated to provide direction and effective delivery of the University's mandated functions. It is hoped that a more effective, efficient, sustainable and development-oriented program can be realized to improve the quality of life of people in the various sectors of the economy.

a. Enhance participatory research, extension and innovation activities in the community. As cascaded by researchers/extentionists/innovators;
b. Improve participation and commitment of the university faculty members, students and other REI enthusiasts and development project leaders.
c. Intensify funding and moral support to faculty and other REI enthusiasts;
d. Improve research, extension and innovation facilities and equipment. This shall include the establishment of different REI centers with appropriate laboratory equipment and facilities;
e. Strengthen the intellectual capital program through design thinking for education innovation;
f. Sustain and strengthen the existing linkages and expansion of partnership through various strategies;
g. Transfer technology through modern delivery systems, internet, Radio-TV Program and use of multi-media in the presentation and dissemination;
h. Realign REI thrusts to the Harmonized National R&E Agenda prepared by NEDA, DOST, DOH, CHED and other participating agencies; and,
i. Crisis management and other deliverables.

1.5.6. Research, Extension and Innovation Strategies and Approaches

To attain its vision and mission, the following strategies/approaches are utilized:

Strategies

- Use of digital platform
- Research and Extension Dissemination
- Intellectual Property Management
- Capability building
- Data management
- Environmental scanning
- Ethical review of protocols

Approaches

- Participatory and cost sharing;
- Inter-campus and inter-agency;
- Inter-disciplinary and multi-disciplinary;
- Collaborative partnership;
- Integration of gender and ethical concerns;
- Resource-based initiatives, and
- International collaboration and linkages.

1.6. RESEARCH, EXTENSION AND INNOVATION STRATEGIC DEVELOPMENT PLAN

The PSU-REI strategic development plan sets forth the research, extension and innovation agenda that provide the strategic map and build markers for guiding the REI in achieving the strategic goals in its culmination period. This said period is inspired by the ideas generated in research, extension and innovation through knowledge and technology development.

The purpose of the strategic development plan is to capture the cornerstones of a common vision and understanding of the University's role in the context of research, extension and innovation considering the multiple changing demands of knowledge and technology in the regional, national and international arena. The plan is the result of a year-long, iterative, inclusive process involving input from different stakeholders from across the PSU-REI Centers and the Province of Pangasinan, with its wide-ranging examination of research-extension activities and opportunities spanning the entire university system. Figure 3 shows the perspective of the REI Strategic Development Plan.

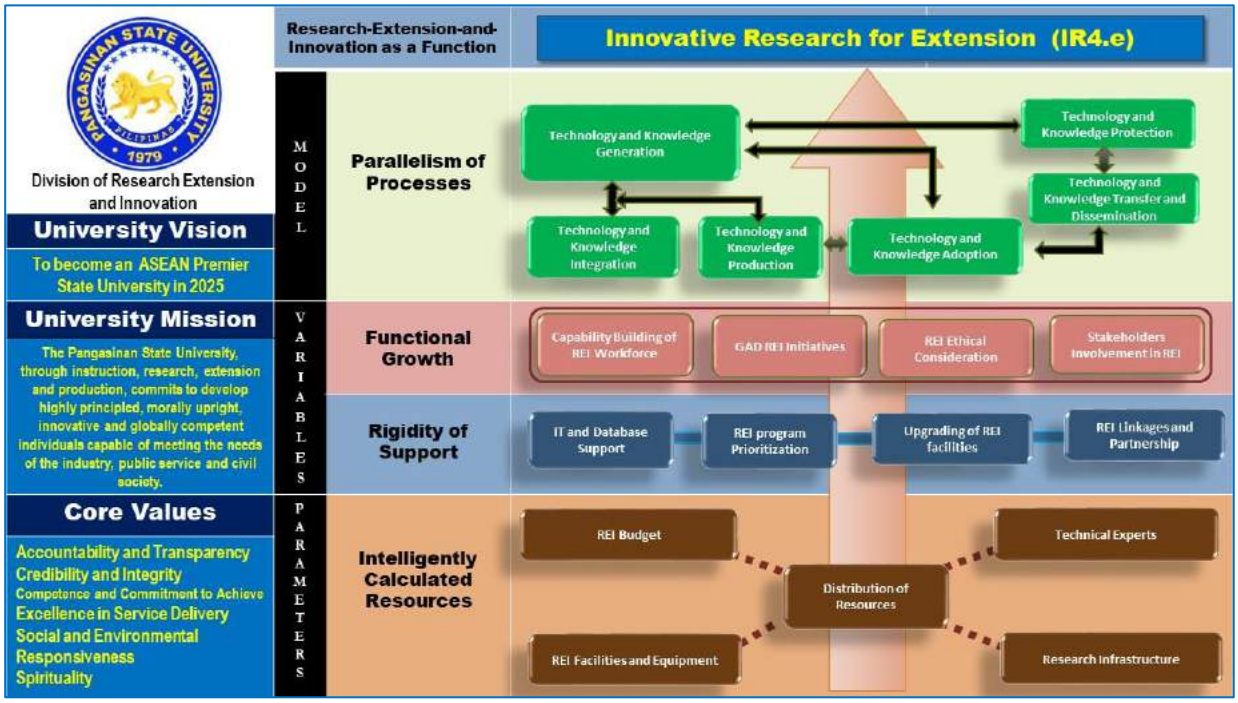


Figure 3. Perspective of the Research, Extension and Innovation (REI) Strategic Development Plan

CHAPTER II
ORGANIZATION AND MANAGEMENT

2.1. Organizational Structure

The organizational structure of the Research, Extension and Innovation (REI) Division is presented in Figure 2. As an entity, the REI Division is governed by a body that is composed of the top level management, officials, and experts in the University The structure reflects the network of relationships among various positions. It shows how these positions or units are delineated and related to one another in the division. The duties, responsibilities, and functions of each position are briefly described in the succeeding sections.

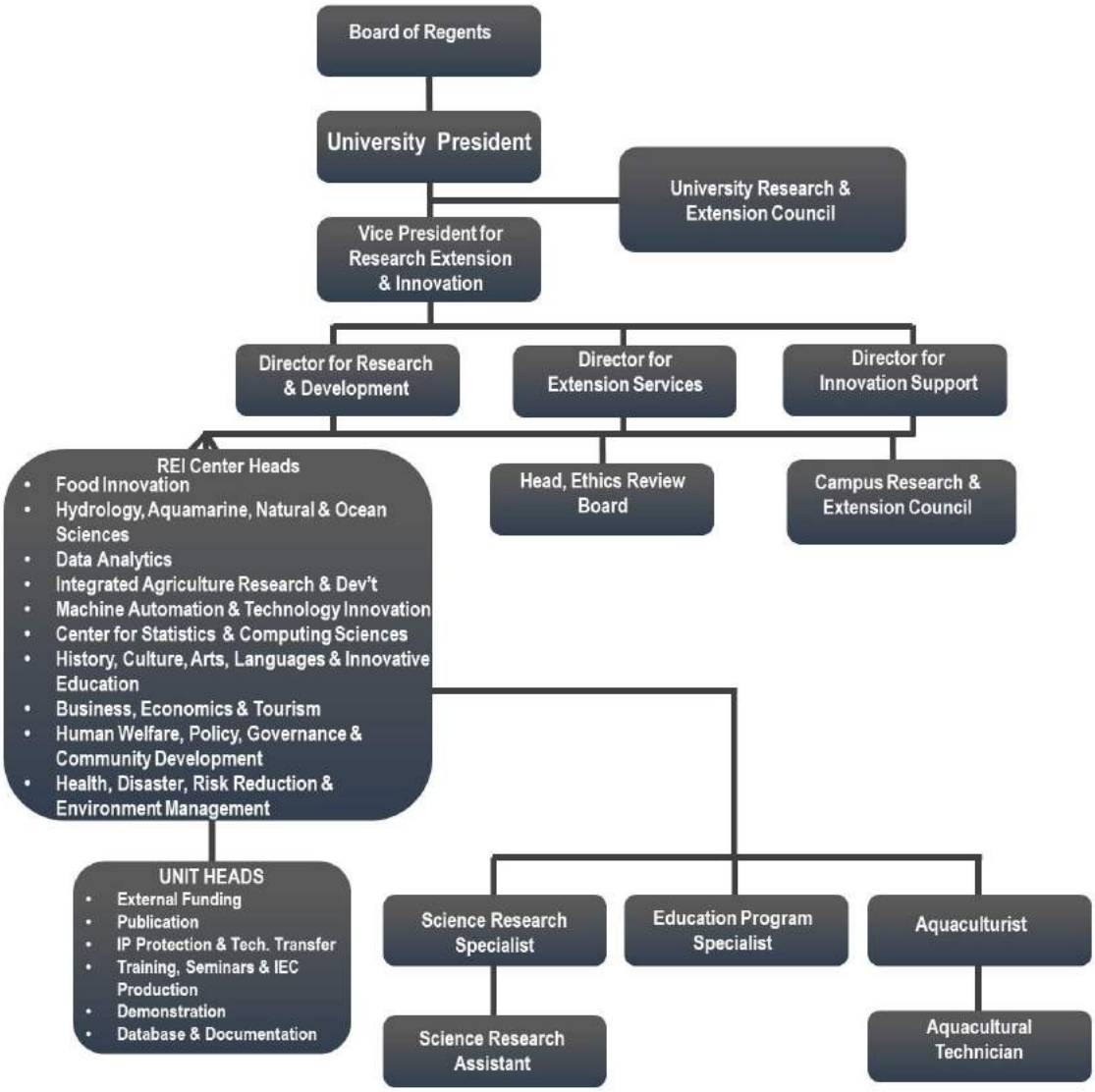


Figure 2. Organizational Structure of the Research, Extension and Innovation (REI) Division

2.2. Functional Descriptions

2.2.1. Board of Regents

The Board of Regents (BOR), occupying the highest level in the Research, Extension and Innovation (REI) Division structure, is the governing body and highest policy-making body of the University. The BOR decides which direction REI should take and assures accountability of the officers and staff of the Division in the performance of their functions and responsibilities. The BOR sets the REI policies, future plans, major programs and projects with their corresponding budget. Key REI appointments are deliberated upon and decided by the Board to ensure check and balance of powers of the officers in charge of the Division.

2.2.2. University President

The University President is the Chief Executive Officer of the University system whose powers and duties are specified in PD 1497 as amended by RA 8292. Supporting him/her in the REI structure is the University Research and Extension Council (U REC). The overall REI Program is headed by the President where he executes REI policies and guidelines approved by the BOR.

2.2.3. Vice-President for Research, Extension and Innovation (V-PREI)

The Vice-President for REI shall:

i. Plan, implement, monitor, coordinate and evaluate the University's Development Plan for Research, Extension and Innovation;
ii. Coordinate and promote interdisciplinary collaboration in research, extension and innovation programs and projects of campuses in accordance with the thrust and priorities of the University;
iii. Screen and evaluate study, project and program proposals in research, extension and innovation intended for funding by the University and other agencies;
iv. Prepare and submit budgetary proposals for extension, research and innovation training;
v. Monitor and feedback to the President Research, Extension and Innovation activities and performance; and
vi. Facilitate the formulation of the University Research, Extension and Innovation agenda through the Division Directors.

The Vice-President has the authority to make decisions concerning the following:

i. Approval of Research, Extension and Innovation Programs and Projects;
ii. Monitoring and Supervision of Research, Extension and Innovation Services and other related activities; and
iii. Recommendation of proposed Research, Extension and Innovation Programs and Projects to the University Research, Extension and Innovation Council.

2.2.4. University Research, Extension and Innovation Council (UREIC)

University Research, Extension and Innovation Council (UREIC) is composed of the University President as Chair, Vice-President for Research, Extension and Innovation (V-PREI) as Vice-Chair, Director for Research and Development(DR), Director for Extension Services(DE), Director for Innovation Support(DI), Research, Extension and Innovation Center Heads (CHs), Campus Executive Directors (CEDs), Campus Extension

Coordinators (CECs), Campus Research Coordinators (CRCs), and the Personnel who are holding plantilla items under Research and Extension.

The UREIC was created under the administration of Dr. Dexter Buted with the approval of the Board of Regents.

The UREIC shall:

i. identify or rationalize research, extension and innovation thrusts/resources/capabilities of the University;
ii. evaluate research, extension and innovation proposals submitted by faculty members and constituents;
iii. review and examine duly accomplished project proposals submitted by different REI Centers;
iv. implement/monitor/evaluate research, extension and innovation projects approved by the University;
v. assist in generating outside support for the research, extension and innovation program of the University; and
vi. disseminate information to different campuses.

2.2.5. Director for Research and Development (DRD)

The Director for Research and Development (DRD) shall:

i. provide direction in the planning, implementation, monitoring, coordination and evaluation of the University Research Development Program;
ii. formulate and prepare the University research program and its corresponding budget proposal;
iii. submit annual action plan and quarterly/annual reports of accomplishments to the Vice President for Research, Extension and Innovation;
iv. promote and enhance the research consciousness and capabilities of faculty and staff;
v. screen, review, evaluate and recommend research study/ projects/program proposal of proponents for University and/or external funding for approval;
vi. acknowledge and accredit completed research study/project/program submitted by proponents;
vii. establish a network of linkages with government and non-government research institutions, local and foreign; and
viii. Do other related functions upon the directive of the Vice President for Research, Extension and Innovation.

In addition, the DRD has the authority to make decisions concerning the following:

i. Management of approved budget;
ii. Recommendation of researches/projects to the Vice President for Research, Extension and Innovation; and
iii. Improvement of the proposal/projects/research.

2.2.6. Director for Extension Services (DES)

The Director for Extension (DE) shall:

i. Provide direction in the planning, implementation, monitoring, coordination and evaluation of the University Extension Programs;
ii. Formulate and prepare the University Extension Program and its corresponding budget proposal; and submits annual action plans and quarterly/annual reports of accomplishment to the Office of the Vice President for Finance Management;

iii. Promote and enhance the extension consciousness and capabilities of extensionists, faculty members and staff;
iv. Screen, review, evaluate and recommend extension/training program proposals for funding by the University or external agencies;
v. Accept and accredit completed extension/training programs submitted by proponents and extensionists;
vi. Provide and recommend opportunities for each personnel in extension to optimize the use of his training/experiences, talents, skills and knowledge;
vii. Establish a network of linkages with government and non-government extension institutions;
viii. Submit annual action plans and quarterly/annual reports of accomplishments to the Vice President for Research, Extension and Innovation; and
ix. Establish a network of linkages with institutions of higher learning both local and international, government and non-government agencies for resource complementation and maximization of functions.

The DES has the authority to make decisions concerning the following:

i. Recommendation of extension project/program proposals with corresponding budgetary requirements to the University Research, Extension and Innovation Council headed by the University President and co-headed by the Vice President for Research, Extension and Innovation;
ii. Recommendation of extensionists for participation to seminar, workshop, and training;
iii. Recommendation of extensionists to the University Research, Extension and Innovation Council qualified candidates for awards and recognition;
iv. Formulation and update of the PSU Extension Manual;
- Presentation of Best Extension Practices to other SUCs and Agencies; and
- Representation of the University Extension Unit to agencies/institutions.

2.2.7. Director for Innovation (DIS)

The Director for Innovation shall:

- Promote the use of patent information as a tool for technology development;
- Promote innovation and encourages the researcher on the creation, protection, utilization, and respect for intellectual property;
- Create pool of science and technical experts with competence to conduct patent search and patent drafting;
- Provide skills training in patent search likewise as patent facility and library for patent information organizing a community of patent information users;
- Organize a community of experts to participate in patent examination;
- Assist in patent prosecution and IP capacity building interventions of IPOPHL that helps increase IP creation, protection, and commercialization of technology in the university;
- Assist in IP audit and evaluation services;
- Provide advice on IP management and commercialization strategies; and
- Provide licensing support hence a depository of patent-related documents, papers and statistics.

The DIS has the authority to make decisions concerning the following:

- Improvement of the Research, Extension and Innovation Manual of Operations;
- Plan, Proposal and Implementation of programs and activities designed to this unit;
- Involvement in the monitoring activity of submitted technology by different campuses; and

- Authority to transact process, receive and sign documents needed by IPOHL and statistics.

2.2.8. Ethics Review Board (ERB)

The Ethics Review Board (ERB) shall review all project proposals collated to ensure that the rights, social welfare, and dignity of all research participants are protected. The ERB is composed of the University President, Vice-President for Research, Extension and Innovation (V-PREI), Director for Research (DR), Director for Extension (DE), Director for Innovation, Head-Ethics Advisory Board (H-EAB, Unit Head-Proposals and Publication (UH-ProPub), Campus Executive Directors (CEDs), Legal Officer, and the University Expert/s who specialize/s in the concerned field of research under review.

The ERB ensures that researches conducted by faculty, staff, and students are conducted in accordance with scientific and ethical principles. It is tied with the research goal which is to produce the highest quality of research possible in the University. As such, issues where research involves humans/animals as participants (i.e. as 'subjects' in the project), the need for anonymity where appropriate or required and the need for safety (that they are not in any way harmed and that they are fully cognizant of the aims and outcomes of the research or the so-called 'informed consent') should be ensured.

2.2.9. Head-Ethics Review Board (H-ERB)

The H-EAB shall oversee the Ethics Review Board (ERB) in accordance with its functions as stated in the Operations Manual of the ERB. Moreover, s/he shall oversee the establishment and proper implementation of the University Research Ethical Guidelines to all Research/Extension/Innovation Projects.

The Head for Research Ethics Board shall:

- Evaluate the conduct of research in the university in accordance with international and national guidelines, local laws, standards of professional conduct and practice, and community mores, values, and needs;
- Promote research integrity by identifying and resolving conflicts of interest;
- Establish appropriate mechanisms in all stages of the research thereby ensuring the proper documentation of and adherence to the confidentiality rule and policy on informed consent;
- Report to the institutional or national authorities any matter that affects the conduct and ethics of research;
- Keep a systematic and organized record of all proposals reviewed, including actions taken and other pertinent information;
- Establish network and/or connection with relevant local, national, and international organizations; and
- Develop guidelines for the establishment, management, and standardization of research ethics review.

The H-ERB has the authority to make decisions concerning the following:

- Improvement of the Research, Extension and Innovation Manual of Operations;
- Plan, Proposal and Implementation of programs and activities designed to this unit;
- Involvement in the monitoring activity of submitted researches by different campuses; and
- Authority to transact process, receive and sign documents needed by Research Ethics Review Committees.

2.2.10. Center Head (CH)

The CH of a specific Research, Extension and Innovation Center shall take charge in the overall management and operations of the Center in accordance with its objectives and thrusts.

2.2.11. Research, Extension and Innovation Centers

There are ten (10) Research, Extension and Innovation Centers which focus on research, extension and innovation projects along different areas of specialization, to wit: Hydrology, Aquamarine, Natural and Ocean Sciences; Integrated Agriculture; Food Innovation; Data Analytics; Statistics and Computing Sciences; Machine Automation and Technology Innovation; Health, Disaster Risk, and Environment Management; Human Welfare, Policy Governance and Community Development; History, Culture, Languages and Innovative Education; and Economics, Business and Tourism.

These Centers are composed of heads, researchers, extensionists and innovators whose fields of specialization are aligned with in center's area of focus. The centers are also comprised of personnel who hold plantilla items under research and extension and who shall render essential services relevant to their area of expertise.

2.2.11.1. Food Innovation Center (FIC)

The FIC Head shall:

- Provide direction on the planning, implementation, monitoring, coordination and evaluation and development of research and extension training sustainability proposals;
- Promote and enhance the food innovation proposal with budgetary requirements writing consciousness and research capabilities of faculty and students;
- • As member of the University Research, Extension and Innovation Council, screen, reviews, evaluates, and recommends research study/project/program proposals submitted by proponents for internal or external funding;
- Facilitate organization, operation and monitoring of Food research activities in the University and Region 1;
- Promote and enhance the consciousness and capabilities of faculty and students on good manufacturing practices;
- Secure soft and hard copies of conducted FIC activities;
- As members of the Research, Extension and Innovation Council, endorsed FIC extension proposals to the Director for Extension Services and VP for Research, Extension and Innovation about technology generated products;
- Submit annual action plans and quarterly/annual reports of accomplishments of FIC to the Division Directors;
- Establish a network of linkages with other institutions and other agencies on local, regional and national/international for resource complementation and maximization of functions;
- implement the project according to project timetable and agreements;
- Supervise the activities and equipment of the Center; and
- Does other related functions upon direction of higher authorities.

In addition, FIC Head is hereby authorized to make decisions concerning the following:

- Recommendation of FIC research projects/programs that are sustainable with corresponding budgetary requirements to the Division Directors, VP for Research, Extension and Innovation and other agencies;

- Participation to seminar, workshop, and training of FIC researchers;
- Conduct and publication of research to any commendable CHED and ISI accredited journals;
- Recommendation of extentionists to the University Extension Council who will qualify as candidate for awards and recognition;
- Formulation and update in the FIC Manual; and
- Conduct of FIC activities.

2.2.11.2. Data Analytics Center (DAC)

The Data Analytics Center shall:

- Promote the use of data analytics in the conduct of academic and industry researches;
- Enhance the capability and skills of students, faculty members, and other academic stakeholders on the field of data science/analytics;
- Provide direction in the planning, implementing, monitoring, coordinating plans and operations and in evaluating the performance of the Center;
- Submit annual action plans and quarterly/annual financial reports of accomplishment; and
- Does other related functions upon directive of higher authorities.

DAC Head has the authority to make decisions concerning the following:

- Development and improvement of the Data Analytics Consultation Center; and
- Preparation, monitoring, and implementation of policies, guidelines, and standards required for effective and efficient Center operation and services.

2.2.11.3. Integrated Agriculture Research and Development Center (IARDC)

The UH of MPTD TDIP shall supervise the development of research, extension and innovation materials. This includes, among others, the formulation of a training design intended for a research/extension/innovation activity.

The IARDC shall:

- Provide direction on the planning, preparation, implementation, coordination, monitoring, and evaluation of Research and Development Plans and Programs of the Center;
- Spearhead the research activities of the Center anchored on the regional thrusts and national research agenda;
- Evaluate research implementation of the Center;
- Submit annual action plans and quarterly/annual reports of accomplishments to the Director for Research Development; and
- Seek research funding, collaborations and linkages with government agencies, private institutions and international organizations.

The IARDC Head has the authority to make decisions concerning the following:

- Recommendation of Faculty Researchers and Agriculturist of the Center for attendance in capability building or training seminars related to agriculture; and
- Conduct of research and publication in the PSU Research Journal and other peer reviewed journals.

2.2.11.4. Machine Automation and Technology Innovation Center (MATIC)

The MATIC Center shall:

- Provide direction on the planning, preparation, implementation, coordination, monitoring, and evaluation of Research and Development Plans and Programs of the Center;
- Coordinate with the campus research council in the screening, review and evaluation of the research proposals of faculty researchers for endorsement to the University Research, Extension and Innovation Council;
- Submit annual action plans and quarterly/annual reports of accomplishments to the Director for Research and Development; and
- Establish a network of linkages with research institutions of higher learning, government and non-government agencies for sharing of research results.

The MATIC Head has the authority to make decisions concerning the following:

- Recommendation of Faculty Researchers of the Center for attendance in capability building or training seminars related to engineering; and
- Conduct of research and publication in the PSU Research Journal and other peer reviewed journals.

2.2.11.5. Health, Disaster, Risk- Reduction, and Environmental Management (CHDRREM)

The **CHDRREM shall:**

- Promote and facilitate leading-edge research, including collaborative and interdisciplinary research, in the research areas of health, energy, disaster and environmental sustainability related to the goals of the university;
- Build and provide sufficient support for a community of innovative researchers in the university in order to increase internal and external research opportunities for faculty, undergraduate and graduate students;
- Provide direction in the planning, implementing, monitoring, coordinating plans and operations and in evaluating the performance of the Center;
- Prepare and submit annual action plans and quarterly/annual reports of accomplishment; and
- Does other related functions upon directive of higher authorities.

The CHRRDEM Head has the authority to make decisions concerning the following:

- Development and improvement of the Center; and
- Preparation, monitoring, and implementation of policies, guidelines, and standards required for effective and efficient Center operation and services.

2.2.11.6. Center for Human Welfare, Policy, Governance and Community Development (CHWPoGCoD)

The **CHWPoGCoD shall**:

- Generate knowledge and technology, packaging and commercialization of materials related to human welfare, policy, governance and community development;

- Provide direction in the planning, implementing, monitoring, coordinating plans and operations and in evaluating the performance of the Center;
- Prepare and submit annual action plans and quarterly/annual reports of accomplishment;
- Prepare and submit annual quarterly/annual financial reports of accomplishment to the Office of the Vice President for Finance Management; and
- Does other related functions upon directive of higher authorities.

The CHWPoGCoD Head has the authority to make decisions concerning the following:

- Development and improvement of the Center; and
- Preparation, monitoring and implementation of policies, guidelines, and standards required for effective and efficient Center operation and services.

2.2.11.7. Center for Hydrology, Aquamarine, Natural and Ocean Sciences (CHANOS)

The CHANOS shall:

- Provide direction on the planning, preparation, implementation, coordination, monitoring and evaluation on Research and Development Plans and Programs of the Center;
- Coordinate with the campus research coordinator and members of the Campus Research Council in the screening, review and evaluation of research proposals of faculty and researches for endorsement to the University Research, Extension, and Innovation Council;
- Submit annual action plans and quarterly/annual reports of accomplishments to the Director for Research Development; and
- Establish a network of linkages with research institutions of higher learning, government and non-government agencies for sharing of research results.

The CHANOS has the authority to make decisions concerning the following:

- Recommendation of faculty researchers and Aquaculturist of the Center for attendance in capability building or training seminars related to fisheries; and
- Conduct of research and publication in the PSU Research Journal and other peer reviewed journals.

2.2.11.8. Center for Statistics and Computing Sciences $(CS)^2$

The CS^2 shall:

- Provide direction in the planning, implementing, monitoring, coordinating plans and operations and in evaluating the performance of the Center;
- Prepare and submit annual action plans and quarterly/annual reports of accomplishment to the Office of the Division Directors;
- Prepare and submit annual quarterly/annual financial reports of accomplishment to the Office of the President thru the Vice President for Finance Management; and
- Does other related functions upon directive of higher authorities.

In addition, $(CS)^2$ Head is hereby authorized to make decisions concerning the following:

- Development and improvement of the Statistics and Computing Sciences Consultation Center; and
- Preparation, monitoring, and implementation of policies, guidelines, and standards required for effective and efficient Center operation and services.

2.2.11.9. Center for History, Culture, Arts, Languages and Innovative Education (CHCALIE)

The **CHCALIE shall**:

- Spearhead activities like in-house proposal review, implementation and monitoring of researches, faculty fora, journal publication, production of IEC materials, and extension project;
- Collate Recovery Program, Intervention Program, Training Design, Policy Guidelines, Process Manual, Operations Manual, Action Plan, or Development Plan as part of the research outputs and as an input to legislative redirection and extension activity;
- Provide direction in the planning, implementing, monitoring, coordinating plans and operations and in evaluating the performance of the Center;
- Prepare and submit annual action plans and quarterly/annual reports of accomplishment to the Division Directors;
- Prepare and submit annual quarterly/annual financial reports of accomplishment to the Office of the Vice President for Finance Management; and
- Does other related functions upon directive of higher authorities.

The CHCALIE Head has the authority to make decisions concerning the following:

- Development and improvement of the Center; and
- Preparation, monitoring and implementation of policies, guidelines, and standards required for effective and efficient Center operation and services.

2.2.11.10. Center for Business, Economics and Tourism (CBET)

The CBET shall:

- Provide direction in the planning, implementation, monitoring, coordination and evaluation of the University Research and Development Program applicable to the Center for Business, Economics and Tourism;
- Formulate, prepare and integrate the University Research Program and its corresponding budget proposal and submit annual action plans and quarterly/annual reports of accomplishments to the Director for Research Development;
- Promote and enhance the research consciousness and capabilities of researchers, faculty members and staff;
- Screen, review, evaluate and recommend research study/project/program proposal of proponents related to business, economics and tourism for University or for external funding;
- Acknowledge and accredit completed research program/project/study submitted by proponents related to business, economics and tourism;
- Enhance network of linkages with government and non-government research institutions, local and foreign; and
- Does other related functions upon directive of higher authorities.

The CBET Head has the authority to make decisions concerning the following:

- Development and improvement of the Center; and
- Preparation, monitoring and implementation of policies, guidelines, and standards required for effective and efficient Center operation and services.

2.2.12. Unit Head (UH)

The UH shall take charge of specific key areas which are deemed crucial to the operations of the REI Center. S/He shall extend the necessary technical expertise and support to the REI Center to help achieve its mission and objectives. The heads are designated in each of the following areas (1) External Funding; (2) Publication (3) IP Protection and Technology transfer (4) Trainings, seminars and IEC Production (5) Demonstration (6) Database and documentation

2.2.13. REI Personnel

REI personnel includes the Academic Researcher(s), Academic Extensionist(s) and Academic Innovator(s).

2.2.13.1. Academic Researchers (ARs)

An AR may be a faculty or non-teaching staff who conducts investigation of a problem or phenomenon to determine solutions to problems relevant to matters concerning not only the organization but also the community that PSU serves.

ARs shall:

- Find solutions to pressing issues, seek new knowledge needed to hasten organizational and social development through his/her *COMPLETE RESEARCH PROJECT (CRP);*
- Submit a *Research Project Proposal (RPP)* in line with the University's Research Agenda to his/her Department Chair and to the CRC;
- Coordinate with the CRC about the status of his/her *RPP*;
- Works closely with the CRC and U RED to make his/her *CRP* become *PSUKB*; and
- Works doubly close with the CRC and the U RED to make his/her *PSUKB* as much as possible to become part of *ITS PSU.*

2.2.13.2. Academic Extensionists (AEs)

Academic Extentionist(s) is the primary helper(s), designer(s) of ways on how to reach out individuals, families and communities throughout the Province of Pangasinan through a broad range of educational programs and services to support the young, the elderly and all in between for a better way of living.

The AEs shall:

- Design ways by which individuals could become productive, help individuals strengthen their families and make communities understand better, cope with complex public issues and propagate safe and caring environment through his/her *COMPLETE EXTENSION PROJECT (CEP);*
- Submit an *Extension Project Proposal (RPP)* in line with the University's Research Agenda to his/her Department Chair and to the CEC;
- Coordinate with the CEC about the status of his/her *EPP;*
- Should his/her *EPP* becomes a *Qualified EPP(QEPP)* then s/he shall ask for the assistance of the CEC in carrying out his/her *QEPP* to become a *CRP*;
- Works closely with the CEC and U RED to make his/her *CRP* become *PSUKB*; and
- Works doubly close with the CRC and the U RED to make his/her *PSUKB* as much as possible to become part of *ITS PSU.*

2.2.13.3. Science Research Specialist (SRS)

The Science Research Specialist (SRS), who works closely with the AR(s), evaluates the quality of research entries as s/he participates in the conceptualization of needed activities and linkage to helpful agencies depending on the kind and the field of research at hand.

Functions:

- Works closely with the AR(s) who leads the *QRPP*;
- Evaluates the quality of research entries while helping in the conceptualization of needed activities; and

  Links the AR(s) to helpful agencies depending on the type of research and the field it is in.

2.2.13.4. Science Research Assistant (RA)

The Science Research Assistant (RA) provides support to the SRS who helps the AR(s) conduct experiments to gather, analyze and present research outputs.

The RA shall:

- Help carry out experiments according to protocols laid out by the AR(s);
- Collect, log data and conduct statistical analyses of data sets;
- Assist in checking facts, proofreading and editing of research documents to ensure accuracy; and
- Create presentation materials to help AR(s) present findings.

2.2.13.5. Education Program Specialist (EPS)

The Education Program Specialist subsists to extend professional support to the UH- ProPub and the concerned CH in assessing all *RPPs/EPPs* submitted. The EPS is also in charge in coordinating the U REI to competent Institutions which could help provide deserving R&E Personnel scholarships, trainings/seminars they need to better their performance for the growth and development of U REI.

The EPS shall:

- Support the UH-ProPub and the concerned CH in assessing all *RPPs/EPPs* submitted should they merit to become *QRPP/QEPP;*
- Provide the needed *pointers for qualifications(pfq) (aside from the pfq from the UH-ProPub and the concerned CH)* for all *RPPs/EPPs* submitted to become *Qualified;*
- Gather all pertinent documents from the Impact Assessment on *PSUKB* transfer initiatives from year 1 to year 3/5 or until the *PSUKB* is considered *ITS PSU* to come up with the ***Best Practices*** of the University;
- Link the U REI to competent Institutions which could help provide deserving REI Personnel scholarships, trainings/seminars they need to better their performance for the growth and development of U REI.
- Extend support to REI Personnel as possible trainees/scholars about documentary requirements to facilitate attendance to trainings/seminars and availment of scholarships;

- Safe keep and maintain records of trainees/scholars for future sharing and enhancements of participants or desired personnel; and

- Provide supporting records (for succession or continuity) of trainees/grantees in the identification of potential employees eyed to become part of the pool of candidates for critical positions in the U REI.

2.2.13.6. Aquaculturist

The aquaculturist shall:

- Manage a Hatchery-Nursery for shrimp and finfish at the Maine Research Laboratory Station.
- Assist in the conduct of University/College Researches; implement other researches pf the college with other supporting/collaborator agencies.
- Does extension activities related to his field of expertise.
- Does other function ordered by higher authorities.

2.2.13.7. Aquacultural Technician

The aquacultural technician shall:

- Under direction, performs laboratory research in fisheries
- Performs collection and analysis of different fishery production
- Gather and collect data needed for fishery products
- Prepares and fires fishing gears used in marine, brackish and freshwater bodies of water
- Does other related works

2.2.13.8. Campus Research Coordinator (CRC)

The Campus Research Coordinator is in charge of encouraging faculty, staff and students to actively participate in the formulation, implementation, evaluation and documentation of the research agenda of the his/her Campus.

The CRC shall:

- Coordinate and collate all the research agenda of each Department to the CED;
- Coordinates the research agenda prioritized by the CED to the CH and to the DE;
- Encourages faculty, staff and students to actively participate in the formulation of the research agenda of the Department involved;
- Assists the AR(s) in the preparation of *RPP;*
- Assists the AR(s) and in carrying out his/her *QRPP* to become a *CRP;*
- Assists the AR(s) make his/her *CRP* become *PSUKB;*
- Assists the AR(s)' *PSUKB* as much as possible to become part of *ITS PSU;*
- Maintains the functional operations of the Campus Research Office; and
- Assist Department Chairs (DCs) in evaluating undergraduate studies for the *Thesis Award.*

2.2.13.9. Campus Extension Coordinator (CEC)

The Campus Extension Coordinator in is charge of encouraging faculty, staff and students to actively participate in the formulation, implementation, evaluation and documentation of the extension agenda of his/her Campus.

Functions:

- Coordinates and collates all the extension agenda of each Department to the CED;
- Coordinates the extension agenda prioritized by the CED to the CH and to the DE;

- Encourages faculty, staff and students to actively participate in the formulation of the extension agenda of the Department involved;
- Assists the AE(s) in the preparation of *EPP;*
- Assists the AE(s) and in carrying out his/her *QEPP* to become a *CEP;*
- Assists the AE(s) make his/her *CEP* become *PSUKB;*
- Assists the AE(s)' *PSUKB* as much as possible to become part of *ITS PSU*; and
- Maintains the functional operations of the Campus Extension Office.

CHAPTER 3
RESEARCH, EXTENSION AND INNOVATION PROCESSES

Research, Extension and Innovation are functions of the University which are interdependent with each other. As the University adheres to its strategic goal of keeping up a strong research culture, multidisciplinary and interdisciplinary researches are aimed at creating something not only by thinking across boundaries but considering the efficient utilization of innovative research outputs. Achieving such ends, the processes for any set of activities that use University resources are put in place. Research, Extension and Innovation endeavors will be based on a process approach to establish effective and efficient steps and procedures consistent to the standards set in the University.

Modelled by several processes interconnected in a wider multifaceted network, the six processes identified are determined in terms of a set of procedures, capturing what needs to be done to arrive at the desired outcomes. These processes are: 1) Technology and Knowledge Generation; 2) Technology and Knowledge Integration; 3) Technology and Knowledge Production; 4) Technology and Knowledge Protection; 5) Technology and Knowledge Utilization and Dissemination; and 6) Technology and Knowledge Adoption.

Although each function has its distinct domain, REI as functions should not be disconnected. Knowledge and technology are the parameters which serve as the continuum of these functions. At the research part, the parameters are generated, though integration of the expected output in terms of extension services and/or patenting is kept in mind at the start of the research endeavor. Generated Knowledge or Technology is then protected with intellectual property right before they are disseminated or transferred and are produced and adopted by the community or other stakeholders. Information and education campaign (IEC) materials and impact assessment are also ends in mind before the starting any research project. Each of the processes can be simultaneously taking place at the same time; rather than flowing in a series of activities or happening one at a time, the processes may be of parallel occurrence.

Though the REI model shows knowledge and technology protection, transfer and dissemination as a distinct function of Innovation, the conceptualization of research per see entails innovative and creative mind among the researchers. Whereas, knowledge and technology integration, production and adoption are the main domain of extension, these parameters are product of research which are then protected for transfer and dissemination by the innovation function. Immediately after the adoption of the knowledge and technology, another problem may arise; and thus, another offshoot research may be conceptualized on. With this, the interdependence of research, extension and innovation is vividly emphasized.

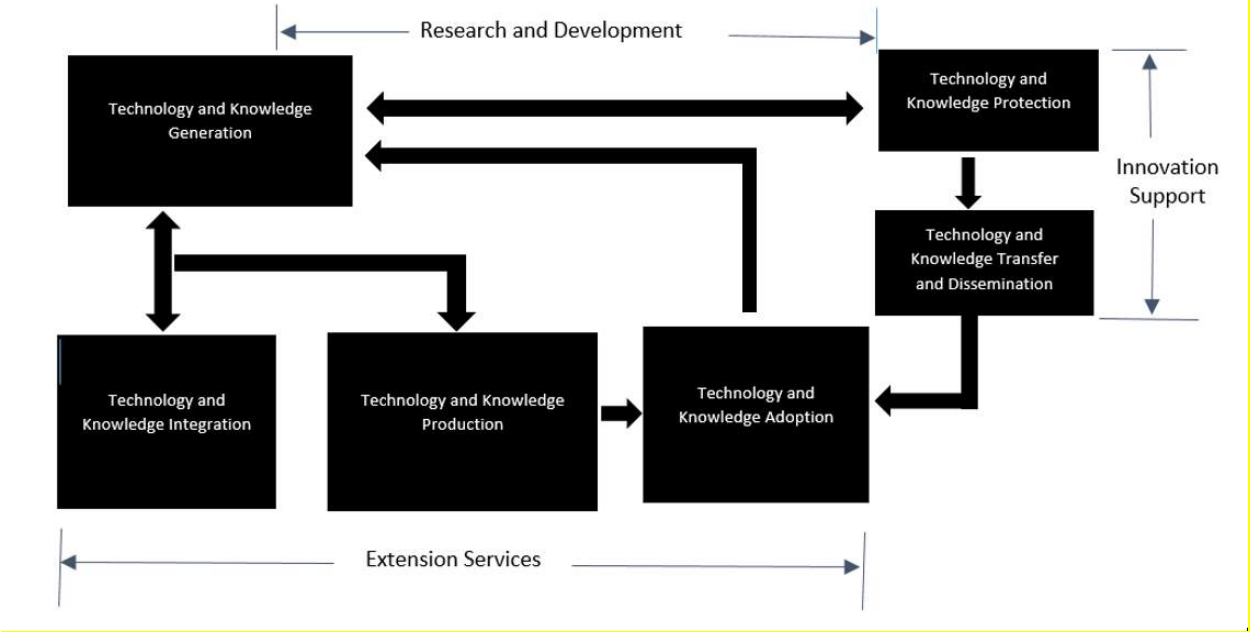


Fig. 3 Model of the REI processes

3. 1. Knowledge and Technology Generation

This process is performed by the teaching and non-teaching personnel of the University that aims to accept or refute previous theories and concepts or to design and build a prototype with an end goal of improving the processes and systems in learning institutions, service and product industries, and partner communities. It covers the formulation of researchable areas under the different priority programs anchored on the University research, development and extension agenda. It also involves the proposal writing, University-level in-house review, and selection for funding. The approval of research proposals for internal funding or monetary counterpart for external funding is granted on the basis of the relevant support or contribution of the research proposal to technology or knowledge generation. It includes the implementation stage following the research methodology, line item budget utilization, ethics protocols and time frame. It also includes the submission of progress reports and financial reports using the recommended monitoring and evaluation forms of the funding institutions to facilitate assessment of on-going researches. It requires the submission of financial and terminal reports for completed knowledge-based researches and the demonstration of the physical prototype for researches that are technology-based.

The process starts with the formulation of the researchable areas under different priority programs anchored on the University RDE Agenda which will be undertaken by the Vice President for Research, Extension and Innovation Support (VP-REIS), together with the Director for Research, Director for Extension, Director for Innovation Support and Center Heads. The VP for REIS shall present these priority programs to the University President and the BOR Research Committee for discussions and finalization of priority researchable areas.

Dissemination of priority researchable areas to all the campuses and units in the University will be done through an office advisory released by the University President. The Research Council is also tasked to disseminate these priority researchable areas to stakeholders including students, faculty and academic support staff and prospected partner agencies.

A call for proposal submission will be announced through an office advisory. Faculty researchers and academic staff may start writing and submitting their proposal to their Campus Research and Extension Coordinators. These proposals will be submitted to the Campus Executive Directors/ Executive Directors who shall endorse to the Office of the VP-REIS. Initial review and classification of research proposals will be done by the three Directors and the VP-REIS.

In the evaluation of these proposals an important question being raised is: Is it technology or knowledge generating research? If yes, the proposals will be assigned to RDE centers for in-house proposal review. If not, the research must be generating relevant support to technology or knowledge generating researches for it to be endorsed for the in-house proposal review.

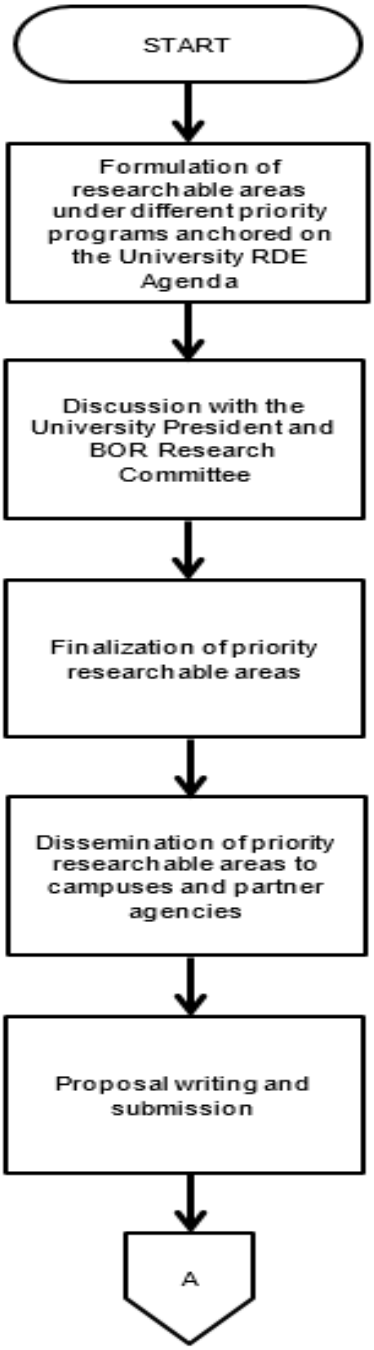
The in-house proposal review per Research Center will be scheduled. The research program/project/ study leader has to present his/her proposal before the panel members composed by the VP-REIS, Directors, Center Heads, internal and external experts.

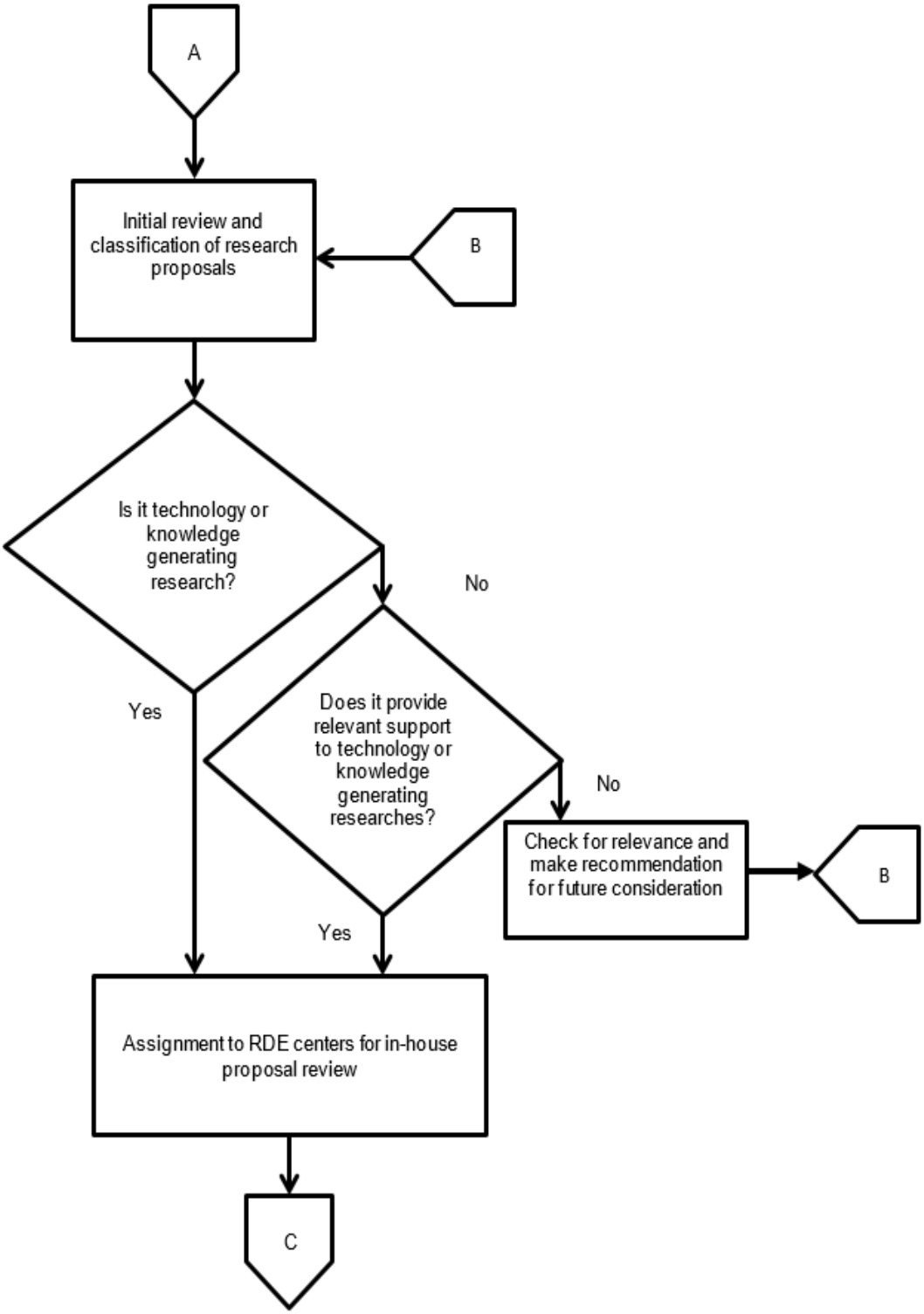
The panel members shall evaluate, review and filter the proposals presented. Another consideration is the means of funding of the research and extension proposal. If it is for internal funding, the Research Council shall endorse these selected proposals for funding. For external funding, monetary counterpart of the University or other support will be reviewed.

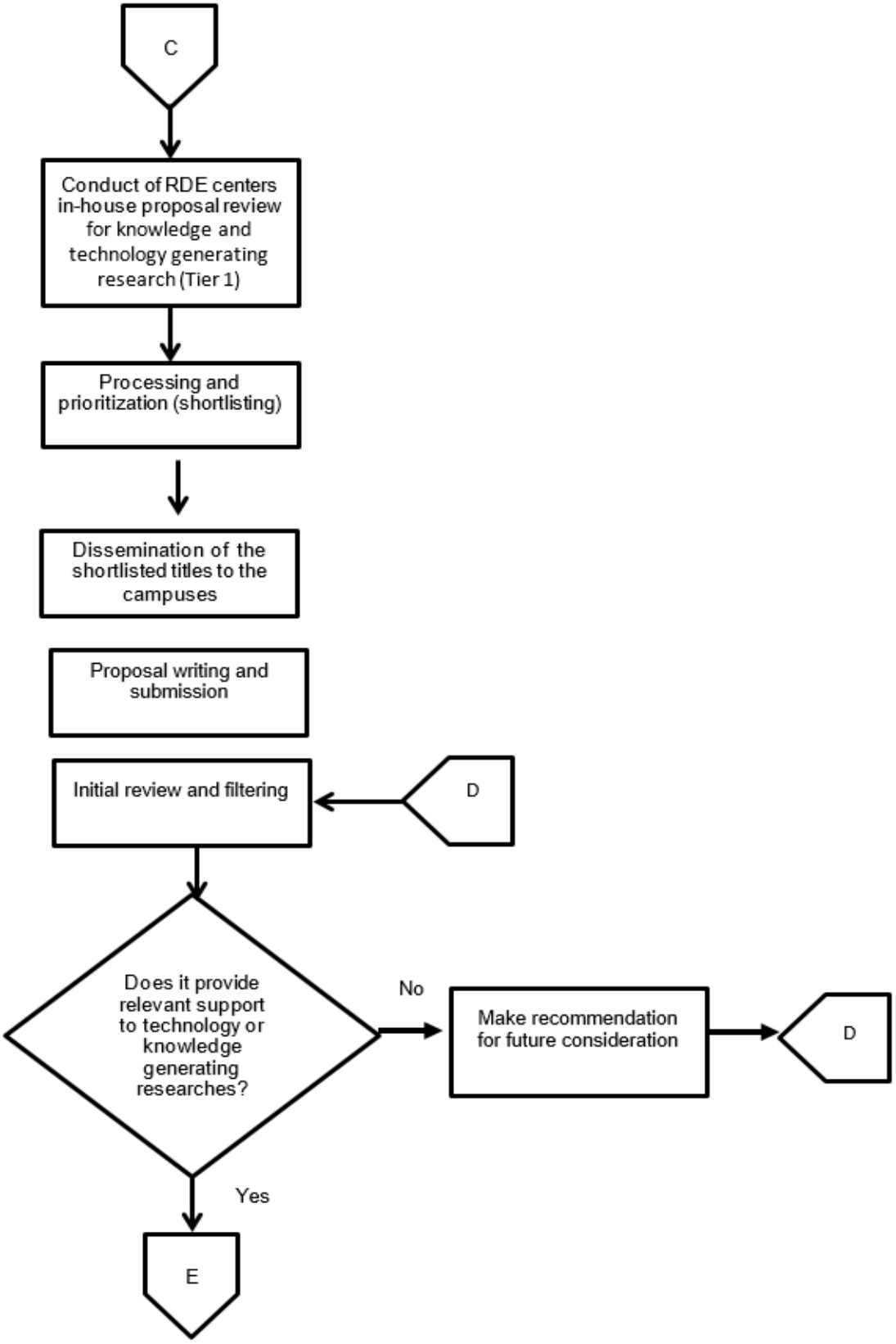
After the in-house proposal review of all the Research Centers, the VP-REIS shall disseminate the shortlisted titles to the campuses through an office advisory. For the approved externally-funded researches, a MOA will be agreed upon by PSU and the funding agency. The MOA shall be presented to the BOR for approval.

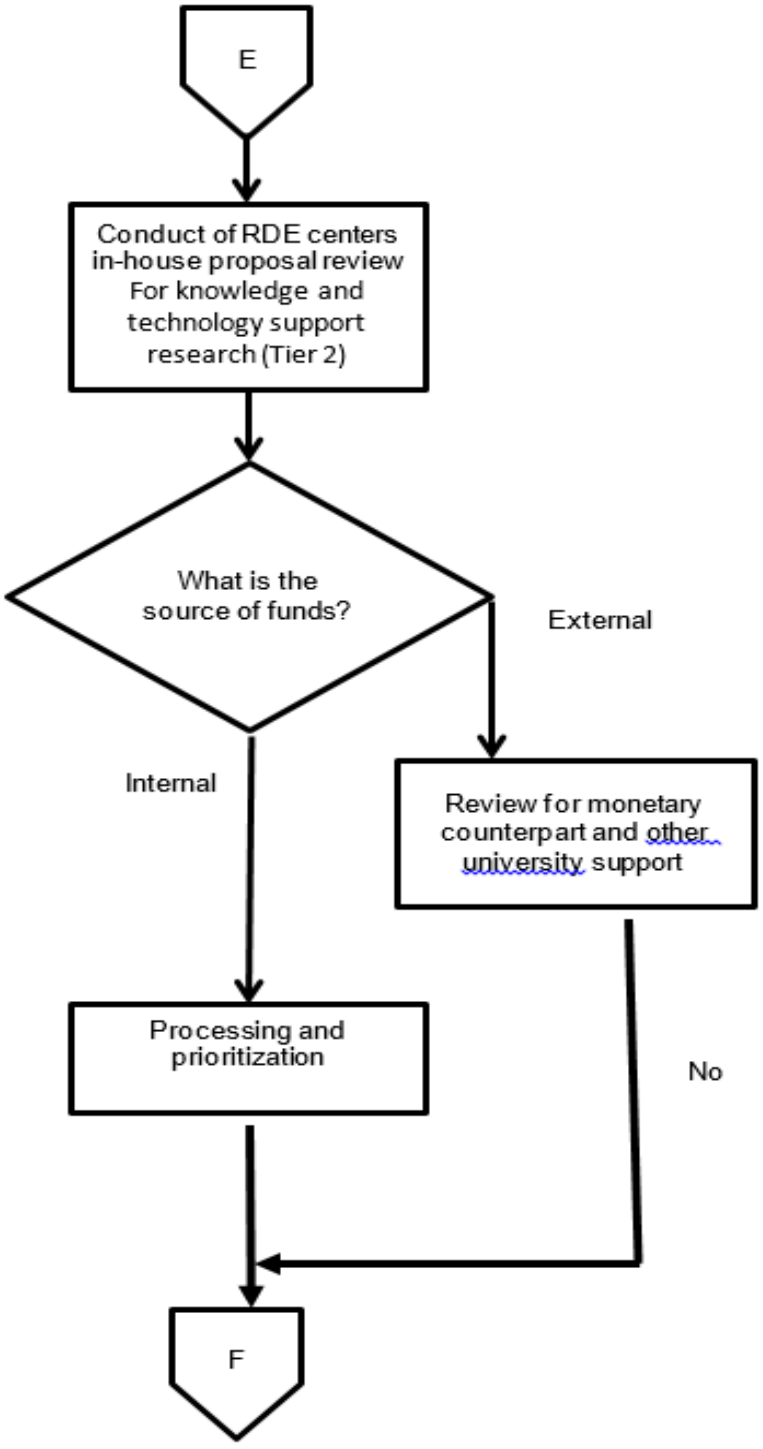
Fund will be requested for the implementation of the approved research proposal from the University for internally funded proposals; while, funds for externally funded may be requested from the University if funds are already downloaded to PSU coffers. Research progress monitoring and reporting shall be done. The researchers are required to submit a monthly and quarter progress report to their Campus Coordinators, who will classify for which Research Center each research progress report will be forwarded to. And once a research is completed, the researcher has to submit terminal reports. Now, in case the research is not completed on time, the concerned Research Center through its Monitoring and Evaluation Unit shall review the risks or problems encountered by the researcher/s and offer solutions or corrective actions in the process.

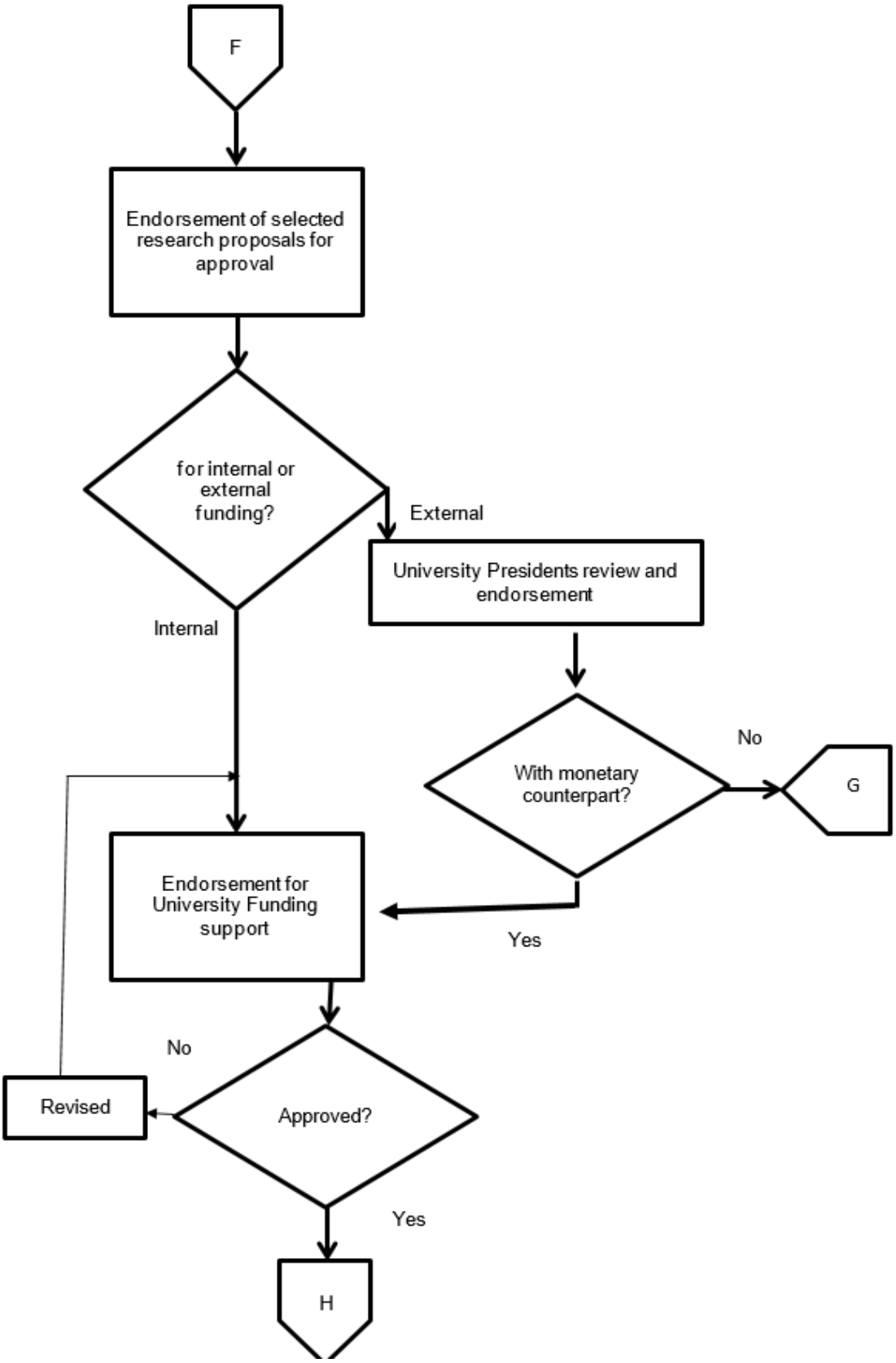
If the completed research generates knowledge, the concerned Research Center shall determine its utilization. If the research generates technology, such will be endorsed for its protection and the development of a prototype for production.

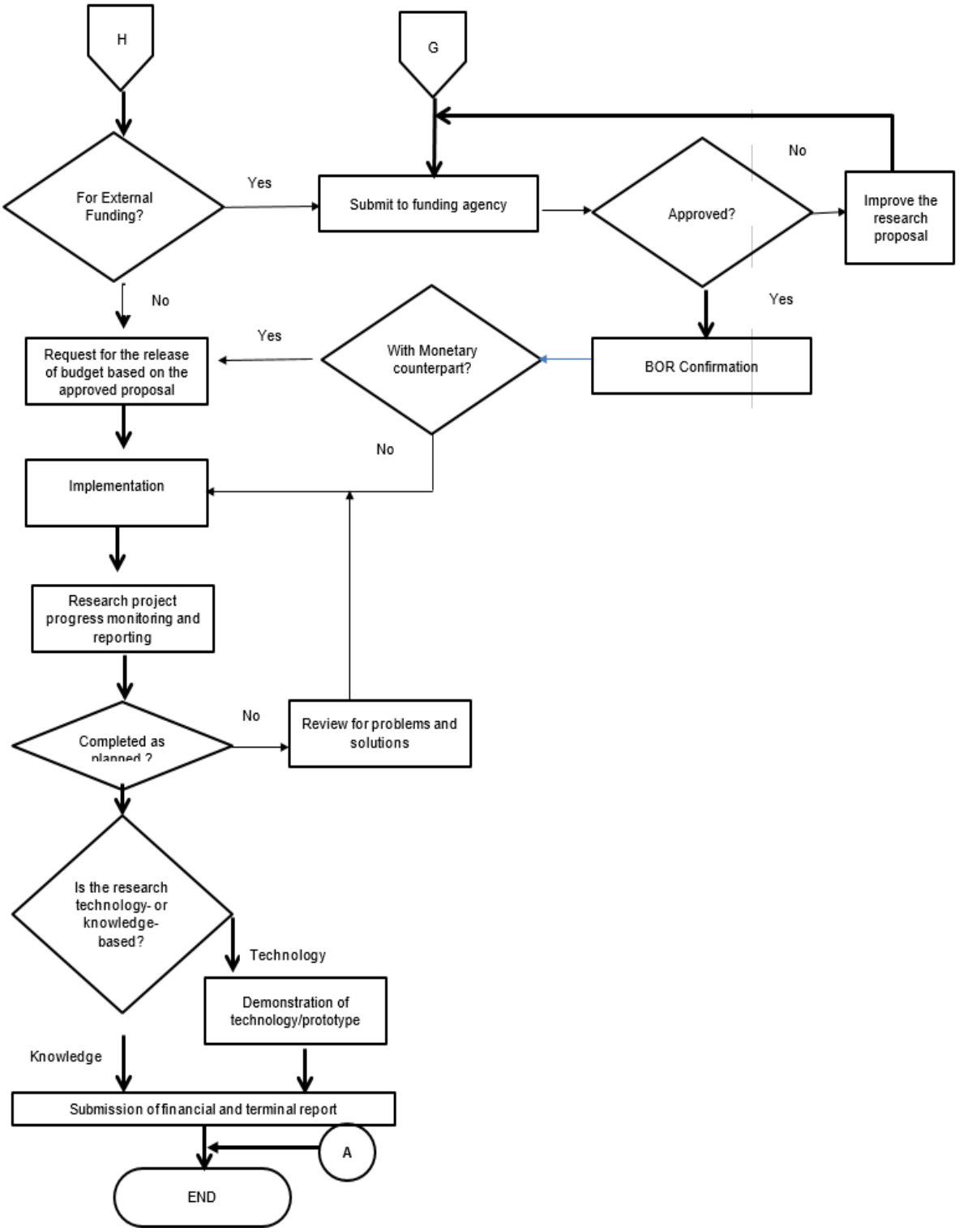

START
Formulation of researchable areas under different priority programs anchored on the University RDE Agenda
Discussion with the University President and BOR Research Committee
Finalization of priority researchable areas
Dissemination of priority researchable areas to campuses and partner agencies
Proposal writing and submission
A


A
Initial review and classification of research proposals
B
Is it technology or knowledge generating research?
No
Yes
Does it provide relevant support to technology or knowledge generating researches?
No
Check for relevance and make recommendation for future consideration
B
Yes
Assignment to RDE centers for in-house proposal review
C


C
Conduct of RDE centers in-house proposal review for knowledge and technology generating research (Tier 1)
Processing and prioritization (shortlisting)
Dissemination of the shortlisted titles to the campuses
Proposal writing and submission
Initial review and filtering
D
Does it provide relevant support to technology or knowledge generating researches?
No
Make recommendation for future consideration
D
Yes
E


E
Conduct of RDE centers in-house proposal review For knowledge and technology support research (Tier 2)
What is the source of funds?
External
Internal
Review for monetary counterpart and other university support
Processing and prioritization
No
F

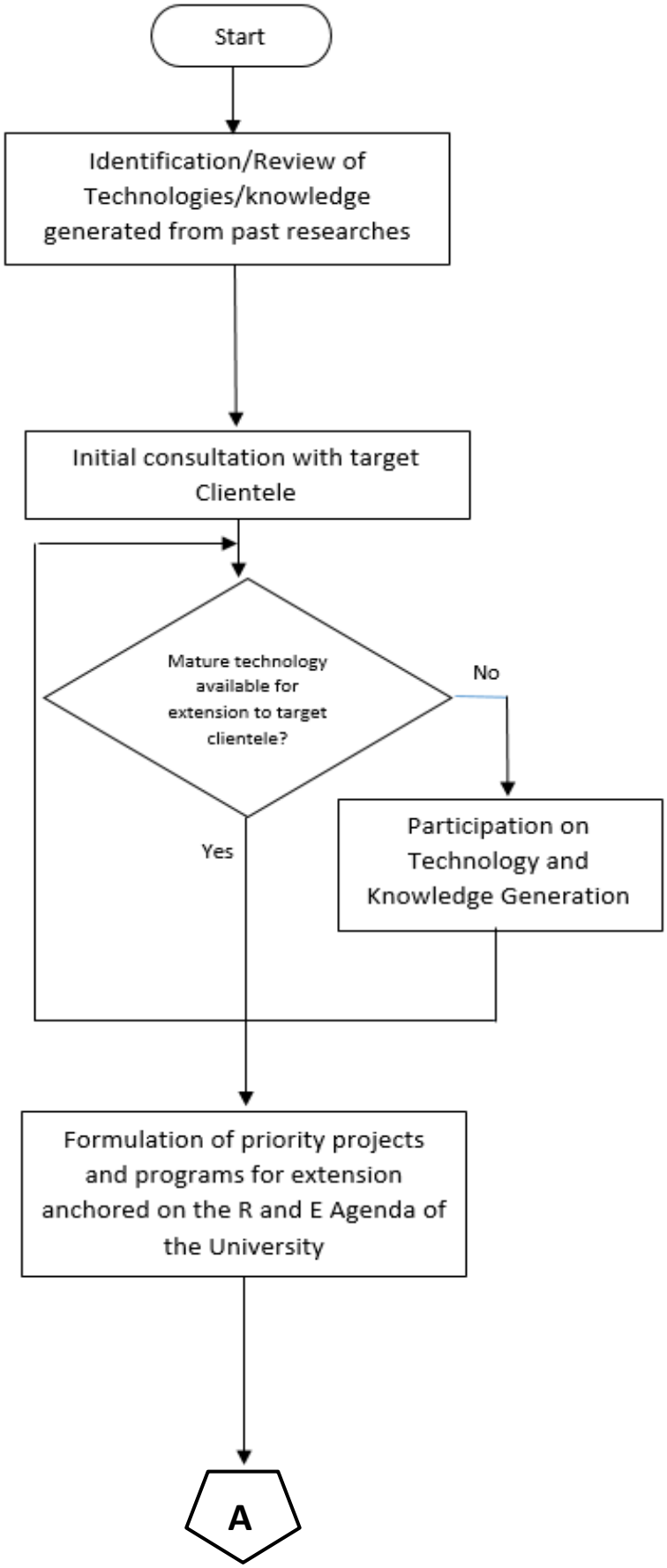

F
Endorsement of selected research proposals for approval
for internal or external funding?
External
University Presidents review and endorsement
Internal
With monetary counterpart?
No
G
Endorsement for University Funding support
Yes
No
Revised
Approved?
Yes
H

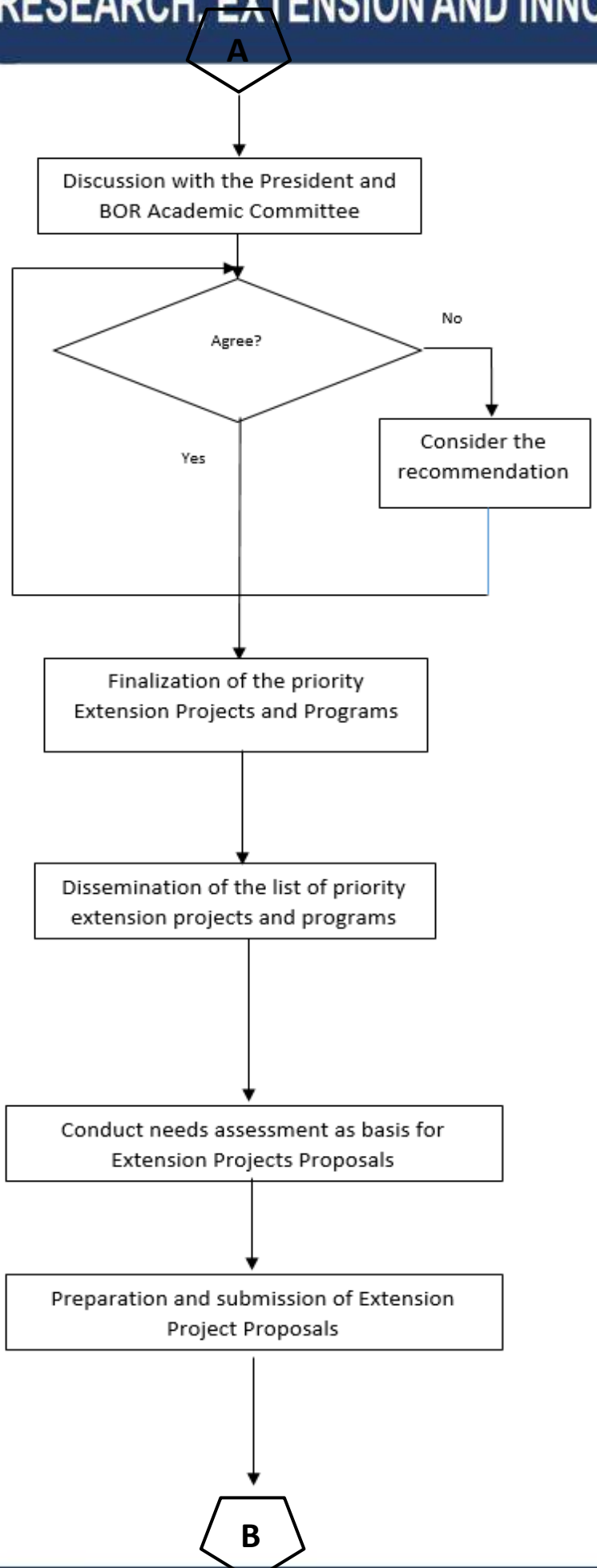

H
G
For External Funding?
Yes
Submit to funding agency
Approved?
No
Improve the research proposal
No
Yes
Request for the release of budget based on the approved proposal
Yes
With Monetary counterpart?
BOR Confirmation
No
Implementation
Research project progress monitoring and reporting
Completed as planned ?
No
Review for problems and solutions
Is the research technology- or knowledge-based?
Technology
Demonstration of technology/prototype
Knowledge
Submission of financial and terminal report
A
END

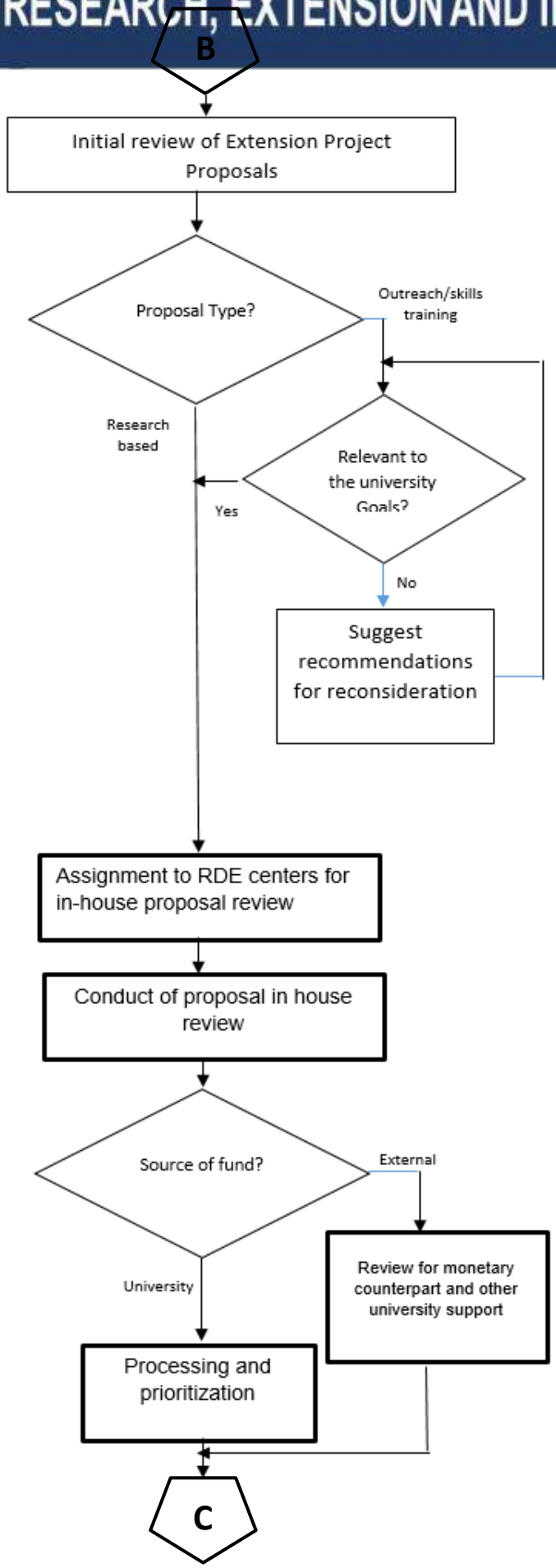
3.2. Knowledge and Technology Integration

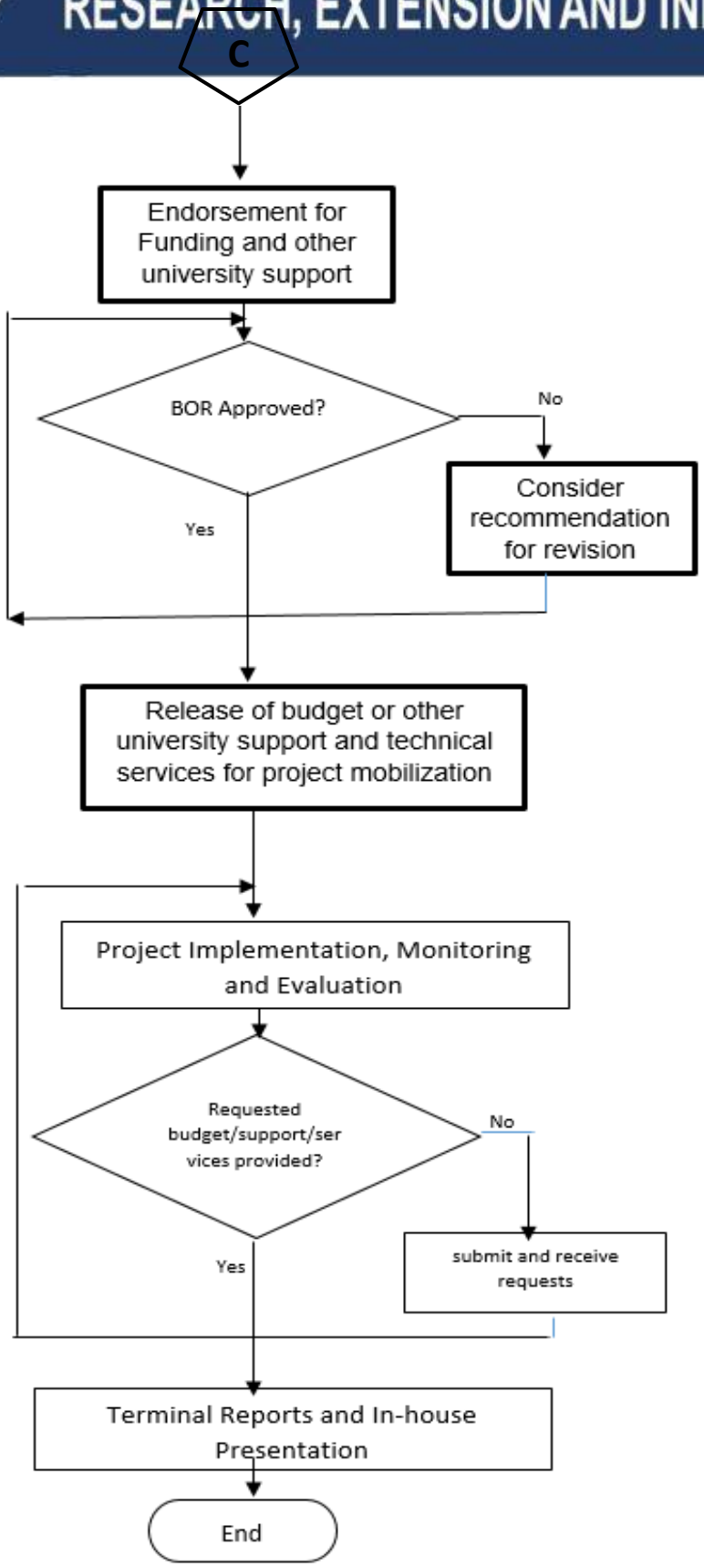
This process covers the initial utilization of the newly generated knowledge and technology in the field to identify early feedbacks, assessment of maturity, fine adjustment and enhancement, and packaging of the improved version. It starts with the evaluation of the knowledge and technology by the experts in the field as to its functionality, reliability, durability, compliance with standards and risk responsive for the purpose of understanding the whole picture of the research output as well as how it could be incorporated into the process or system in a service or product industry, and the community. This aims to improve the generated research output, reach its target level of maturity, and obtain the expected satisfaction level from future adopters, investors and other players in the market. It includes the conduct of economic feasibility, incremental benefit and cost analysis, and product risk assessment.

The incremental costs of the utilization of knowledge or technology should be justified based on its beneficial effects on teaching and learning, health and safety, production process, or community development. It also involves identification of possible risk or failure paths once the new knowledge or technology is utilized as well as countermeasures to prevent negative event sequences and behaviors. It includes the assessment of maturity or the identification of the readiness level of the knowledge or technology, It requires fine tuning of the generated output based on the results of different assessments. It ends in packaging of the improved knowledge or technology giving emphasis to the product features, logistics involved and consumer legal requirements.


Start
Identification/Review of Technologies/knowledge generated from past researches
Initial consultation with target Clientele
Mature technology available for extension to target clientele?
No
Yes
Participation on Technology and Knowledge Generation
Formulation of priority projects and programs for extension anchored on the R and E Agenda of the University
A


A
Discussion with the President and BOR Academic Committee
Agree?
No
Yes
Consider the recommendation
Finalization of the priority Extension Projects and Programs
Dissemination of the list of priority extension projects and programs
Conduct needs assessment as basis for Extension Projects Proposals
Preparation and submission of Extension Project Proposals
B


B
Initial review of Extension Project Proposals
Proposal Type?
Outreach/skills training
Research based
Relevant to the university Goals?
Yes
No
Suggest recommendations for reconsideration
Assignment to RDE centers for in-house proposal review
Conduct of proposal in house review
Source of fund?
External
University
Review for monetary counterpart and other university support
Processing and prioritization
C


C
Endorsement for Funding and other university support
BOR Approved?
No
Consider recommendation for revision
Yes
Release of budget or other university support and technical services for project mobilization
Project Implementation, Monitoring and Evaluation
Requested budget/support/services provided?
No
submit and receive requests
Yes
Terminal Reports and In-house Presentation
End

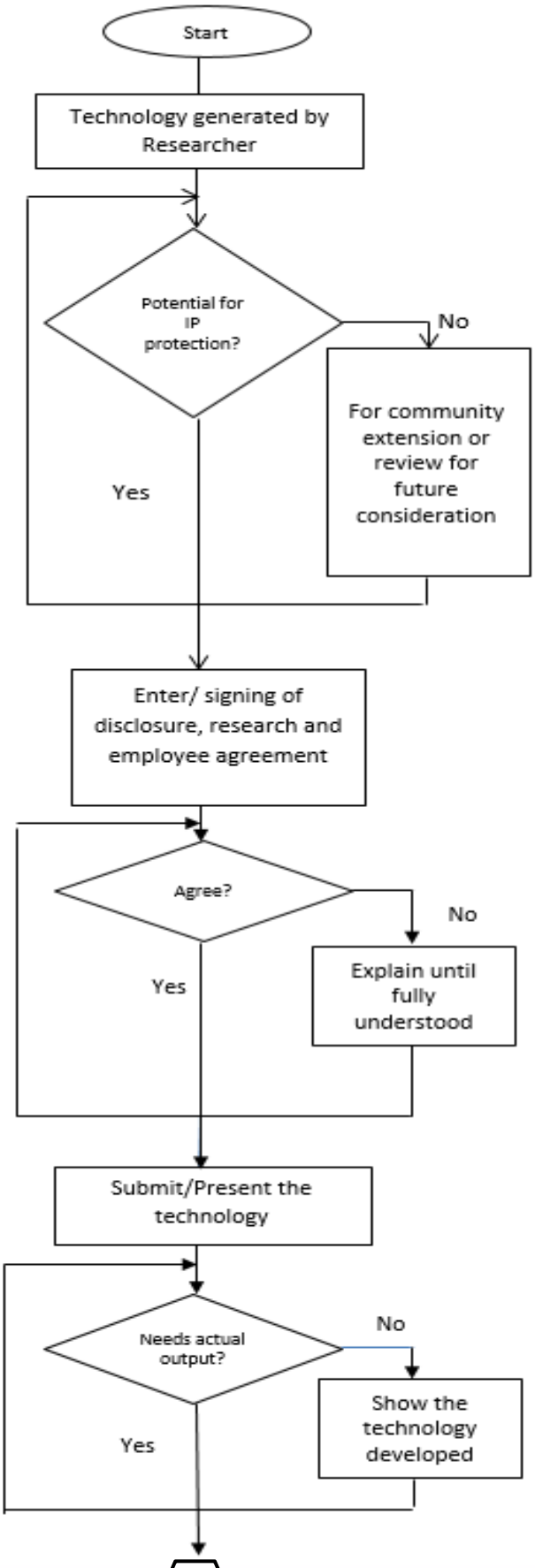
3.3. Knowledge and Technology Protection

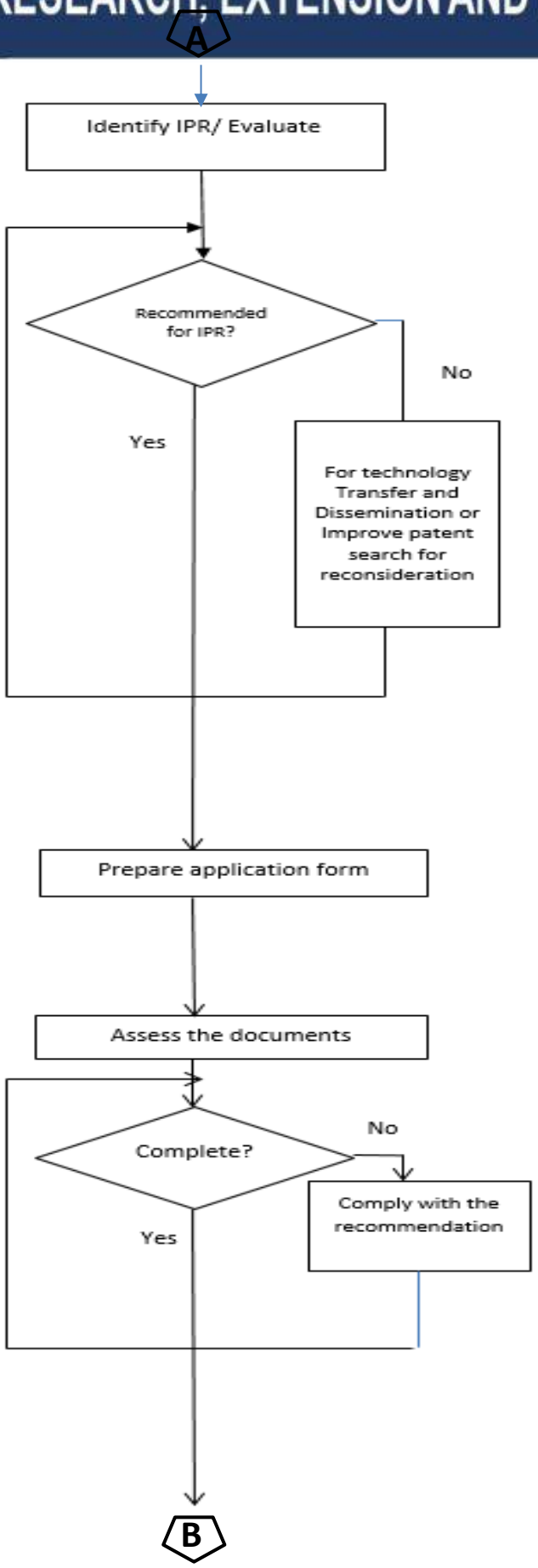
The technology generated from research having potential characteristics for patent application is pre-determined during the in-house review. The proposed technology and completed researches having potential for IP application will be endorsed to the technology/knowledge generation and with the guidance of the Intellectual property, Innovation and Technology Support Office (IP-ITSO) in the conduct of patent search. Endorsement to the IP-ITSO follows after the patent search with the attachment of the suggestions and comments of the patent evaluator.

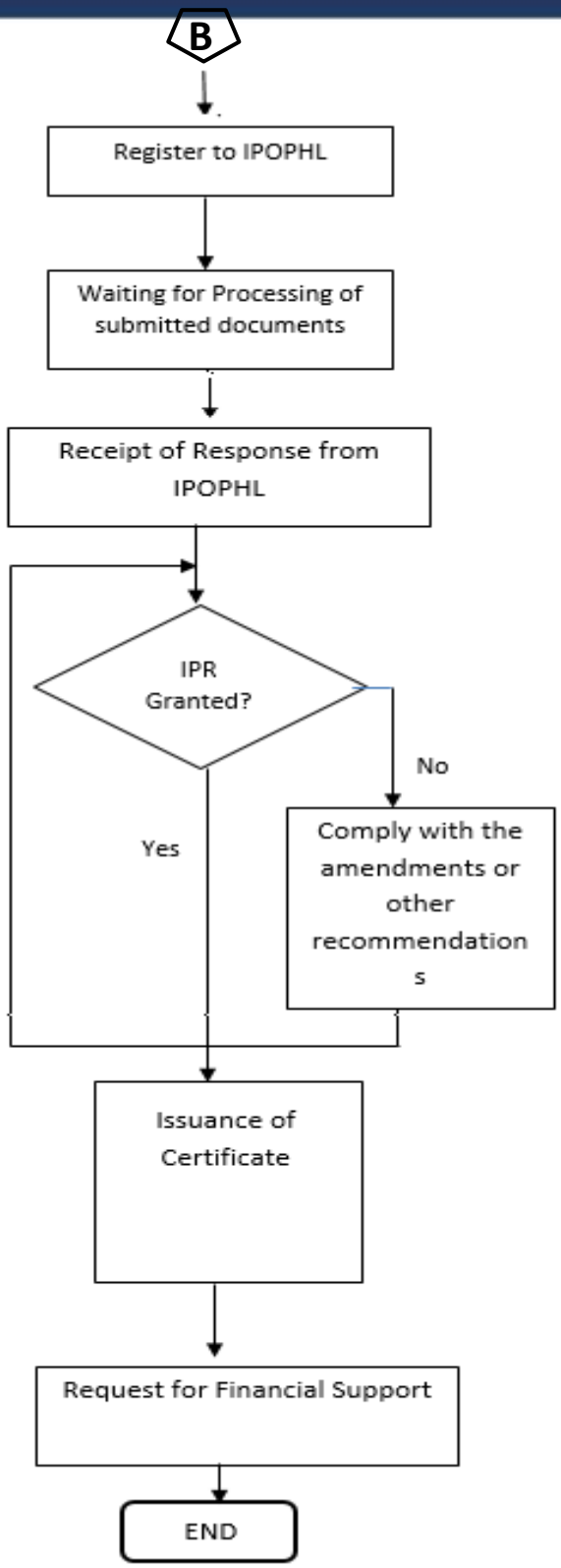
The author/ researcher/inventor/designer will fill out the necessary disclosure form and other forms to be accomplished and will explain briefly the step by step procedure. The submission of the proposed technology or technology completed will determine the type of Intellectual Property Right (IPR) application to register. Drafting of the claims of the technology will be discussed together with the proponent(s) elucidating the nature and scope and boundaries of the technology. The IP-ITSO will guide the researcher/ inventor/designer in applying and filling out the application form to be submitted at the Intellectual Property of the Philippines (IPOPHL). The ITSO office is also responsible in reviewing the inclusiveness of the claims as well as the completeness of the form being fill-out. All financial transaction regarding the IP filling, up to awarding of certificate will be charged to the University's fund.

The IP-ITSO will be explaining the granting procedure of the different IPR application to the concern individuals. Furthermore, we will be monitoring the status of the application, as well as the response of the author/researcher/inventor/designer on the suggestions made by the patent examiner of IPOPHL. The office will also be responsible until the awarding of certificate of the applicant is attained.

For those proposed technology and or completed researches with technology but with no IP potential will be for extension or improve patent search for reconsideration.


Start
Technology generated by Researcher
Potential for IP protection?
No
For community extension or review for future consideration
Yes
Enter/ signing of disclosure, research and employee agreement
Agree?
No
Explain until fully understood
Yes
Submit/Present the technology
Needs actual output?
No
Show the technology developed
Yes
A

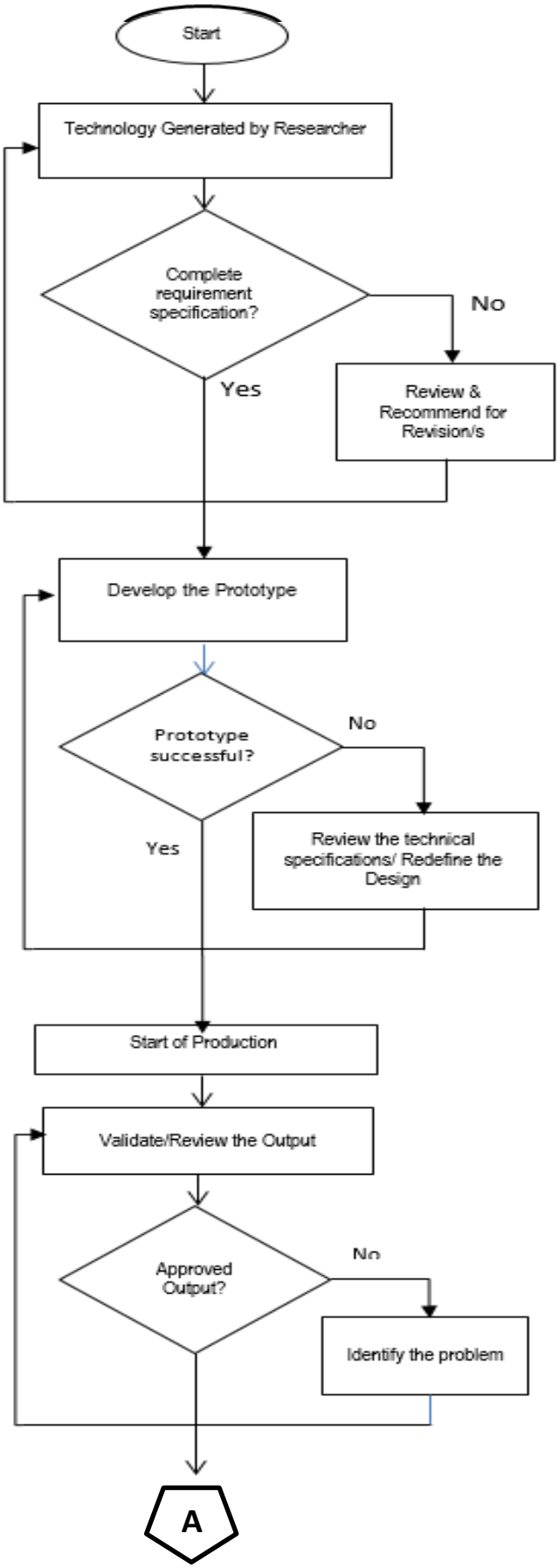

A
Identify IPR/ Evaluate
Recommended for IPR?
No
Yes
For technology Transfer and Dissemination or Improve patent search for reconsideration
Prepare application form
Assess the documents
Complete?
No
Comply with the recommendation
Yes
B

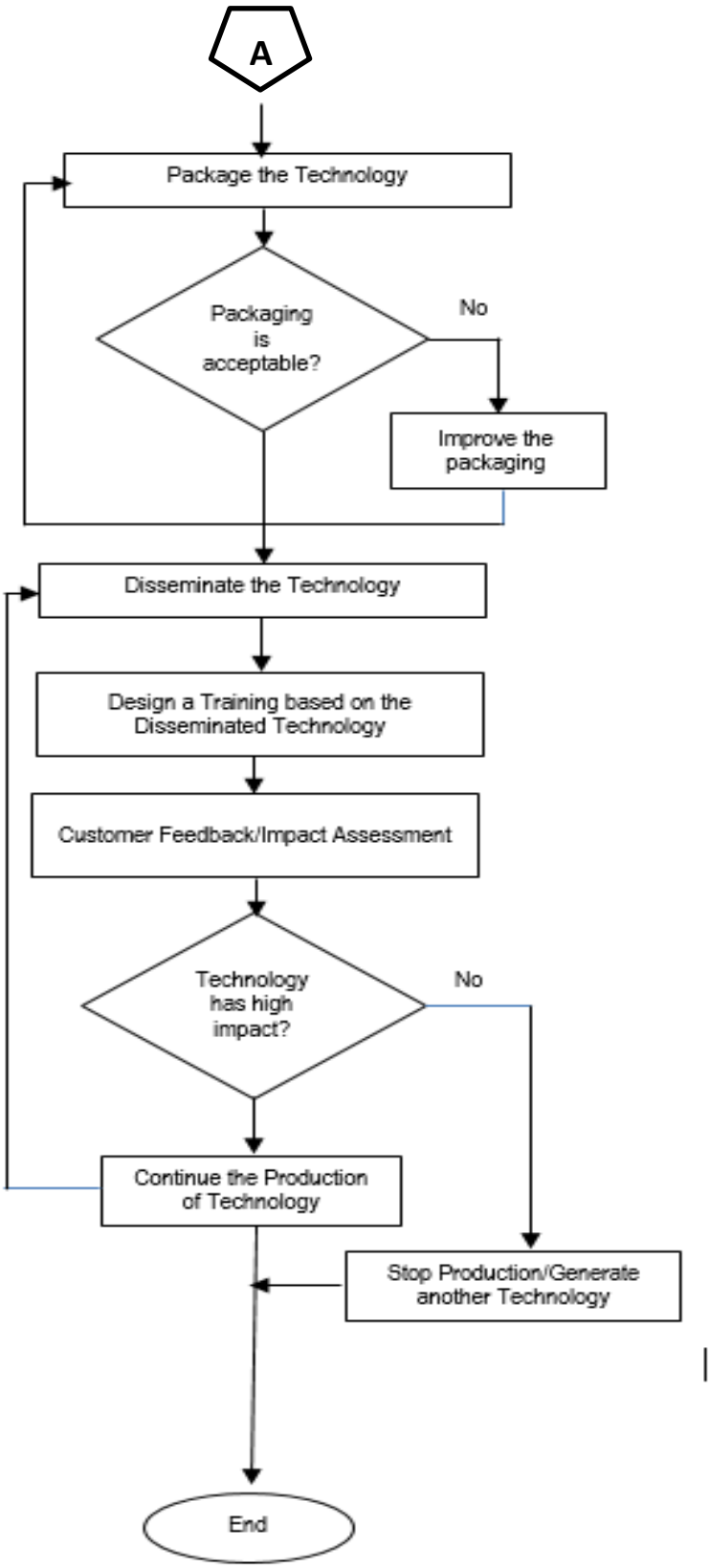

B
Register to IPOPHL
Waiting for Processing of submitted documents
Receipt of Response from IPOPHL
IPR Granted?
No
Yes
Comply with the amendments or other recommendations
Issuance of Certificate
Request for Financial Support
END

3.4. Knowledge and Technology Production

This process starts with the identification of the purpose of technology by the Technology and Knowledge Generation Unit. Once technical requirements are specified and specifications needed in prototyping are cleared, the researcher/s of the said technology will be notified for his/her/ their permission to endorse the generated technology to the production of prototype. To test the functionality and usability of the prototype developed, demonstration will be done. At this stage, potential adopters from the community will be invited to assist in the assessment of effectiveness of the technology based on their needs. If the prototype passed the assessment, the Technology and Knowledge Production Unit will start the production. The output product shall then be validated through comparison of its functionality and usability to the prototype developed. Once the product has satisfied all the requirement needed by the end-user, the technology will then be packaged for dissemination.

Upon dissemination of the technology, the extension unit shall design trainings available and as needed by the community. After each training, a customer feedback and/or impact assessment shall be done to determine if the technology needs to continue or stop in production. Documentation will be done for the preparation and submission of terminal reports.


Start
Technology Generated by Researcher
Complete requirement specification?
No
Yes
Review & Recommend for Revision/s
Develop the Prototype
Prototype successful?
No
Yes
Review the technical specifications/ Redefine the Design
Start of Production
Validate/Review the Output
Approved Output?
No
Identify the problem
A

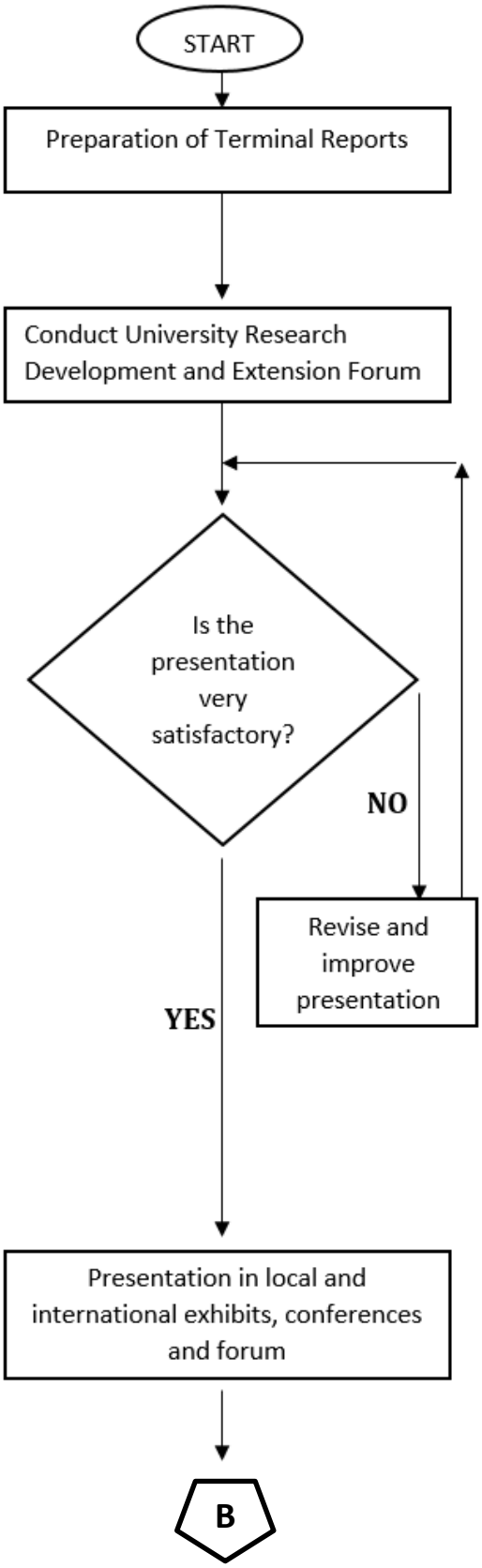

A
Package the Technology
Packaging is acceptable?
No
Improve the packaging
Disseminate the Technology
Design a Training based on the Disseminated Technology
Customer Feedback/Impact Assessment
Technology has high impact?
No
Continue the Production of Technology
Stop Production/Generate another Technology
End

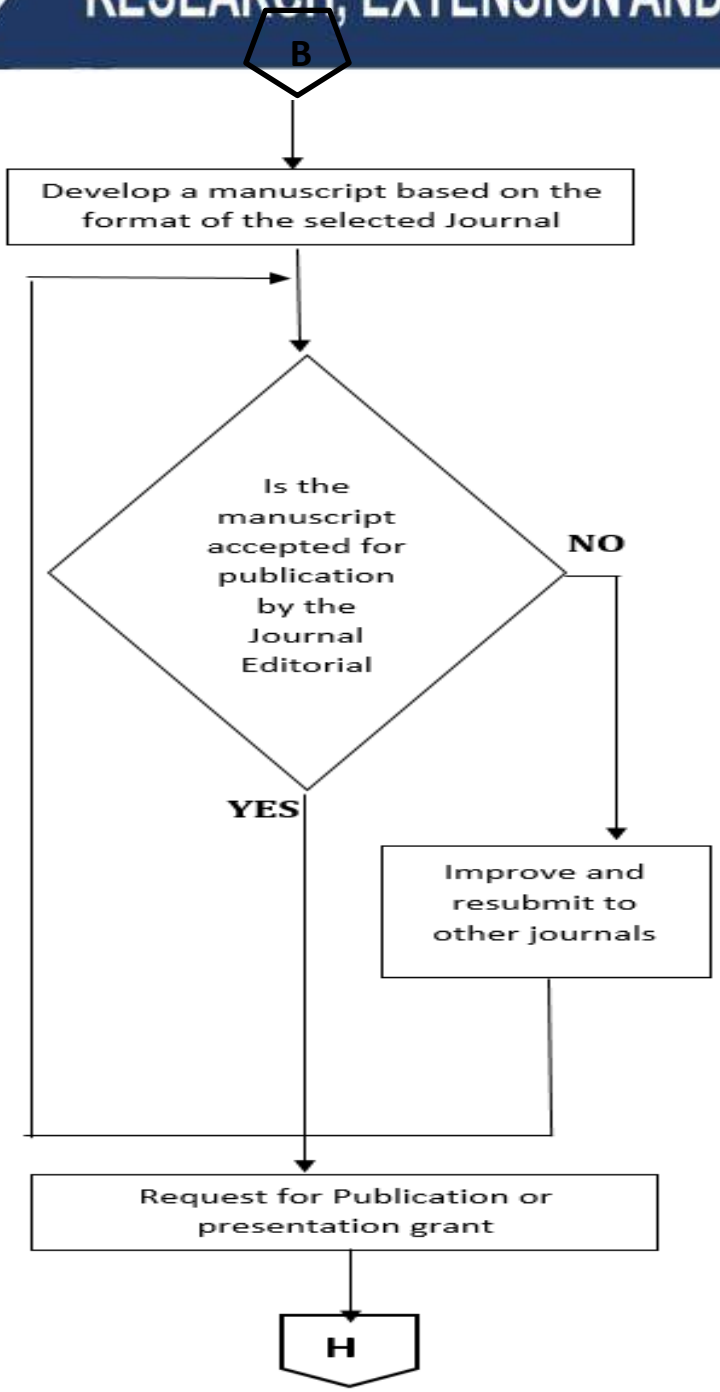
3.5. Knowledge and Technology Transfer and Dissemination

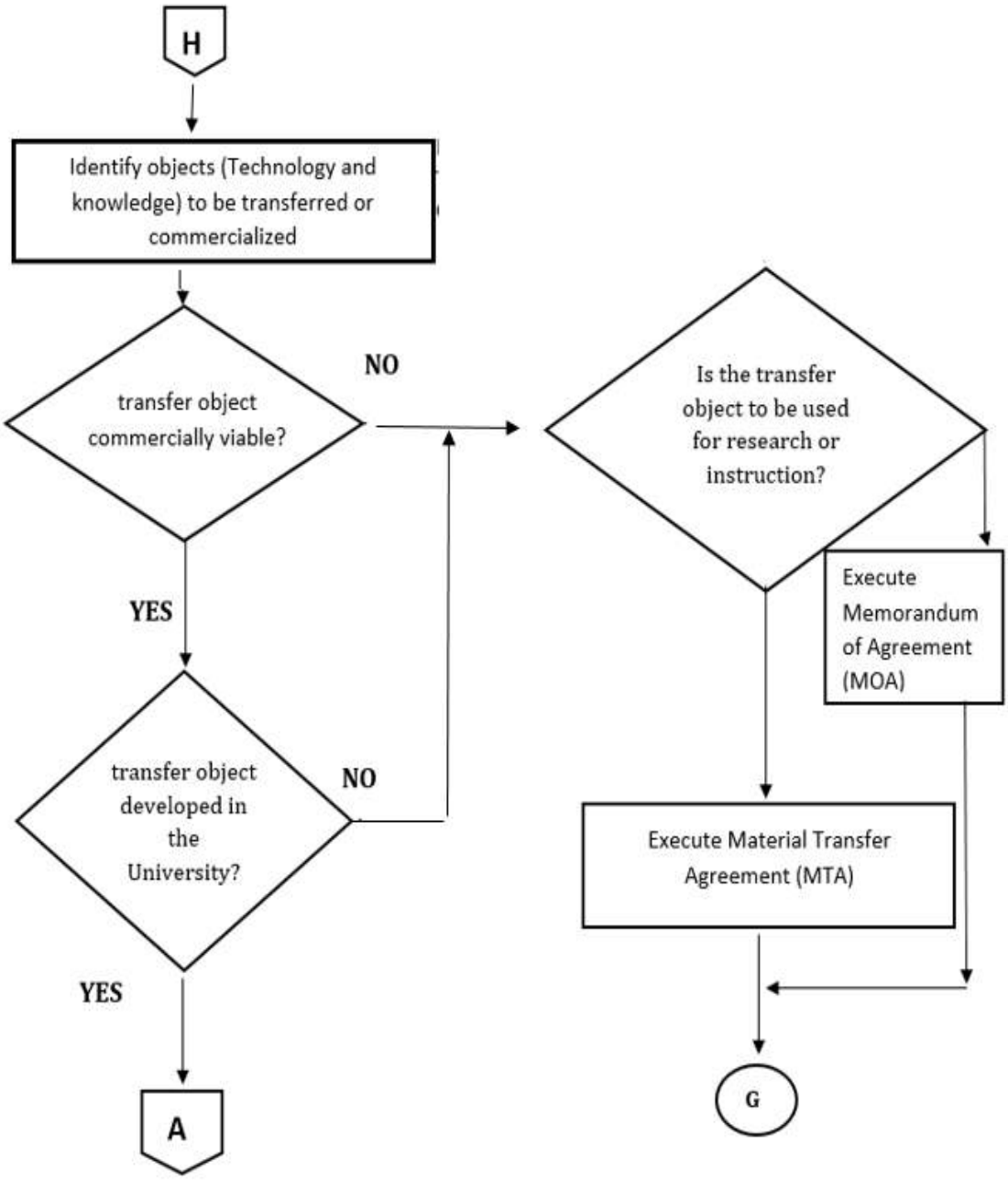
This process centers on the dissemination and transfer of knowledge from University to the target clientele. It starts with the submission of complete terminal report and will be presented during the forum and open for suggestions or comments to be incorporated so to improve the quality of the output. The improved output can be presented in local, provincial/regional, national or international in a form of publication and oral presentation after applied protection. The Extension services or Technology Transfer Office (TTO) will identify the objects ready to be transferred, this transfer objects are classified as IPR's (patents, utility model, or industrial design) and the office also determine the objects its commercial viability. If the transfer object does not have commercial value but maybe useful in the community are nonexclusively transferred to other parties via Memorandum of Agreement.

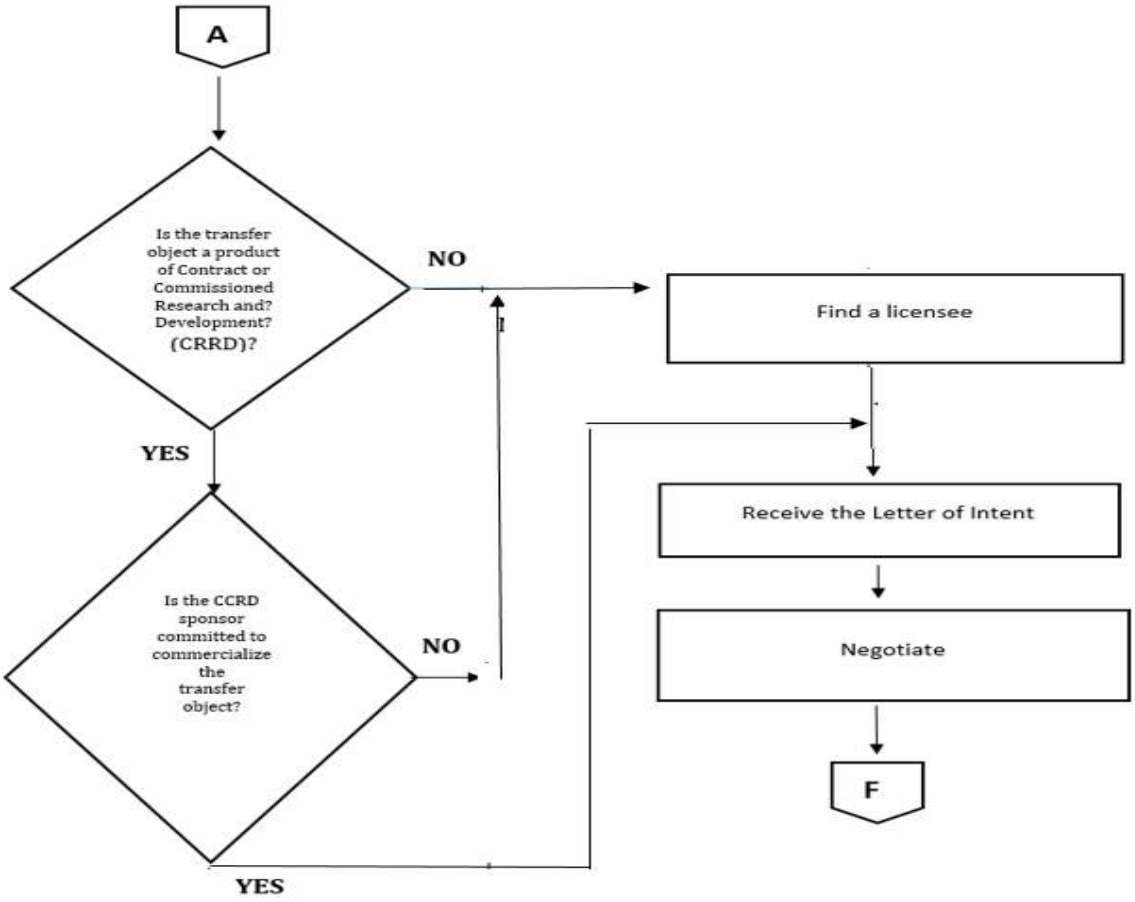
The TTO/Researcher will provide relevant information/ documents like reference materials to facilitate promotion, dissemination, transfer or commercialization of the IP's/IPR's to prospective adaptors. The university has the right to commercialize any potential IPR generated within a year it was granted, but the inventor/author/designer shall be allowed to commercialize or participate in a spin-off company subject to the provision of R.A. 10055. However, the University shall have all the right to the IP and take over the commercialization. Refer to Technology Transfer Protocol of the University for more information.

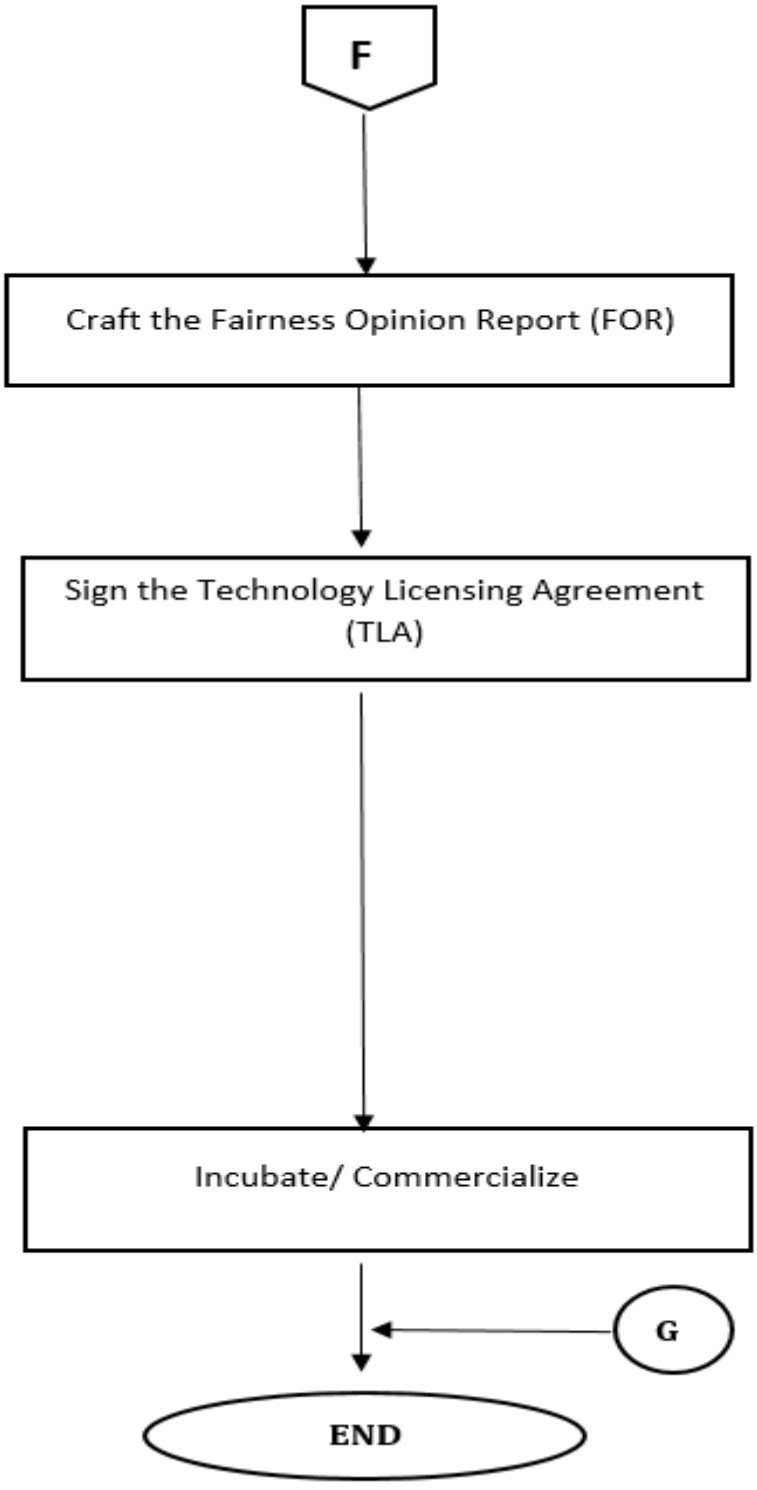
Pitching session, exhibits or caravans, professional meetings and publish list of technology through IP depot at IPOPHL are some ways to find prospect technology adopters and investors. From that potential adopters or investors will write a letter of intent, negotiate, and consider the projected cost, valuation and other business transactions. Craft the fairness opinion report (FOR) and present to the Fairness Opinion Board at DOST for certification and clearance. Technology Licensing Agreement (TLA) will be draft from the TTO and present to the prospective technology adopter for review and finalization, from there explain the necessary payment stipulated in the TLA to the University cashier. The TTO will conduct necessary training and technical assistance to the adopter in the initial stage of incubation/commercialization, followed by ex-post analysis/impact assessment three years after technology or knowledge transfer.


START
Preparation of Terminal Reports
Conduct University Research Development and Extension Forum
Is the presentation very satisfactory?
NO
Revise and improve presentation
YES
Presentation in local and international exhibits, conferences and forum
B


B
Develop a manuscript based on the format of the selected Journal
Is the manuscript accepted for publication by the Journal Editorial
NO
YES
Improve and resubmit to other journals
Request for Publication or presentation grant
H


H
Identify objects (Technology and knowledge) to be transferred or commercialized
transfer object commercially viable?
NO
YES
transfer object developed in the University?
NO
YES
A
Is the transfer object to be used for research or instruction?
Execute Memorandum of Agreement (MOA)
Execute Material Transfer Agreement (MTA)
G


A
Is the transfer object a product of Contract or Commissioned Research and? Development? (CRRD)?
NO
YES
Find a licensee
Receive the Letter of Intent
Negotiate
F
Is the CCRD sponsor committed to commercialize the transfer object?
NO
YES

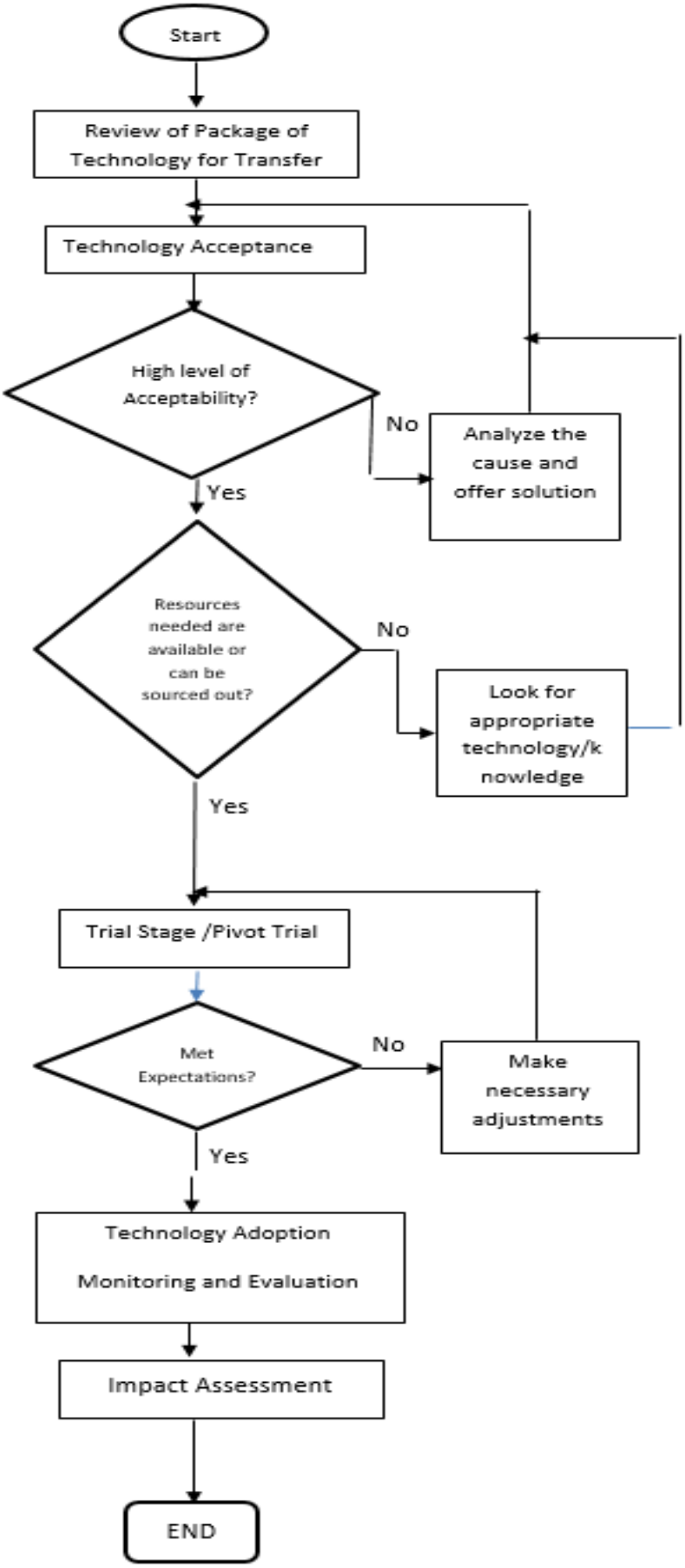

F
Craft the Fairness Opinion Report (FOR)
Sign the Technology Licensing Agreement (TLA)
Incubate/ Commercialize
G
END

3.6. Knowledge and Technology Adoption

The process of technology and knowledge utilization and adoption starts with the Extension Services Division which reviews the results of training-workshop or series of workshops on mature technology conducted by the University. Target adopters are then assessed whether to use or not to use the PoT based on its perceived usefulness and ease of utilization.

Once decided, the target adopter, with the help of the Extension Services Division and the PoT generator will access the capability of the target adopter on the resources needed to use the technology. If the resources needed are not available, target adopter may source out the needed resources. Target adopters will initially utilize technology under trial. Continuous trials will be made until all expectations are made following necessary adjustments before another trial is to be conducted. Once satisfied with the trials, target adopter will adopt the technology subject to some agreed rules on the adoption.

Monitoring and evaluation will be conducted throughout the adoption period of the PoT to address possible issues and concerns and for improvement. At least three years after adoption of PoT, the Extension Research Monitoring and Evaluation Unit will conduct impact assessment.


Start
Review of Package of Technology for Transfer
Technology Acceptance
High level of Acceptability?
No
Analyze the cause and offer solution
Yes
Resources needed are available or can be sourced out?
No
Look for appropriate technology/knowledge
Yes
Trial Stage /Pivot Trial
Met Expectations?
No
Make necessary adjustments
Yes
Technology Adoption
Monitoring and Evaluation
Impact Assessment
END

CHAPTER IV
GENERAL POLICIES AND PROCEDURES

Policies, procedures and guidelines are an essential element in the operations of any organization. Policies address pertinent issues while procedures clearly define a sequence of steps to be followed in a consistent manner. Policies and procedures however are generic. They provide guide but do not provide detailed specifics in implementation.

Policies, procedures and guidelines (PPG) are useless if not effectively communicated to the employees. In the development and implementation of research, extension and innovation programs, utilizing PPG ensures that the people involved are consistent in their decisions.

4.1. Guidelines Activities for Technology and Knowledge Generation

4.1.1. Preparation of R&D Proposal

Capsule Proposal provides the basic information of a particular project that the proponent would like to implement in his/her/their agency.

4.1.1.1. Basic Information

1. Project Title. Brief but clear official and distinctive name of the project that describes the main theme of the proposed study.
2. Proponent(s). Complete name of the project leader and designation including the agency where he belongs, office address, contact numbers and email address.
3. Implementing Agency. Lead agency (Research Center/Institution/College where the proponent belongs) and collaborating agency(ies) (Persons/Researchers and/or their Agencies who will be cooperating with the lead agency) that will be implementing the project.
4. Project Duration. Time that indicates proposed date of start and completion of the project.
5. Project Location. Place or area covered by the project.
6. Total Budget Requested. Financial requirement of the project in Philippine peso.

4.1.1.2. Technical Description

1. Rationale. Definition of research problem, scope and coverage, significance of the research project as well as the justification for its conduct.
2. Objectives. General and/or specific aim of the project with statements that should be consistent with the title
3. Methodology. Methodology indicates the project components (if applicable), and contains the details and procedure to be followed in conducting the research and includes:
    a) Factors in experiment (variables)
    b) Treatments to be used and lay-out
    c) Procedures: experimental design, replications, characteristics of experimental units (sites, number, area, etc.)
    d) Statistical analysis
    e) Specific management of the experiment (this include specific features about the management of the experiment that are not included in the treatments)
    f) Cultural practices (i.e. land preparation, pest control, weed control, fertilization, etc.)
4. Expected Output. Specific product or service that the project is expected to produce or 6Ps

5. Potential Impact. Broad and long-term effects of the results of the project.
6. Milestone. Yearly expected output of the project.
7. Users or Beneficiaries. Intended beneficiaries of the project results (e.g. marginalized farmers, unemployed graduates, etc.)
8. Budgetary Requirement (including counterpart funds or other sources). Financial requirement that will be incurred for the entire duration of the project and broken down into:
    a) Personal Services (PS)
    b) Maintenance and Other Operating Expenses (MOOE)
    c) Equipment Outlay (EO)
    d) Administrative Cost (AC)

4.1.1.3. Brief Profile of Proponent(S)

1. Education. Information about the proponent's most recent scientific education including the names and addresses of the institutions attended, dates of the courses and academic degrees achieved a swell as the area of specialization.
2. Other Studies. Other courses or training programs attended by the proponent in the field of the proposed research project.
3. Publications and Research Experience. List of major publications, thesis/theses and researches done by the proponent in the field of the proposed research project.

4.1.2. Eligibility, Qualifications and Responsibilities of PSU Researchers

4.1.2.1. Eligibility of PSU Researchers

All faculty and staff of the Pangasinan State University regardless of the status of employment are eligible and encouraged to submit proposals for possible funding by the university and or by external funding agencies. New researchers are limited to one study in line with his/her field of specialization or a co-researcher of a senior researcher working on a research project. Faculty and non-teaching personnel under research plantilla are required to conduct and submit one study per year. Such work has to be included in the IPCR.

4.1.2.2. Qualifications of PSU Researchers

The researchers must possess the academic qualifications and track record of successful implementation of research projects and should be able to carry out the project with due diligence and efficiency, and in accordance with appropriate administrative, financial, technical, managerial practices in conformity with sound environmental and social standards.

4.1.2.3. Responsibility of Researchers

All faculty and staff are encouraged to conduct research programs/projects/studies based on their expertise and agenda set forth in the University and their respective campuses. Proposals should be submitted to the Campus Research and Development Council for evaluation and endorsement to the University Research and Development Council. ` Once the proposal is approved, the researchers shall take the full responsibility in the implementation of the outlined activities. Completed reports must be submitted as scheduled. The concerned researchers must also present in appropriate fora the results of their studies/projects and publish the same in a journal. Researchers shall submit monthly and quarterly research and financial report.

4.1.3. Categories of Research according to Fund Source

By funding source, research support in the University may come from two sources:

* Internally funded research
* Externally funded research

4.1.3.1. Internally funded researches

Internally funded researches are researches conducted with funding coming from PSU either through the General Appropriations Act (GAA or Fund 101), or from income (Fund 164).

4.1.3.2. Externally funded researches

Externally funded researches are researches conducted through funding support from external sources (other than GAA and income such as PCARRD-DOST, DA-BAR, CHED, NEDA, etc.). (Cite here the counterpart of the university, multiple funding, legal bases of external funding utilization)

4.1.4. Authorship

A leader of any research activity shall be the senior author of any accomplishments made. Other members of the team shall be the junior authors. Since the Research Process involves 4 phases, conceptualization, data-gathering, analysis/interpretation of data and manuscript-writing, authorship will be given to individuals who have major contributions to at least 3 of these phases.

Individuals who helped in 1 or 2 of the phases will be properly acknowledged. Individuals and organizations that provided support in any way to research projects without remuneration should be properly acknowledged in their involvement/participation.

4.1.5. R&D Related Activities/Programs

Aside from the conduct of research projects, other activities are also conducted such as the following:

4.1.5.1. University Research and Development Symposium. This is a University wide activity for faculty/non-teaching researchers and students who have undertaken their undergraduate and graduate theses/dissertations. This is usually undertaken biannually to evaluate completed and on-going researches in preparation for presentation in regional, national and international research symposia.

4.1.5.2. University Research Seminar Series. The University Research Seminar Series conducted to provide an avenue for all student-researchers of the University to disseminate the results of their researches to a bigger number of stakeholders. It aims to: 1. Disseminate results of completed researches of the University to a wider group of audience. 2. Promote understanding and appreciation of research breakthroughs/results. 3. Improve the quality of researches in the University. 4. Train student-researchers in presenting orally their research outputs.

4.1.5.3. Dissemination of Research Results. Research outputs (completed researches and on-going and continuing) are expected to be presented by researcher/co-researchers in the University R&D Symposium which is biannually sponsored by the Office of the Executive Director for Research and Development. Screened/evaluated researches once accepted by the Screening Committees of the R&D consortia conducting the activity, societies, associations, institutions are eventually presented in the regional, national

and international research symposia. The R&D Division shall be the clearing-house of all researches presented in the different levels, hence, all papers for presentation outside the university should be noted by the R&D office. Moreover, for paper presented outside the university, regardless of the source of funding in the university, the minimum ratio between presenter and paper should be 1:1, one participant to one paper. For researchers who are intending to present their paper in international R&D fora, the CHED Support for Presentation in International Conferences provide financial support to prospective presenter whose research output shall go through rigid screening by the Zonal Research Center before the paper be endorsed to the CHED Main for approval and processing of the funding requirements.

4.1.6. Implementation of Research Project

A research project proposal which met the criteria for funding either by the university or other funding agencies shall be given approval for its implementation. In the conduct of the study, the Office of the Vice President for REI is the office that takes charge of the monitoring and facilitates the evaluation of research results.

4.1.6.1. Conducting the Project

Upon approval of the proposal from external project, the proponent(s) and the funding agency shall enter in to a MOA / MOU. From the institutional a notice to proceed is issued to the campus executive director through the campus research and extension coordinator. The researcher(s) implement(s) and complete(s) the research project within the approved time. The release of funds per tranche is observed.

4.1.6.2. Procedures for the Purchase of Supplies and Equipment

All office supplies and materials for projects shall be purchased or withdrawn from the Supply Office in accordance with the approved requisition and issue voucher (RIV).

Purchases made outside for a single item amounting to P1,000 or more requires the following:

1. Three instances of canvassing of the supply/material from different sources;
2. Property inspection report from the supply officer;
3. Original copy of the dealer's invoice showing the quantity, description of the articles, unit and total value; and/or official receipts.

The project leader prepares a requisition form, which contains the desired specifications of the equipment and the quantity of the item. At least three (3) suppliers are invited to submit their quotations, which the bidding committee studies. Purchase negotiations are handled by the Purchasing Section/Supply Office.

The supply officer inspects all purchased equipment. A memorandum receipt (MR) is preferred to signify the project leader's responsibility over the equipment receipted to him. Equipment purchased for the project is considered the property of the university and must be surrendered by the project leaders upon completion of their respective projects. The Supply Officer is authorized to retrieve the equipment.

4.1.6.3. Traveling Expenses

These include expenses incurred in the movement of persons employed in the government, such as transportation, subsistence, lodging and travel per diems; the hiring of guides or patrol; airline fares; tips, transfer, etc. of persons while traveling outside the official station; charter of boats, launches, automobiles, etc.; non- commutable transportation allowances, road tolls, parking fees, and all other similar expenses. Not included in this account are supplies used in the operation. Before starting on an official trip, the official or employee concerned shall prepare a detailed itinerary of travel to be approved by the University President.

The traveling allowances of government officials and employees shall be inclusive of per diems, daily allowances, incidental transportation, and other related expenses while in the field. The allowance rates shall be in accordance with existing rates and do not require receipts.

Transportation expenses for travels between cities/municipalities may be charged separately. A certification of appearance signed by the party being visited must be submitted along with the liquidation, certificate of travel completed, actual itinerary of travel, and copy of approved travel order. Unsettled travel funds shall be the responsibility of the project staff and the project leader. No further travel funds/request shall be approved and released unless previous ones are settled first.

4.1.6.4. Cash Advances/Reimbursement

Project leaders are entitled to withdraw cash advances to cover project expenses. No further cash advances shall be allowed unless the previous cash advance is fully liquidated.

Other project staff members or project leaders may also use their personal funds to travel or to purchase needed materials. Such expenses may be reimbursed by following standard procedures, provided they do not exceed the approved line-item budget.

4.1.6.5. Release of Research Project Funds

The budget allocation per project under the university research grants is pegged at a maximum of TWO HUNDRED THOUSAND PESOS (PhP 200,00.00) and a minimum of FIFTY THOUSAND PESOS (PhP 50,00.00) per BOR Resolution No. 99, series 2009. The total budget allocation shall be based on the approved budgetary allocation of the project. For externally-funded research projects, the approved budget per project will be disbursed in tranches.

Funds shall be released in accordance with the approved line item budget (LIB) of the project, terms of references (TOR) and schedule of deliverables and tranche releases (SDTR), provided there are no outstanding cash advances and depending on the availability of funds of the implementing unit. The schedule of tranche releases will be 50%-50% for institutionally-funded research projects, specifically those falling under the pre-paid scheme. For the post-payment scheme, payment will be done on a one-time basis. For externally funded researches fund releases will be based on the SDTR as stipulated in the MOU/MOA.

Expected deliverables reflected in the SDTR and progress reports shall be required for succeeding releases of funds. Further cash advances shall be allowed only if the previous cash advance is fully liquidated. Realignment or reprogramming of the line item budget is allowed as long as it is within the approved amount of the project.

4.1.6.6. Research Project Monitoring

The CRD shall conduct a project audit any time during the implementation of the project study to assist the researchers and identify needs and problems. Monitoring of the project's progress will be done at least twice during the research period in coordination with the Campus Research Office. Reports on the progress of the on-going research project shall be submitted within the specified time stipulated in the Schedule of Deliverables and Tranche Releases (SDTR).

4.1.6.7. Request for Project Duration Extension

Failure to complete the research on the due date may require a researcher to extend the project duration. In cases where there are such requests, the request will be deliberated on by the Office of the Vice President for Research and Extension and an approval from the University President is required. The disapproval of such a request obligates the researchers concerned to refund the entire amount allocated as used for the research project within the same time frame as the duration of the project through direct re-payment or salary deductions as approved by the university president.

4.1.6.8. Request for Changes in Research Project Leadership or Members

The researchers are required to write a letter specifying their concern to the Office of the Vice President for Research and Extension and the Office endorses the same to the Office of the President for deliberation. The changes in leadership and membership in team research are allowed for researches funded by PSU. For externally-funded researches, the authors have to follow the guidelines of their funding agency.

4.1.7. Research Project Evaluation

Completed research outputs or terminal reports shall be submitted in two copies to the Office of the Vice President for Research and Extension following the prescribed format. Researcher/s is/are also required to submit a publishable abstract of the study for evaluation. Terminal reports or completed outputs shall be evaluated by the Center for Research and Development.

Completed research projects are reviewed by internal and external reviewers. Completed studies are to be presented in the University In House Review for evaluation and feedback.

All information and reports arising from the research activity shall acknowledge the contribution of the host institution. Researcher/s is/are given the right to publish their findings regarding the research provided that they acknowledge the contribution of the host institution.

4.1.7.1. Selection of Evaluators

The external evaluators of both the research proposal and the completed research project are recommended and chosen from the pool of evaluators in research to the University President for approval. The selection of evaluators considers the expertise of the evaluator based on the research topic to be evaluated, technical research expertise and publication experiences.

4.1.7.2. Review of Research Projects

The review of research projects is done semi-annually for proposals every June and October of each year and evaluation of completed projects is done upon the submission of report is completed. The review of proposals will be done either in an in-house review with two external reviewers or evaluation of proposals by two external reviewers via on-line or slow mail. Evaluation of completed research projects will be done by two external reviewers and by presentation of papers in the research in house review initiated by the university.

The Research Office of every Campus will coordinate with the Office of the Vice President for Research and Extension for the scheduling of an in-house review. In case a joint review cannot be done due to difficulty in arranging the schedules of external evaluators, the proposals or completed projects can be sent to the respective evaluators and a request for the written report of the evaluation be addressed to them. The same procedure will be applied to externally-funded research projects. However, for externally funded projects, as soon as the project has been completed, the evaluation can be done any time to allow flexibility with regard to the differences in policies between PSU and the funding agencies.

4.1.8. Failure to Implement Research

An employee who fails to implement his/her approved research or extension proposal shall carry additional units for the next semester on top of his regular load. The added units are equal to the credits that he/she enjoyed corresponding to the proposal that he failed to conduct.

Failure to finish approved researches on time will not entitle the researcher for another until he finished the research and submitted terminal report.

4.1.9. Submission of Reports

To facilitate submission of reports, a University-wide format prescribed by the Office of the Director for Planning is being followed as well as approved forms provided by the R&D office. Reports are submitted quarterly and as the need arise. Such reports are submitted to concerned offices on time. Reports are expected to be submitted two weeks after the end of the quarter.

4.1.10. Research Designation

Special order for research designation as study leader, project leader or program leader, shall be given to the researchers at the start of the study.

Research programs can be handled by researchers with academic rank of Associate to Full Professors and will be funded by the University or other external funding agencies

4.2. Guidelines and Activities for the Technology and Knowledge Integration

4.2.1. Review of the University Extension Agenda

Through an office order, the VP for Research and Extension convenes the Director and the Campus Extension Coordinators to review the University Extension Agenda and to schedule the Campus and University Extension Project Proposal Review. Meeting is held every second week of January of each year.

4.2.2. Call for Extension Proposals

The call for extension project proposals will be held every third week of January. The Campus Extension Coordinator will meet the Program Extension Coordinators in the Campus to update on the University Extension Agenda and synchronize with curricular offerings in the Campus. It shall advise the program

extension coordinators to prepare their extension project proposals following the University format and then shall schedule the Extension Project Proposal Review.

4.2.3. Conduct of Campus Extension Project Proposal Review

a. With a memorandum issued by the Campus Executive Director, a project proposal review which aims to determine which proposed extension programs/projects will be approved for funding will be held every fourth week of January. Faculty members will present their project proposals through a PowerPoint presentation. Three printed copies of their proposals following the University formal shall be submitted to the Campus Extension Council and will judged by the Council according to the criteria set. Faculty members whose proposals were approved shall re-submit two printed copies of their proposals incorporating the corrections and recommendations of the Council.

b. Unapproved proposals shall be revised incorporating suggestions of the Campus Extension Council and pass it again for review by the Council.

c. Through an office order from the Vice President for Research and Extension, the Director for Extension will spearhead the conduct of the University Extension Proposal Review. It will be participated by the Campus Extension Coordinators and faculty members who'll present their extension proposals. Their presentation will be adjudged by the University Extension Council based on the criteria set by the Council. The proposal review is held every fourth week of February.

d. The University Extension Coordinator shall consolidate the approved proposals and shall forward it to the VP for Research and Extension, who will forward it to the President for the latter's BOR meeting and seek funding approval from the Board. The said activity is to be held every 1st week of March.

4.2.4. Approval by the Board of Regents

The University President shall present the extension program/project proposals to the BOR meeting being held every first quarter of each year. The approved resolution shall be cascaded to the VP for Research and Extension for implementation.

4.2.5. Release of Budget

The Vice President for Research and Extension will attach the BOR approved resolution for the funding of the extension program/projects. The VP for Research and Extension shall issue an office order addressed to the Campus Executive Director and Campus Extension Coordinators informing them of the approval and advising them to 'cash advance' for the implementation of their projects. This will be cascaded to the program extension coordinators by the Campus Extension Coordinator. This is done every fourth week of March each year.

4.2.6. Implementation of Extension Program/Project

With the release of the budget, the faculty-extensionist proponents shall implement their extension program/project following the period of implementation based on their project proposals. He/She shall meet his/her members and plan the "when, where, how and who" of the event. The extension proponent shall also set a meeting with the key person of the partner agencies and beneficiaries for the planning. Attendance,

minutes of the meeting and photos for documentation will be kept. Compliance to the training design and training methodology stated in the approved project/program proposal should be met. Assess the effectiveness of the implementation by soliciting feedback from the trainees with the use of a monitoring form.

4.2.7. Submission of Report

The Faculty-Extension Proponent/s will determine and measure the impact of the extension training implemented particularly on the number of technology adopters, increased income, employment generated and the qualitative benefits earned/gained by the participants. It should be done three months after the implementation of the project and must have and a report at the end of each year following the implementation. A quarterly report shall be submitted by the proponent/s to the Campus Extension Office.

4.3. Guidelines and Activities for the Technology and Knowledge Protection

Patentable Research technology and creative work carried out by the faculty and other staff of the University may result in intellectual property that could serve the public good as well as private interests. Asserting and protecting the intellectual property rights of PSU researchers and creative artists are therefore critical components of the University's research mandate.

In general, copyrights to intellectual property remain with their creator, except in the case of institutional or collaborative work, because the University is expected to generate copyrightable ideas and creative work. Patentable rights like inventions, utility model, industrial design and trademark, are generally presumed owned by the University when these are created with substantial use of University resources

The fundamental functions of the University are instruction, research, extension and production to advance the boundaries of knowledge and to serve the public good; in the pursuit of this functions, new creations and discoveries, collectively known as Intellectual Property (IP) will result and subject to, or may be eligible for intellectual property protection where the University and creator of the IP plays a vital role. The University owned technologies when granted rights under existing intellectual property regimes, shall be made available for public use consistent with PSU's mandate to transfer and disseminate appropriate technologies. The IP Policy also seeks to provide guidelines that can be consistently applied to facilitate commercialization of research outputs and to arrive at equitable solutions to possible IP issues relating to the conduct of research, technology transfer and commercialization. Operationally, the PSU- IP Policy:

a. guide the researcher in protecting, patent searching, drafting and giving value to their work;
b. promote, preserve, encourage and aid innovation at the University through scientific researches;
c. facilitate the transfer of technology from the University to industry in accordance with R.A. 10055 (Technology Transfer Act).
d. ensure that the economic benefits arising from the commercialization of Intellectual Property are distributed fair and equitable manner as agreed upon;
e. interprets the Intellectual Property Code in a manner that ensures and maintains the academic freedoms of both the faculty and the University

The PSU IP Policy aims to:

a) develop quality human resources, researches and technologies for people empowerment, global competitiveness and sustainable development;
b) encourages technological innovations, creations and inventions by researchers, faculty members and students; and

c) promote and support of the University's research function, which complements its mandate of instruction and enrichment and expansion of knowledge as an academic institution.

The PSU IP applies to all faculty members, researchers, administrative personnel and students of the Pangasinan State University as well as visiting researchers/ scientist, consultants, faculty, students, collaborators or partners whether in the national or international research development network, and other organizations whether public or private.

4.3.1. Intellectual Property Ownership

The ownership of Intellectual property and Intellectual Property Rights. The ownership of IPs and IPRs shall be governed by the following:

1. IPs and IPRs derived and generated from research funded by the GFA, whether such funding is in whole or in part shall in general be vested in the University that actually performed the research; (IP- is a term used to describe intangible assets resulting from the creative work of an individual or organization. (**IPs** refers to creations of the mind, such as inventions, literary and artistic works, and symbols, names, images, and designs used in commerce. IP can also refer to future tangible and /or intangible assets that may be recognized as intellectual property. **IPRs** refers to those rights recognized and protected in Republic Act No. 8293, other known as "Intellectual Property Code of the Philippines". Intellectual property rights such as: a) copyright and related rights; b) patents, utility models and industrial design; and c) other intellectual property rights such as but not limited to:
1) trademarks and service marks; 2) geographic indications; 3) layout-designs (topographies) of integrated circuits; and
4) protection of undisclosed information or trade secrets.)

2. All Intellectual Property, including laboratory notebooks, cell lines and other Tangible Research Property shall be owned by the University subject to the following circumstances:

(a) The IP was created as part of the regular duty and official functions of the Researcher(s); and

(b) In the course of the creation of the IP, significant University resources were used; or the IP was created pursuant to a Research Funding Agreement (RFA) between the University and a third party. (Generally, use of library facilities, facilities available to the general public and occasional use of personal office equipment and office staff may not be considered significant use of University resources.)

(c) If an employee of the University creates Intellectual Property outside the normal course of his or her duties of employment, with the significant use of University resources, he or she will be deemed to have agreed to transfer the IP Rights in such Intellectual Property to the University as consideration for the use of University resources.

(d) Intellectual Property as defined in this Policy, created in the course of, or pursuant to a sponsored research or other type of agreement with a third party, shall initially belong to the University, and then ownership shall be determined according to the terms of such agreements in accordance with Article 5.

3. Non-employees, such as visiting researchers, are required to transfer to the University any Intellectual Property they create in the course of their activities arising from their association with the University. Such individuals will be treated as if they were University employees for the purposes of this Policy.

4. Any Intellectual Property created in the course of the engagement of student employees with the University shall be owned by the University.
5. Students who are not employed by the University shall own all Intellectual Property and associated IP Rights they create in the normal course of their studies. However, the following exceptions shall apply.
   (a) If a student is offered a studentship sponsored by a third party under a separate agreement, under which the third party has a claim on Intellectual Property arising from the studentship, or creates an Intellectual Property in the course of or pursuant to a sponsored research, the student must agree that the Intellectual Property shall initially belong to the University, and ownership will then be determined in accordance with the terms of the agreement concluded with the third party.
   (b) If a student creates Intellectual Property with the significant use of University resources in connection with his or her research activity, he or she will be deemed to have agreed to transfer the IP Rights in such Intellectual Property to the University as consideration for the use of University resources.
   (c) The University shall claim ownership of all Intellectual Property created in the course of undergraduate, graduate, and postgraduate (doctorate) students' research activity.
   (d) Students shall be given the option to assign IP Rights to the University and shall then be granted the same rights as any employee inventor as set out in this Policy.

6. All rights in Copyrighted Works are owned by their creators/authors regardless of the use of University resources. Copyrighted Works specifically commissioned by the University or developed in the performance of a sponsored research or other third party agreement shall constitute an exception where the provisions of such agreements shall be taken into account.
7. The University shall be the sole owner of the University logo and shall have it registered with the Intellectual Property Office of the Philippines. Any use of the University logo shall require prior license or permission from the University.
8. Any provision in this Policy inconsistent with applicable provisions on IP ownership in Republic Act 10055, or the Technology Transfer Act of the Philippines, as well as with other relevant laws, shall be deemed superseded.
9. Theses and Dissertations. A student shall own the copyright of his/her thesis or dissertation subject to the provisions of existing copyright laws, this policy and any arrangement/ contract with the University and other external parties. However, the student shall grant to the University a non-exclusive royalty free license to reproduce, publish and publicly distribute copies of their manuscript in whatever form subject to the requirements of applicable laws, this policy and any contractual stipulators.

   If the thesis and dissertation has IP potential, the University may withhold public access to said manuscript, or to its defense proceedings to protect the University and other IPR's.

4.3.2. Copyright

Copyright is the exclusive and legally secured right to the matter and form of literary, scholarly, scientific and artistic works resulting from intellectual creation, as provided for under the Intellectual Property Code of the Philippines (Chapter V, Sec. 177).

"Work" includes the "material object." The material object is the original physical form in which the creation/work is rendered. The copyright is distinct from the other property rights over the material object.

Consequently, the transfer or assignment of the copyright shall not necessarily constitute a transfer of the material object. Nor shall a transfer or assignment of the sole copy or of one or several copies of the work necessarily imply transfer or assignment of the copyright [Section 181 IP Code].

As a corrective measure, the University shall claim copyright of unauthorized works, created through substantial use of University resources such as libraries, research facilities, buildings, utilities, equipment, tools and apparatus, including services of its employees working within the scope of their activities not for University purposes but for the personal gain or advantage of the faculty, research staff or student involved.

4.3.2.1. COPYRIGHT OWNERS

Subject to the Law on Copyright of the Intellectual Property Code of the Philippines, the following guidelines shall govern copyright and related rights at PSU.

4.3.2.2. Ownership and Assignment of Copyright

PSU as an agency of the government of the Philippines, cannot hold copyright but reserve its rights to require prior approval if its work is exploited for commercial purposes. However, it shall authorize its authors to individually/collectively hold copyright, if the same is generated as part of regular duties, with the use of funds, facilities, or services, and due to involvement with PSU and/or agency). The author shall assign copyrighted works to PSU.

Copyright to outputs of collaborative works by PSU with other institutions shall be governed by these guidelines and the stipulations in the agreement.

Determination of authorship in cases of collaborative efforts among authors.

1. Joint ownership resulting from contributions from different persons shall be determined as follows:
   a. By stipulation in the research contract;
   b. By application of the law on joint and/or sole ownership; and
   c. Through dispute resolution arbitrated by the IP Unit Head of PSU.

As a general principle, copyright of all works shall remain with the creator, except in cases of institutional or collaborative works. The University shall have exclusive ownership of copyright in case of institutional works. Institutional works include:

a. Works that are supported by a specific allocation of University funds or other resources other than the usual salary and resources made available to every faculty, student or staff
b. Works created at the direction and control of the University through its officials or designates for the purpose of a specific project or purpose
c. Works whose authorship cannot be attributed to one or a discrete number of authors
d. Works whose authorship cannot be attributed to one or a discrete number of authors because it is the result of simultaneous or sequential contributions over time by multiple authors.

In cases of work resulting from the contribution of efforts coming from different persons, authorship (whether sole or collaborative) shall be determined as follows:

a. By stipulation in the research contract
b. By application of the rules for joint, primary and sole authorship as determined by a publication for which the work was intended
c. Through alternative modes of dispute processing including mediation and arbitration to be facilitated by the Vice President for Research, Extension and Innovation if the work originated from the efforts of the faculty, research staff and students in a single constituent university or by the Vice President for Academic Affairs if otherwise. No dispute pertaining to authorship of any work shall be referred for legal action unless any one of these processes has been availed. If the

work is the result of collaborative efforts between the University, an outside entity and the creator(s), absent any contractual stipulation to the contrary, the copyright shall belong in joint ownership to the University, the creators and the outside entity.

4.3.3. Terms and Conditions of Use of Institutional Works

1. PSU users shall be covered by the undertaking to be executed by them prior to or during their employment or contract with PSU. They are automatically authorized to use PSU institutional works provided that the materials are properly cited and attributed.
2. Third party users shall be covered by a separate agreement including but not limited to the following terms and conditions.
3. The agreement applies both to the user requesting the use of the material and the employer or organization for those programs the materials shall be used. The agreement takes effect once the works are obtained.
4. The user must agree to a processing fee and the terms of payment as specified in the agreement. Fees, as determined by PSU, shall include but not limited to service charge, production fee, processing and handling fee and shipping fee, if necessary. All materials obtained from PSU are strictly limited to the listed restrictions in the agreement or others as specified by PSU.
5. The period of use of the materials shall be specified by PSU and shall be stipulated in the agreement. Renewals or extensions in the use of the works shall be at the sole discretion of PSU.
6. Agreements shall be terminated or cancelled upon failure to comply with the restrictions specified in the agreement.
7. Media assets such as photos, graphics, and Power Point presentations can be copied, printed, or downloaded for purposes of integrating the assets into their own multimedia programs or for other research, educational and non-commercial purposes provided that they are properly attributed and cited. Copies of the programs shall be furnished to PSU for validation free of charge.

5. Any alteration in publications such as news articles, books, bulletin, reports and artistic and literary works are not allowed. However, alterations for the purpose of improving the clarity, enhancing color, and cropping to maximize space, may be allowed by the PSU.
6. The publications may not be used to infringe the copyright of any individual or organization. Users must ensure that the works will not be used for any unlawful, obscene, defamatory, or libelous acts. The user is liable for any damage caused to PSU and may enforce payment of such damages under applicable laws.

4.3.4. Terms and Conditions of Use of Database or Information Systems

Databases or information systems which are unique forms of derivative works shall be governed by the following guidelines:

1. Prior approval from the PSU shall be required for any use of database or information systems;
2. A user shall not extract or re-utilize a database or contents thereof without prior approval of PSU or the copyright owner.
3. The user shall not distribute copies of the database or contents thereof to third parties without authority from PSU.
4. A user shall properly attribute or cite PSU or author when using the database or content thereof for communication to the public.

4.3.4. Credit and Copyright Notice. Any public display or distribution of media assets and databases requires the user to place a copyright notice, photo credit or any form of acknowledgement at the end of each work.

4.3.5. Student Thesis/Dissertation

a. A Student shall own the copyright of his or her thesis/dissertation subject to any agreement with the University or external parties. The Student shall grant to the University a royalty-free permission to reproduce, publish and publicly distribute copies of the thesis, in whatever form, electronic or otherwise.

b. If a thesis/dissertation contains information on an invention that may be patentable, the thesis may be required to be withheld in accordance with the procedures below:

6.2.1. (i) The College/Department may withhold public access to the Student's Thesis / dissertation containing information on patentable invention until such time a patent application is filed by the (IP- ITSO to IPOPHL)

(ii) If the ITSO Unit decides not to pursue a patent protection the thesis/dissertation may be released in accordance with the procedures adopted by the University. The IP-ITSO Unit shall, within three (3) months from the date of receipt of the Technology Disclosure Form, confirm in writing to the Inventor(s) whether or not the University will pursue patenting and/or commercialization of the IP, subject to any obligations that may be owed to external parties.

(iii) If the Inventors' request for the return of the IP and wishes to pursue patent protection for the invention themselves, the Inventors may request the College/Department to withhold the thesis/dissertation for not more than three (3) months from the date of return of the IP in order for the relevant patent application to be filed.

4.3.6. Copyright Registration

The copyright owner may file an application for a certificate of registration to the NLP (National Library of the Phils.)or the IPOPHL through IPRU office. The requirements for copyright with NLP are listed in Appendix H while that of IPOPHL see Appendix I. Copyright application form is downloadable at the NLP website (http:// web.nlp.gov.ph or the IPOPHL website: www.ipophil.gov.ph)

4.3.7. PATENTS

A patent is an intellectual property right granted to an inventor by the government through its appropriate agency (Intellectual Property Office of the Philippines). This right gives the grantee the opportunity to exclude others from making, using or selling the invention for a limited period from the date of filing the application. This period of exclusivity is granted in exchange for the inventor's disclosure of the details of invention so that others may seek improvements or new uses. Thus, the inventor has monopoly control of the invention and the society also gains through further advancements that may be made on the technology (Chapter VIII, Sec. 71).

4.3.7.1. PATENT COVERAGE

All inventions which may be or may relate to a product, process or an improvement of any of the foregoing that is new, involves an inventive step, is industrially applicable, including utility models and industrial designs, referred to in the PSU-IP Policy as "inventions" shall be covered by the rules on patent.

As a general principle, the right to patent for all works created with substantial use of University resources shall belong to the University. "Substantial use of university resources" is a matter that can be established on a case-to-case basis. For example, making a single local call through the University telephone system does not constitute substantial use of University resources. Creators of commissioned inventions should disclose and assign the patent to these works.

Subject to the law on patents, utility models and industrial designs as contained in Part II of the IP Code of the Philippines, the following guidelines shall govern patents, utility models and industrial designs at PSU.

4.3.7.1.1. Ownership. PSU shall have ownership of patents or utility models or an industrial design in any of the following instances:

a. If commissioned by PSU;
b. If provided for in the contract to generate an IP;
c. If the inventor made the invention in the course of his contract with PSU;
d. If the invention is the result of the performance of the inventor's regularly assigned duties, unless there is an agreement, expressed or implied, to the country.

4.3.7.1.2.. Commissioned inventions are: a) Inventions that are supported by a specific allocation of University funds or use of other University resources. b) Inventions produced at the direction and control of the University in pursuit of a specific project or purpose regardless of the source of funding. c) Works whose inventorship, could not be attributed to one or a discrete number of inventors. d) Those that may be stipulated by contract as commissioned inventions. The University shall own all commissioned invention.

Regardless of the source of funding, patents to the following inventions shall be assigned to the University:

a. Those conceived or first reduced to practice by employees, the faculty or students in the University in the performance of their duties
b. Those created through substantial use of University resources such as libraries, research facilities, buildings, utilities, equipment, tools and apparatus, including the services of its employees, as well as visiting researchers and students, working within the scope of their employment.
c. In the case of work resulting from the collaborative efforts of the University, an outside entity and the creator(s), involving substantial use of University resources, the patent may belong in joint ownership among the University, the creator(s) and the outside entity, only with the prior written consent of the University.

1.2. The PSU employees or all those covered by these guidelines, shall own the invention, utility model, or industrial design generated outside of his/her regular duties even if the employees uses the time, facilities, and materials of the PSU, subject to other existing laws, rules, and regulations on the use of government time, facilities, and materials.

1.3 The right of collaborators/external partners shall be based on the stipulations in the agreement between PSU and their partners.

4.3.8. Intellectual Property Right Application

Patent/Invention

A natural or juridical person may apply for patent with developed technology or research output. The IPOPHL requirements if the applicant is not the inventor, his/her is required to submit a proof of his authority to apply for the patent.

Procedure: (1) request for the grant of patent (downloadable forms at www. ipophil .gov.ph); (2) description of the invention (specification and claim/s); (3) drawings for the invention (if any); and (4) filing fee (small or big entity) .

Grant of Patent- If the application meets the requirements of the IP Code and there Regulations, the IPOPHL shall grant the patent with payment of corresponding fees. The term shall be twenty years (20) from the date of filing of the application.

4.3.9. OTHER INTELLECTUAL PROPERTY RIGHTS

4.3.9.1. Utility Model (UM) refers to an innovation that is new and has industrial applicability but is not sufficiently inventive to meet patent application standards. A UM could be useful tools, machine, product, process, composition.

Procedure: (1) accomplished request for registration (forms downloadable) attached the following specification or description (a) title; (b) technical field; (c) background of the UM; (d) brief description of the several views of the drawings (if any) ; (e) detaled description; (f) claim/s; (g) drawings (if any) ; (h) abstract of the disclosure. The corresponding fees are published online by IPOPHL.

4.3.9.2. Industrial Design (ID) is any composition of shape, line, colors, or a combination thereof, or nay three-dimensional form, whether or not associated with shape, lines or colors, which produce aesthetic and ornamental effect in their tout ensemble or when taken as a whole. Provided that such composition or form gives a special appearance to a can serve as pattern for an industrial product or handicraft. (IPOPHL) This means that an industrial design is primarily of an aesthetic nature and any technical features of the article to which it is applied are not protected. Ex: watches, jewelry, electrical appliances, textile designs etc.

Procedure: Same as that of UM application forms also downloadable and duly accomplished the request for registration. The corresponding fee is published online by IPOPHL.

4.3.9.3.TradeMark or Service marks (TM) - Trade and service marks are distinctive words or graphic symbols long associated with the University (e.g. PSU Seal, etc.) registered by the University with the Intellectual Property Office. The University shall own trade or service marks relating to goods or services distributed by the University. These include names and symbols used by the University in conjunction with its computer programs or University activities and events.

4.3.10. PROCESS FLOW

a) A technology generated by researcher a proposal or completed research presented during the in-house review having potential for IP protection. Signify his/her intent to disclose, the inventor

shall submit a duly accomplished disclosure / research agreement and employee agreement application form to the respective constituent university's IP-ITSO for preliminary assessment.

b) Upon review and consideration, the inventor is requested to accomplish the complete agreement forms and submit it to the IP-ITSO together with the supporting documents, if any, such as but not limited to the following: (1) proof of concept, (2) preliminary prior art search, (3) presentation and public communication materials, and (4) copy of relevant agreements, contracts, grants and similar documents.

c) The receiving IP-ITSO shall assign an IDF reference number for proper documentation and endorse to the patent evaluator depending on the IP to be evaluated and perform patent search and check its claims. The patent evaluator makes his/her report and identify type of IPR after evaluation.

d. IP-ITSO team where patent evaluator is a member will review and explain to the inventor/ author the needed requirements for specific IPRs.
e. Prepare an application form that can be downloaded at IPOPHL website. Instruct to fill-out the necessary information.
f. Assess the comprehensiveness and completeness of the IPR application form
g. Submit letter to the accounting office indicating the summary of the application and their corresponding fees for funding.
h. Submit the documents to the IPOPHIL via online or on site.
i. Make a report /update to the VPREI and submit all original receipts to the accounting office for liquidation or reimbursement.
j. If the application granted by IPOPHL notice of publication via IPO- Gazette after a month of publication or so notice of issuance will be received and submit payments for 2nd publication and the issuance of certificate .

4.3.11. PROPRIETARY INFORMATION

The Proprietary information which includes information arising from University work. These include processes which may fall under the concept of trade secrets.

4.3.12. TANGIBLE RESEARCH PROPERTY

Tangible research property (TRP) or research results which are in tangible form (e.g., integrated circuit chips, computer software, biological organisms and engineering prototypes) and which cannot be the subject of any other kind of intellectual property protection are presumptively considered as owned by the University. All TRPs may not be used by outside parties without the consent of the University. In no case shall biological material in any form be the subject of patents or any form of acquisition.

4.3.13. EXCEPTIONS AND PUBLIC DOMAIN

Proprietary information such as proposed terms of research agreement and financial agreements shall be covered by existing rules relating to the constitutional duty of a state university to public disclosure. Research information and processes used for academic purposes shall be presumptively considered as part of the public domain and shall not be considered as trade secrets, except when:

a. Necessary in order to pursue an academic research project to its completion.

b. The information is necessary in order to protect intellectual property rights of the University on an invention.
c. Upon the determination of the President, circumstances are such that well-defined interests of the general public will be better protected by temporarily claiming legal protection of research processes as trade secrets.

4.3.13.1. Research Collaborations with External Parties

Research Collaborations with Non- Commercial Parties

a. Non-commercial parties include other universities, research institutions, government agencies and non-governmental organizations.

b. In collaboration with non-commercial parties, IP will generally be jointly owned where both parties have jointly developed the IP (i.e. where employees/students of both parties are involved in creating, developing or generating the IP0).

4.3.13.2. Confidentiality Obligation

All Researchers shall, at all times, maintain confidential all information whether made or developed on their own, or in collaboration with University colleagues, or acquired through discussions (whether formal or informal) with University colleagues.

(a) All Researchers shall keep the University's business secret in confidence. In terms of this Policy, every fact, information, solution or data related to the research carried out at the University, whose public disclosure, or its acquisition or exploitation by unauthorized persons could damage or endanger the University's lawful, financial, economic or market interests, shall qualify as business secret. Researchers shall, when communicating with third parties, exercise all due diligence regarding confidentiality provisions.

(b) Disclosure of Confidential Information, however, may be allowed under the following circumstances:
   (i) Disclosure is required by law; and/or
   (ii) Disclosure is made with the prior consent of the University.

4.3.13.3. Disclosure of Conflicts of Interest

a. The Researchers primary commitment of time and intellectual contributions as employees of the University should be to the education, research, innovation, and academic programs of the University.
b. It is the responsibility of all researchers to ensure that their agreements with third parties do not conflict with their obligations to the University or to this Policy. This provision shall apply in particular to private consultancy and other research service agreements concluded with third parties. Each Researcher should make his or her obligations to the University clear to those with whom such agreements may be made, and should likewise ensure that they are provided with a copy of this Policy.

c. All Academic and Research Staff must make full and honest disclosure to, and seek the prior approval of the University with respect to the following circumstances:

   (i) Academic and Research Staff undertaking sponsored or collaborative research with an organization or company that has a licensed IP from the University, where the research is related to or in the same area as the licensed IP;

(ii) Deployment of University students by the Academic and Research Staff to do product and/or process research and development for an organization or company in which the researcher has an interest, whether directly or indirectly. In cases where a researcher supervises final-year projects and higher degree students, the aforementioned circumstance includes working on thesis topics in which the Academic and Research Staff has a commercial interest in the research area;

(iii) Transmitting Confidential Information to an organization or company;

(iv) Undertaking or changing the orientation of the Academic and Research Staff's research (whether supported by University funds or external grants) to serve the research, product development or other needs of an organization or company;

(v) Purchase of equipment, instruments, materials or other items for research from an organization or company in which the researcher has an interest, whether directly or indirectly; and

(vi) Engaging in consultation or commercial exploitation of a University IP with an organization or company in which the Academic and Research Staff has any interest, whether directly or indirectly.

d. An Academic and Research Staff shall be deemed to have an interest if he/she or any person related to him/her within the third degree of consanguinity or affinity is an official of, or holds a significant share in the organization or company in which the Academic and Research Staff has an interest.

e. Failure to disclose interest in an organization or company and/or to seek approval from the University as required shall make the Academic and Research Staff liable to disciplinary or other actions which the University may, in its sole discretion, impose.

4.3.14. DISCLOSURE, EVALUATION AND COMMERCIALIZATION OF IP

4.3.14.1. IP Disclosure and Evaluation Process

(a) If an researchers has developed any IP, the ownership of which is vested in the University, the IP –ITSO Staff must make a list on a submitted disclosure form to his/her Dean.

(b) The IP-ITSO will evaluate the patentability and/or commercial potential of the IP. The office may consult, if appropriate or necessary, with other University or independent experts in the field for assistance in the evaluation of the IP.

(c) The IP-ITSO shall, within two weeks minimum from the date of receipt of the Technology Disclosure Form, confirm in writing with the REI and patent evaluator whether or not the University will pursue patenting and/or commercialization of the IP.

Failure of the University to commercialize within one year period after it was granted, the inventor /s shall be allowed to commercialize or participate in a spin-off company subject to the provision of R.A. 10055 Chapter VI (Refer to TTP manual for details).

d. The REI shall at all times maintain confidential the details of an IP in accordance with the confidentiality policy set, more particularly during the period when assessing the viability of patenting and/or commercializing the IP. During the evaluation period, the REI Staff are obliged to withhold any public disclosure until such time as a patent application has been filed.

e. Should the IP be covered by obligations to a Sponsor or Research Collaborator under the terms of a grant or Research Funding Agreement, the TLO will contact the Sponsor or

Research Collaborator and proceed with the management of the IP in accordance with the terms of the agreement with such party.

4.3.14.2. Commercialization of the University's IP

(a) The University shall be entitled to approach, negotiate and enter into any binding agreement with any third party on such terms and conditions as the University, being the legal and beneficial owner of the IP, shall in its sole decision deem fit.

(b) The University shall be entitled to assign rights or grant licenses, whether exclusive or not, in respect of the IP for such periods as it shall deem fit, or make such other arrangements relating to such IP as it may deem appropriate in order to facilitate technology transfer while protecting the rights of the University and the researcher.

(c) The University will not negotiate contracts for consulting services for the researcher as part of a license arrangement. The researchers are free to negotiate such contracts on a personal basis.

(d) The support and cooperation of the inventors are critical for successful commercialization. The researcher shall provide all information and render all assistance to the University in any phase as may be required from time to time.

(e) The University may use any means whatsoever, as it shall in its sole discretion deem fit, to protect any IP owned by it, including but not limited to instituting proceedings concerning infringement of IP rights and breach of license agreements.

(f) All Intellectual Property licensing or commercialization activities by the University shall proceed, and subsequent contracts thereof shall materialize, in accordance with the pertinent provisions of Republic Act 8293, or the Intellectual Property Code of the Philippines, particularly Sections 87 and 88, as well as in accordance with Republic Act 10055, or the Technology Transfer Act of the Philippines and its Implementing Rules and Regulations, and other relevant laws, as the case may be.

4.3.15. CONSULTANCIES

a. University Personnel entering into consultancy work pursuing the commercialization of the IP shall commit not to disclose or transfer to external party any IP belonging to the University. They shall also ensure that a separate agreement is entered into with the appropriate College/ or Department for the use of University facilities, equipment or resources for such consulting work.

b. In any consulting service, University Personnel shall not breach the confidentiality obligations to which they are subject by virtue of being employees of the University. They shall not disclose any Confidential Information which relate to University IP or any research which is being carried out at the University.

4.3.16. CONFLICT OF INTEREST

a. Conflicts of interest may arise in various situations relating to technology transfer interactions with industry. To minimize or prevent such conflict of interest situations University personnel must make full and honest disclosure to, and seek approval of, the University in the following situations:

i. undertaking sponsored or collaborative research with a company that has licensed IP from the University, where the research is related or in the same area as the IP licensed;

ii. deployment of Students by the University Personnel to do product and / or

process research and development for a company in which the University Personnel has an interest. In cases where a University Personnel supervises final-year projects and higher degree students, this includes working on thesis topics in which the University Personnel has a commercial interest in the research area;

iii. Transmitting to company information that is not generally available to the public. This includes withholding or reducing publications after transferring technology to the company' or failing to attend to industry visitors from competing companies;

iv. Undertaking or changing the orientation of the University personnel's research (whether supported by University funds or external grants) to serve the research, product development or other needs of a company;

v. Use of the University personnel's position in the University to participate in company activities;

vi. Purchasing of equipment, instruments, materials or other items for University teaching and /or research from a company in which the University Personnel has an interest;

vii. Engaging in consultation with a company in which the university personnel or any person related to him (including without limitation), his parent, spouse, brother, sister, son, daughter, or any person who is holding legal title for the benefit of the university personnel) has an interest, whether legal, beneficial or otherwise.

4.3.17. Directorship of Companies (including University Spin-Off Companies)

Subject to the conditions as laid down by the University foe academic staff to undertake external consultation and specialist work (including Non-Executive Company Directorship), University Personnel may be given approval to accept appointment to non-executive directorships in companies, including companies to be formed, that will commercialize their inventions.

4.3.18. CONFLICT RESOLUTION

1. In case of conflict arising from any of the provisions of this policy, the parties may agree to result to mediation to settle the dispute with the assistance of the PSU IP Office, Executive research Director and VP Research and Extension and Univ. Legal Officer. The decision is appealable to the President of PSU whose decision shall be final.

2. If the parties are not amenable to mediation, the parties may avail any remedy provided for by existing laws, rules, and regulations.

4.3.19. PENALTIES

Any person found to have violated any of the provisions of this IP Policy shall be dealt with in accordance with the provisions of the faculty, staff, administrative or applicable employment manual. Any violation of these policies shall be considered as a disciplinary offense.

4.3. 4.4. Guidelines FOR Technology AND Knowledge Dissemination and Transfer

4.4.1. Preparation for Terminal Report- The research and extension proponent/s shall prepare the following documents: progress report, financial report, and detailed narrative report following the format of the IP-ITSO Office

1. Conduct University Research Development and Extension Forum

a. The University Research and Extension Office will issue an order to the Campus Executive Directors, Research and Extension Coordinators informing the conduct of the University Research and Extension Forum
b. The students, faculty researchers and extensionist will present their completed thesis, projects, or programs to the forum through oral or poster presentation. A panel of judges headed by the VP for RDE will screen, quality assess, and review the presentations. The students, faculty researchers and extensionist may be required to revise/improve the content of the presentation to fit for external presentation and publication

2. Presentation in local and international exhibits, conferences and forum
   a. The students, faculty researchers and extensionist will choose where to present and publish their thesis, projects or programs. To publish/present research in any field; research in any field; research papers/presentations should be prepared according to the journal/conference template. Each journal/conference has its own template, it can be downloaded from the journal's/conference's site. The master lists of ISI- and Scopus-listed journals may be accessed through this links: Web of Science journals: https://mjl.clarivate.com.home, Scopus-listed journals: http://www.elsevier.com/solutions/scopus/content

   b. If the manuscript has been denied, it can be improved and can be resubmitted to other journals. However, If the manuscript has been accepted for publication by the Journal Editorial, the students, faculty researchers and extensionist can request for publication or presentation grant under the following the terms: (see Publication in Research)

      Scopus indexed publication
      CHED recognized Journal
      ASEAN Citation Index

   c. The students, faculty researchers and extensionist will request presentation and publication grant to the Office of the President through the Vice President for Finance. They are to attach the following documents: 1) Certificate of Publication, 2) Official Receipts, 3) Certificate of Presentation

3. Identify Objects (Technology and Knowledge) to be transferred or commercialized.
   a. The Extension Services or Technology Transfer Office TTO (if existing) will identify the objects to be transferred or commercialized. Transfer Objects can be classified as IPs (patents, utility models, industrial designs, copyrights, trademarks), prototypes, know-how, process design, technological development, knowledge and skills, technical advice and information.
   b. Initial steps in the technology/knowledge transfer (TKT) are to be determined whether the transfer objects are commercially viable, generated by the University Researchers, product of Contract or Commissioned Research and Development.
   c. Discoveries relating to transfer objects that do not have significant commercial value but may be useful tool in research or instruction are nonexclusively

transferred to other parties via **materials transfer agreements** (MTAs). The Extension services will draft the MTA and both parties will sign the MTA.

d. Discoveries relating to transfer objects that do not have significant commercial value but may be useful in the Community are nonexclusively transferred to other parties via Memorandum of Agreement (MOA). The Extension services will draft the MOA and both parties will sign the MOA.

e. Discoveries arising under Contract or Commissioned Research and Development (CRRD) are often subsequently commercialized by the CRRD sponsoring company.

f. The Technology Transfer Office (TTO) will find a licensee (existing company or even established a new commercial entity to be the licensee or spin-off). The technology/knowledge generators will participate in technology transfer day, caravans, professional meetings, and exhibits to find prospects technology adapters. The TTO may publish list of available technologies or mall information about new technologies to specific companies who fit the profile of potential licensees.

g. Potential adopter will write a letter of intent to commercialize the technology/knowledge address to the University President through the VP for Research Development and Extension.

h. The potential adopter and the TTO will negotiate the license (Term Sheet). Factors that the TTO will consider in negotiating the license include the type of technology, the projected cost of bridging a product to market, the size of potential market, the anticipated profit margin, whether a patent, utility model, industrial design has been issued, the prospects for pending patent application, estimated cost of research that lead to the discovery, the scope of the license being issued (e.g. exclusive vs. nonexclusive, geographic scope, and field of use), and royalty rates. (how much?) Non-disclosure agreement is executed during consultative meetings and negotiations.

4. Craft the Fairness Opinion Report

a. Technology/Knowledge generator and the members of the Fairness Opinion Board will discuss the term sheet and will issue a Fairness of Transaction for both parties

5. Sign the Technology Licensing Agreement (TLA)
   a. The Extension Services or TTO will draft the Technology Licensing Agreement (TLA) and present to the prospective technology adopter for review and finalization. Once approved, both parties will sign the TLA.
   b. The adopter will pay corresponding fee/s stipulated in the TLA to the PSU cashier (campus where the technology/knowledge is generated).
   c. Technology generator will conduct the necessary training and technical assistance to the adopter in the initial stage of incubation and commercialization.
   d. The TTO will conduct an ex-post analysis/impact assessment three (3) years after technology of knowledge transfer.

4.5. Guidelines for Technology and Knowledge Utilization and Adoption

According to PCARRD of the DOST, the technology development process is composed of five major phases. These are technology generation, verification, adaptation, dissemination and commercialization (PCARRD Highlights 2001, 1997 and 1995).

1. Technology Generation (TG). This is the scientific and experimental stage wherein a Research center utilizes all its resources human/technical, financial, material, physical and other resources to generate a component technology or a package of technology.

2. Technology Verification (TV). A technology is classified for verification if it can be incorporated in a package of technology that has potential for improving existing farmers' practices. Specifically, it should satisfy the following:

2.1 It is an integrated technology conducted in the farmers' fields;
2.2 It has been tested for two seasons in TG trials;
2.3 It has shown economic and technical feasibility in TG trials.

Its computed return based on TG trial is better than that of farmers' practices as shown by marginal rate of return (MRR); and Manual of Operation for Research 11

2.4 It is perceived to be socially acceptable and environmentally safe.

3. Technology Adaptation (TA). A technology is classified as technology for adaptation if it meets the following criteria:

3.1 It is conducted in the station or the farmers' field and is only a component of technology;
3.2 It has been tested for TG research for at least one season;
3.3 It has shown good potential for economic feasibility as based on TG research; and
3.4 It has good potential for acceptance by intended end users.

4. Technology Dissemination (TD). This is the stage when promoters of technologies can use varied approaches and methods in bringing technologies to end users. Technologies are ready for dissemination if these have met the following criteria (PCARRD Highlights 2001):

4.1 General adaptability – these are replicable under field conditions;
4.2 Economic profitability – their percent of profitability is equal to the prevailing rate of interest on loans of formal financial institutions. Profitability also considers social costs and benefits;
4.3 Social acceptability – these do not contradict social norms and values prevailing in the community; and
4.4 Potential availability of support services – users have access to market, credit facilities, material inputs and others.

5. Information for Dissemination (ID). Research Division generates information not technologies, but they are very useful in the world of work. Information that is products of research is important to agricultural and rural development. Information for dissemination can be of help in the following:

5.1 Possess significant social and economic implications associated with technology adoption;
5.2 Contribute to a better understanding of research problems;

5.3 Offer information gaps in basic knowledge of agriculture, forestry and natural resources; and
5.4 Help policy makers formulate policies in food, agriculture and natural resources.

6. Technology Commercialization (TC). Technologies that have successfully passed the piloting stage, or have passed the criteria for piloting, or have not been piloted Manual of Operation for Research 12 yet, but have high potential for commercialization are considered priority technologies for commercialization. Technologies are selected based on the following criteria:

6.1 Provide the best alternative for improving income and productivity of a greater majority of people; and
6.2 Provide immediate solutions to self-sufficiency problems, environmental sustainability, import substitution, export generation and promotion of alternative sources of food.

Chapter V
INCENTIVE AND REWARD SYSTEM

5.1. Incentive for Publication

The University shall cover for the publication cost of all listed and registered University Research Outputs to be published in Web of Science or Scopus-indexed and CHED-recognized journals. Authors shall provide necessary documents such as original receipts and the published article to claim such.

Monetary incentive is granted to faculty members who have published listed and registered University Research Outputs in acceptable/reputable journal.

5.1.1. Nature of Publication

Scope of Publication	Cash Incentive (Php)
7. Web of Science Indexed with Impact Factor f > 3.00 or Scopus Indexed with Cite Score of >6.5	50,000.00
8. Web of Science Indexed with Impact Factor of ≤ 3.00 or Scopus Indexed with Cite Score of 3.5 to 6.5	25,000.00
9. Web of Science/Scopus Indexed without Impact Factor/Cite Score < 3.5	10,000.00
10. CHED-Recognized/ASEAN cite index	10,000.00

5.1.1.1. Policies

1. Published articles outside of the academic requirements of a faculty/non-teaching personnel/student such as thesis and dissertation are disqualified for monetary incentive.
2. Authors who claimed publication cost from the University are still qualified for the incentive.
3. The granting of cash incentive is per article depending on the scope/coverage of the journal.

4. All faculty members and staff of the University are eligible for the incentive.
5. In case of co-authorship, the cash incentive shall be divided equally among the number of authors. The cash incentive share of non-PSU author, should there be any, shall retain as University fund.
6. Author/s applying for the incentive shall submit request letter duly endorsed by the Campus Research Coordinator and the CED, addressed to the VPREI with attention to the DRD; the same shall be endorsed to the University President with attention to the VPREI.
7. Upon publication, the University shall be furnished with two copies.
8. Should the publication be withdrawn due to plagiarism or any form of unethical act like illegal use of data, the author/s shall refund the entire cash incentive and shall be dealt with appropriately by the University.
9. Impact Factors and Cite Scores shall be based only on the computation of the Clarivate Analytics Web of Science and Scopus.
10. The publication cost and cash incentive grants are limited to two research outputs per researcher per year which are published in:
    - Web of Science/Scopus Indexed without Impact Factor/Cite Score < 3.5
    - CHED-Recognized/ASEAN cite index

5.2. Support for Paper presentations in National and International Conferences

All RDE paper presentations either locally or abroad shall be screened or evaluated by the University Research and Development Council prior to the recommendation of the VP for Research, Extension and Innovation and approval by the University President.

The University shall cover for the registration fee and roundtrip fare of the presenters. A presenter shall be entitled for financial support for a maximum of two papers per year. Coverage shall be as follows:

Expenses	National Presentation	International	
		SEAsian Countries	Other Countries
Registration Fee	Full Amount	P 20,000.00	P 40,000.00
Roundtrip Fare	Full Amount		

5.3. Cash Incentive to Winners of Paper presentation

The grant of incentives to Winners of the Oral and Poster Paper presentations for Research/ Extension conferences for Faculty and Staff shall be provided by the University with the following guidelines:

Category	Scope	
	Regional/ National	International
Oral		
First	10,000.00	15,000.00
Second	5,000.00	10,000.00
Third	3,000.00	5,000.00
Poster	**Regional/ National**	**International**
First	3,500.00	7,000.00
Second	2,500.00	4,000.00
Third	1,500.00	2,500.00

5.4. Recognition for Outstanding Academic Researchers (ROAR), Recognition for Academic Community Extensionist (RACE) and the Recognition for Academic Innovation Developer (RAID) Awards and Incentives

Awards and monetary incentives have significant roles to propel the REI towards excellence. Apart from the accolade, these incentives shall provide the due recognition for the University Researchers, Extensionists and Innovators for their significant contribution and commitment to serve the PSU community.

The ROAR, RACE and RAID Awards and Incentive System is established to salute the budding and seasoned researchers, extensionists and innovators who are exemplars of the University through the guidelines set by the Committee.

The following categories are included for the ROAR, RACE and RAID Awards:

1. Agriculture, Hydrology, Aquamarine, Natural and Ocean Sciences;
2. Machine Automation and Technology Innovation;
3. Data Analytics, Statistics, Computing Sciences, Business and Economics;
4. Tourism, History, Culture, Arts, Languages, and Innovative Education;
5. Food Innovation, Health, Environment, Risk Reduction and Management; and
6. Governance, Policy, Gender and Development.

The annual ROAR, RACE and RAID Awards shall be given on the 3rd week of November, during the celebration of the University Research and Development Week.

5.5. Royalty Fee

All net surplus accruing from any research or innovation project shall be reported and remitted to the University/Campus for proper accounting and auditing. A percentage of the net surplus shall be given to the researcher/extension/innovator. The following percentage sharing shall be followed:

For the University: 60% x NS
For the Researcher: 40% x NS
where

Net Surplus (NS) = Gross Sales – Expenditures

The 60% share of the University shall be deposited in the official RDEI account.

5.6. Equivalent Workload

Faculty members conducting REI shall be given equivalent workload depending on the nature of participation:

Participation	Workload (units)	
	Research	Extension
Study Leader	3	-
Project Leader	6	3
Program Leader	9	6

In research, a study is a single research entity. A research project is composed of at least two component studies while a research program consists two or more projects. In extension, a project is a single extension entity while programs consist of two or more projects.

Equivalent workload shall be at the maximum of nine (9) units calculated from the combination of any of the programs, projects and studies. Other endeavor/s as excess from the maximum workload equivalent, shall no longer bear additional workload equivalent.

Special order for designation as Study Leader, Project Leader or Program Leader, shall be given to the researchers at the start of the study. The special order will be prepared by research coordinator/ extension coordinator and signed by the head of the agency.

Research and extension programs shall be handled by researchers with the academic rank of at least Associate Professor I and shall be funded by the University or other external funding agencies.

5.7. Incentive for Patented Research output

A fixed amount is awarded to the innovator of patented research output. The grant of incentive is applicable only upon the issuance of certificate of Registration from the Intellectual Property of the Philippines. If the invention is the result of collaboration between/among inventors from the University and outside entity, the incentive shall be shared by the collaborating innovators. The cash incentive share of non-PSU innovator, should there be any, shall retain as University fund.

Intellectual Property	Food/ Chemical	Equipment/Apparatus/ Computer Program/Books	Machine
Invention	50, 000.00	75,000.00	100,000.00
Utility Model	10,000.00	15,000.00	20,000.00
Industrial Design	5,000.00	5,000.00	7,500.00
Copyright(research based)	2,000.00	2,000.00	2,000.00

Utilization	Food/ Chemical	Equipment/Apparatus/ Computer Program/Books	Machine
Incentive for IPR Invention UM/ID (only 1 incentive if applied both)	 5000.00 2500.00	 7500.00 5000.00	 10,000.00 5000.00
**Required Memorandum of Agreement Certificate of Utilization Attendance Prototype of the Technology and Manual/ IEC materials			

Commercialization	Food/ Chemical	Equipment/Apparatus/ Computer Program/Books	Machine
Incentive	50, 000.00	75,000.00	100,000.00
Incentive for IPR Invention	 5000.00	 7500.00	 10,000.00

UM/ID (only 1 incentive if applied both)	2500.00	5000.00	5000.00
** Required Memorandum of Agreement Technology Licensing Agreement/ FOR Attendance Prototype of the Technology and Manual/ IEC materials			

NOTE: We award the incentive together with additional incentive only when technology is utilized and/or presenting the required documents for such.