

Utilization of Completed Research Projects in One Philippine Higher Education Institution: Basis for Future Research and Extension Directions

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Abstract –Research contributes to growth and development of the nation. It has become one of the important mandates of state universities and colleges (SUCs) in the Philippines including Sorsogon State College (SSC). Research results when utilized could help improve the lives of people in the community. This study aimed to categorize the completed research projects of SSC from CY 2013-2017 according to type of research and determined the extent of their utilization along dissemination (presentation and publication), citation, extension and commercialization. It also identified the problems encountered in the utilization of researches. Mixed methods of research were employed through quantitative and qualitative techniques. Documentary analysis was conducted through records, annual accomplishment reports, horizontal typology and SUC leveling documents of the Office of Research and Development and Extension Services (ORDES). Face to face interview with selected key informants including the Director for ORDES and faculty researchers were also conducted. The study revealed that majority of completed researches are basic researches. In terms of utilization, the completed research projects were sometimes presented in international, national or regional fora; rarely published in CHED recognized journals or international/national refereed publications; rarely cited in articles published by other researchers in refereed international/national journals; rarely extended to the community; and rarely used for commercialization purposes. Various problems were encountered in the utilization of completed researches. Output of the study may serve as basis of SSC for future research and extension programs to ensure that research results are utilized in Sorsogon and Bicol Region.

Keywords –Citation, Commercialization, Extension, Publication, Research Utilization

INTRODUCTION

Public administration encompasses many disciplines [1]. Public administrators utilize research results for decision-making purposes. Vision for Science and Society [2] confirmed that policy makers without access to scientific information will not be able to make the best decisions on difficult challenges in the community. Research findings can offer valuable data on matters of public concern.

The role and importance of research is acknowledged throughout the world. UNESCO [3] mentioned that research remains as the main source of knowledge and innovation at national, regional and international levels. In the Philippines, Article 14, Section 10 of the 1987 Constitution [4] emphasized that the state shall give priority to research and development (R and D), invention, innovation, and their utilization.

Research has ensured the continued growth and development of education sector [5] and has become one of the trifocal mandates of higher education institutions (HEIs) [6]. Tullao and Regadio [7] stated that the productivity of R and D in state universities and colleges (SUCs) is an important factor of the over-all economic development of the country. In 2016, the Commission on Higher Education (CHED) and Department of Budget and Management (DBM) developed a levelling instrument to measure the institutional performance of SUCs along instruction, research, extension and management capability. Part of which dealt with research capability and included the completed researches for the past three (3) years that were presented, published and cited [8].

One of the most important tasks for universities is the utilization of research results [9]. Bernestein [10]

affirmed that promoting knowledge utilization is an important mission for HEIs. As a continuing process, research must not stop in knowledge generation. It must reach the ladder of utilization [11]. It must be extended to the beneficiaries and the community where it is most needed.

Lynton[12] confirmed that activities promoting knowledge utilization are as essential as activities promoting knowledge creation. In this study, the researchers used the parameters in the Levelling Instrument for SUCs or the Joint Circular No. 1, s. 2016 of DBM and CHED as well as the Joint DOST-IPO Administrative Order No. 02-2010 (The IRR of the Philippine Technology Transfer Act of 2009 or RA 10055) to describe the activities for research utilization. These include the following: (1) presentation of researches in international, national or regional fora, (2) publication in CHED recognized journals or international/national refereed publications, (3) citation of researches in articles published by other researchers in CHED recognized journals or international/national refereed publications, (4) extension, and (5) commercialization. In this study, presentation refers to the activity of research utilization wherein the research results are disseminated in international, national, or regional fora/conferences [13]. Publication refers to the activity of research utilization wherein the research output is published in a CHED recognized journals or international/national refereed publications [13]. Citation refers to the activity of research utilization in which the research has been acknowledged or mentioned and used as reference by other researchers in CHED recognized journals or international/national refereed publications[13]. Extension refers to the activity of research utilization wherein the research output is utilized for knowledge/technology transfer for the benefit of community [14]. Lastly, commercialization refers to the activity of research utilization in which the researchers convert their research result into products that can be used for economic gain of both the researcher and the institution [14]. This includes patents, trademarks, copyright, utility models, business startups among others.

Lynton [15] noted that although HEIs have established a good system for knowledge creation, they have done inadequate job for knowledge utilization. Japos, Tumapon and Lozano [16] revealed that there was lack of research utilization in a University in Southern Philippines although studies were disseminated in local and international fora. Mahilum [17] also disclosed that utilization of research outputs of

the Arts and Science faculty in selected HEIs in Region X are limited. Furthermore, Tullao and Regadio [7] in 2015 revealed that most SUCs in the country have poor R&D output and were not able to optimize the utilization of their R&D funding except for few outstanding universities including University of the Philippines, Central Luzon State University, and Western Visayas State University.

Sorsogon State College (SSC) is the former Sorsogon College of Arts and Trades (SCAT) which was founded in 1907 as Sorsogon Provincial Trade School [18]. By virtue of Republic Act No. 11088, SSC became a university in October 11, 2018. Section 2 of said act has mandated the institution to undertake research, extension and production activities for the sustainable development of Sorsogon and Bicol Region [19]. Article V, Section 23.3 of CMO No. 46 series of 2012 emphasized that institutions typed as university must contribute to nation-building by developing new knowledge and skills through R and D [20]. Hence, as the very first university in the Province of Sorsogon, the institution is expected to level up its programs and projects not only in instruction but also in research, extension, and production. It must help the community improve their lives through utilization of completed research projects.

With these, the researchers were encouraged to investigate the extent of utilization of completed researches from CY 2013-2017 along presentation, publication, citation, extension, and commercialization. It determined the problems encountered in the utilization of these researches. Recommendations were provided to strengthen research utilization of SSC.

OBJECTIVES OF THE STUDY

This study determined the extent of utilization of SSC completed researches from CY 2013-2017. Specifically, it aimed to: (1) categorize completed researches according to type of research (basic, applied and developmental); (2) determine the extent of research utilization along dissemination (presentation and publication), citation, extension and commercialization; (3) identify the problems encountered in the utilization of researches; and (4) provide recommendations based from the results of study.

MATERIALS AND METHODS

Mixed methods of research through quantitative and qualitative techniques were employed in this study. Documentary analysis was conducted to categorize

completed researches and determine the extent of their utilization along the identified variables. Face to face interview with selected key informants (KIs) was performed to identify the problems encountered in the utilization of researches along the identified variables. Qualitative analysis of the responses of KIs during the interview was also conducted.

Key Informants

A total of 15 KIs including the Director for Office of Research and Development and Extension Services (ORDES) and selected faculty researchers were involved in the interview from September 16-18, 2019. These KIs were purposively selected based from the documentary analysis conducted. They have done several researches from CY 2013 – 2017 and have the knowledge required in the study. Table 1 shows the profile of KIs in terms of sex, academic rank, number of years in the college and number of researches conducted from CY 2013-2017. It can be noted that majority of KIs are male, most of them are Instructors and have rendered substantial years of service in SSC. All of them have conducted 1-10 researches from 2013-2017.

Table 1. Key Informant’s Profile

Sex	Total	Percentage
Male	8	53%
Female	7	47%
Academic Rank	Total	Percentage
Instructor I - III	8	53%
Assistant Professor I - IV	3	20%
Associate Professor I - V	2	13%
Professor I – VI	2	13%
No. of Years in the Service	Total	Percentage
1 – 10	7	47%
11 – 20	6	40%
21 – 30	2	13%
No. of Researches Conducted from CY 2013 to Present	Total	Percentage
1 – 10	15	100%
11 – 20	0	0%
21 - 30	0	0%

Instrument

The instrument used in the study was a rubrics developed by researchers to measure the extent of utilization of researches and an interview guide to determine the problems encountered by the researchers in the utilization of completed researches along the identified variables. Both were presented to the Director

for ORDES and panel of experts for validation purposes.

The rubrics consist of the activities of research utilization such as presentation, publication, citation, extension, and commercialization that were listed in the first column. Each of the activities were specifically described in the rubrics based from the Levelling Instrument of SUCs in 2016 and the Joint DOST-IPO Administrative Order No. 02-2010. The other columns of the rubrics indicate the adjectival descriptions such as “very often, often, sometimes, rarely and never” to describe extent of utilization based from the set criteria.

First part of interview guide tackled KIs profile. Questions regarding their names, academic rank, number of years in the service and number of researches conducted from CY 2013 to 2017 were included. Second part of the instrument included open-ended questions regarding the problems met by KIs along the identified variables.

Data Collection and Procedures

The researchers sought permission from the Director for ORDES through the Office of the Vice President for Academic Affairs last May 27, 2019 to gather the needed data, documents, and records. Annual accomplishment reports, horizontal typology and SUC leveling documents of the RDE Office were utilized to identify the completed research projects of SSC from CY 2013-2017 and the extent of utilization along the identified variables. The researchers used the list of completed researches utilized for extension services provided by ORDES. The abstracts of completed research projects were reviewed through the R&D horizontal typology documents to categorize the researches. Face to face interview with KIs was conducted last September 16-18, 2019 to elicit data on the problems encountered along utilization of researches. Their responses were analyzed qualitatively.

Statistical Treatment of Data

The statistical tool used in the study was mainly descriptive in nature. Frequency count and percentages were used in analyzing the profile of KIs, the number of completed researches according to type of research and the extent of utilization along the identified variables. All data were presented in tabular form. As to the extent of utilization, the term “very often” was used when 76-100% of the completed researches are presented, published, cited, extended and commercialized. “Often” was used when 51-75% of the completed researches are presented, published, cited, extended and

commercialized. The adjectival descriptions such as “sometimes, rarely and never” were used when 26-50%, 1-25%, and 0% respectively of the completed researches are presented, published, cited, extended and commercialized.

RESULTS AND DISCUSSION

Types of Completed Research Projects from CY 2013-2017

The completed research projects were classified into basic, applied, and developmental. Table 2 shows that SSC has a total of 237 completed researches from CY 2013-2017. The results revealed that majority or 68% of completed researches are basic researches. Very few are applied (19%) and developmental (13%) researches. The result implies the need to encourage more faculty to conduct applied and developmental researches because these are the type of researches that have greater impact to the community and are more useful compared to basic researches.

Table 2. Types of Completed Research Projects of SSC from CY 2013 – 2017

Types of Research	Total	Percentage
Basic	162	68%
Applied	45	19%
Developmental	30	13%
Total	237	100%

Extent of Utilization of SSC Completed Researches from CY 2013-2017

Dissemination (Presentation and Publication)

In terms of presentation, only 48% of the completed research projects of SSC were presented in international, national or regional fora. Only few (43%) of the basic researches were presented while majority of the applied (56%) and developmental (63%) researches were presented.

Table 3. Utilization of Completed Research Projects of SSC Along Presentation

Type of Research	Total	Presented	%	Description
Basic	162	70	43%	Sometimes
Applied	45	25	56%	Often
Developmental	30	19	63%	Often
Total	237	114	48%	Sometimes

The result shows that along presentation, basic researches were sometimes presented while applied and developmental researches were often presented in international, national or regional fora. This implies that although there were many basic researches conducted, only few were presented in international, national or regional fora. Meanwhile, the applied and developmental researches though few were often presented. Thus, along presentation, the completed research projects of SSC for the past five years were sometimes presented.

According to PCERC [21], a sound dissemination strategy for a research project will result to increased awareness of research, hence maximizing its impact. This implies that although SSC has already established a mechanism for presentation of researches through its annual In-House review, there is still a need to look into the limited participation of faculty researchers in regional, national and international research fora and conferences for widest dissemination of research outputs.

In terms of publication, Table 4 presents that only 17% of completed research projects were published in CHED recognized journals or international/national refereed publications. Very few of the basic (16%), applied (24%) and developmental (10%) researches were published.

Table 4. Utilization of Completed Research Projects of SSC Along Publication

Type of Research	Total	Published	%	Description
Basic	162	26	16%	Rarely
Applied	45	11	24%	Rarely
Developmental	30	3	10%	Rarely
Total	237	40	17%	Rarely

Hence, the completed research projects of SSC from CY 2013-2017 are rarely published in CHED recognized journals or international/national refereed publications. Kyvik and Teodorescu cited by Nygaard [22] lends support to the findings of the study. They disclosed that in HEIs throughout the world, very few researchers were able to publish their outputs. With this, there is a need to consider the quality of researches produced by the faculty members of SSC to make it publishable in reputable research journals. Other factors may be investigated to address the issue.

Table 5. Utilization of Completed Research Projects of SSC Along Citation

Type of Research	Total	Cited	%	Description
Basic	162	4	2%	Rarely
Applied	45	1	2%	Rarely
Developmental	30	1	3%	Rarely
Total	237	6	3%	Rarely

Table 5 revealed that only 3% of completed research projects were cited in articles published by other researchers in refereed international or national journals. Per data shown in Google Scholar, the developmental study completed in 2013 entitled “Big Books as Mother Tongue-Based Instructional Materials in Bicol for Grade One Pupils” which was published in 2015 has four citations.

The following basic researches completed in 2014 were also cited: (1) Vocabulary Learning Education Strategies Used by Teacher Education Students with six citations; (2) SSC Graduate Students Difficulties in Doing Research with two citations; and (3) Variations of Sorsogon Dialects as Mother Tongue-Based Medium of Instruction in Grade School Mathematics with three citations. In addition, the applied research completed in 2015 entitled “Game Development as Students Engagement Project in High School Mathematics” has two citations. The basic research completed in 2016 entitled “Acceptability and Difficulty of the STEM Track Implementation in Senior High School” has four citations.

This study disclosed that the completed research projects of SSC from CY 2013-2017 were rarely cited in articles published by other researchers in refereed international or national journals. The results can be attributed to the extent of publication of these researches. As previously presented, the completed researches were rarely published, hence affecting citation. Publishing data increases citation rates [23]. Hence, citation is affected by publication.

It can be deduced from the findings that utilization of research is possible if research outputs are published and cited. Tijssen [24] stated that citation is one of the indicators of knowledge transfer, utilization and commercialization. Hawkins et al. [25] also mentioned that citation is a key output measure of university-industry knowledge transfer. With these, the authors believe that for citation to occur, researches of SSC must be published so that it could be accessed by other researchers and professionals especially in online

journals. Also, the research must be of quality and relevant to the needs of the users.

Table 6. Utilization of Completed Research Projects of SSC Along Extension

Type of Research	Total	Extended	%	Description
Basic	162	17	10%	Rarely
Applied	45	14	31%	Sometimes
Developmental	30	14	47%	Sometimes
Total	237	45	19%	Rarely

Table 6 shows that only 19% of completed researches were utilized for extension purposes of the college. Basic researches (10%) were rarely extended while the applied (31%) and developmental (47%) researches were sometimes extended. Hence, the researches in the past were rarely utilized for extension activities. The results imply that most of SSC’s extension projects were not research-based. It also implies that collaboration between researchers and extensionists were not yet fully established in SSC. Radhakrishna et al. [26] stressed the importance of research and extension integration in ensuring the utilization of research outputs. With these, the policies on the integration of research and extension activities must be considered for the research outputs to be utilized for extension activities.

Table 7. Utilization of Completed Research Projects of SSC Along Commercialization

Type of Research	Total	Commercialized	%	Description
Basic	162	0	0%	Never
Applied	45	0	0%	Never
Developmental	30	2	7%	Rarely
Total	237	2	1%	Rarely

Table 7 shows that only 1% of completed researches was utilized for commercialization purposes. None of the basic and applied researches was commercialized. Only 7% of developmental researches was used for commercialization purposes. Hence, most of the completed research projects were rarely commercialized.

Specifically, the output of research in 2013 entitled “Tocino Project: A Mitigating Post-Harvest Technology in Tilapia Aquaculture Amidst Climatic Changes” was registered at the Intellectual Property Office of the

Philippines (IPOPIL) as Utility Model in year 2017. Also, the output of research in 2015 entitled “Development of Fortified Veggie Nutri Cupcakes” was registered as Utility Model in IPOPIL last January 2019.

It can be deduced from the findings that since researches were rarely published and rarely cited, the extent of commercialization is also affected. Trencher et. al cited by Awour in 2015 [27] revealed that publication positively correlates with commercialization and permits the fastest and open diffusion of research results. Hence, to achieve commercialization, other activities of utilization such as publication, citation, extension must also be achieved.

The results also imply that the commercialization of completed researches of SSC is very low. OECD [28] revealed that although it is apparent that research thrives in many universities, the rate of commercialization of research results is still low. With these, there is a need to investigate the possible reasons for the non-commercialization of research outputs of the faculty members of SSC.

As revealed by Ambos et. al [29], administrative mechanisms such as the support and assistance to the commercialization of research projects through establishment of Technology Transfer Office (TTO) is one of the organizational level determinants of commercial outputs. They also cited that research projects that take place in universities with a specialized TTO, have a higher likelihood of a commercial output from the project.

Problems Encountered in the Utilization of Researches

The study revealed various problems encountered in the utilization of researches along dissemination (presentation and publication), citation, extension and commercialization.

Dissemination (Presentation and Publication)

Although policies and processes along presentation are already in place as reflected in SSC Research and Extension Manual of Operations, there are still some problems encountered as revealed by KIs. These include the following: researchers’ lack of interest to present paper in national/international fora and conferences, difficulty of finding research fora appropriate to field of specialization (ex. Filipino), and lack of budget for international/foreign travels for paper presentations.

The following are the problems encountered along publication: too much teaching load and assignments, lack of interest and experience on how to publish research paper, lack of knowledge on publication process, lack of information on where to publish research, lack of knowledge or awareness on reputable (ISI/Scopus indexed journals, CHED recognized journals) and predatory journals and fly by night publication companies. KIs also mentioned the capability of researchers, patience and technological inclination of faculty as problems along publication.

Other problems include lack of information dissemination on the list of reputable journals, absence of ethical review committee, lack of assistance in editing the paper, anti-plagiarism software is not available, lack of funds for publication, and no institutional journal to publish completed researches.

KIs also revealed that the requirements of publication companies also pose a challenge to the researchers. These include the following: references used (must be published in online journals), timeliness of the research paper, appropriateness of the research to theme of the journal. KIs also disclosed that there are limited reputable/refereed journals that accept papers written in Filipino language. Some publication companies require researches to be presented first in their fora before it be published in their journal, hence, more expenses to be incurred by researchers.

Citation

Along citation, the major problem is that the research papers are not published so they will not be cited in articles published by other researchers in journals. Other problems include the citation index of publications and the quality of published paper. A KI also mentioned that relevance of research to current issues is one of the factors for citation.

Extension

KIs revealed the following problems encountered along extension: overloading of faculty, busy schedule of faculty because of involvement in accreditation, ISO and other tasks and lack of awareness that extensions must be research-based. One of the KIs mentioned that there are limited number of faculty who thinks of the community as their main target/end user. Other KIs are discouraged to extend their completed researches because of the delayed process in the approval of projects and issuance of office orders.

Commercialization

On the part of researchers, KIs revealed the lack of knowledge on commercialization process, lack of technical know-how to write patent draft and the lack of interest to commercialize their outputs as problems encountered along commercialization.

KIs also noted some deficiencies on the part of college administration. These include the following: lack of personnel in RDE office to assist researchers, absence of Technology Transfer Office or Intellectual Property Office that will facilitate patenting or copyrighting of outputs, no committee to evaluate literary works for copyrighting purposes, absence of an institutional/specific policy on IP, and funding or budgetary constraints.

CONCLUSIONS AND RECOMMENDATIONS

Based from the findings of the study, the following are concluded: (1) Majority of the completed researches of SSC from CY 2013 – 2017 are basic researches, (2) In terms of utilization, the completed research projects were sometimes presented in international, national or regional fora; rarely published in CHED recognized journals or international/national refereed publications; rarely cited in articles published by other researchers in refereed international/national journals; rarely extended to the community; and rarely commercialized, (3) There were various problems encountered in the utilization of completed researches.

The following are hereby recommended: (1) Faculty members are encouraged to conduct applied/developmental researches to contribute to the development of community particularly in the Province of Sorsogon and Bicol Region, (2) Utilization of completed researches be improved and strengthened by addressing the problems encountered along dissemination (presentation and publication), citation, extension and commercialization, (3) To address the problems encountered in the utilization of researches, the following measures may be considered:

- (a) Enhance existing policy on foreign travel and allocate more budget for international presentations to encourage more researchers to present papers in international research fora and conferences,
- (b) SSC ORDES may conduct coaching and mentoring to encourage faculty to pursue publication after presentation in In-house review
- (c) Guide the researchers on the publication process by informing or providing them the list of ISI/Scopus indexed journals, CHED recognized and other reputable journals,

- (d) Submit SSC's research journal for journal incentive program of CHED to give faculty researchers an avenue where they can publish their researches in a CHED-recognized and peer-reviewed journal. SSC ORDES may organize the editorial board and the team of peer reviewers for said purpose.
- (e) Regular subscription to anti-plagiarism software shall be conducted to ensure integrity and reliability of research. SSC ORDES must ensure that all institutional researches undergo plagiarism testing,
- (f) Faculty researches must be encouraged to utilize online sources particularly researches from reputable journals so that plagiarism testing will be more effective. Offline sources must be registered to the program's database. These will facilitate higher chance of having research outputs published in reputable journals,
- (g) The College Research Ethics Review Board shall be created and be made fully functional to ensure that all research and extension activities are conducted in accordance to ethical standards and to comply with the requirements of international and reputable journals,
- (h) Implement deloading of faculty with approved researches to give them enough time to conduct quality researches,
- (i) There shall be a fully functional Technology Transfer Office or Intellectual Property Office manned by competent unit head and staff with corresponding budget to assist in the patenting, copyrighting and commercialization purposes, and
- (j) The individual excellence of faculty researchers must be strengthened through increased industry exposure and other relevant commercialization activities.
- (k) Annual research capability workshop shall be conducted to capacitate faculty.

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