



Short Paper

Unveiling Research Publication Trends: The Bicol University Analysis (2010-2021)

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Abstract

Purpose – Publication is considered one of the most influential factors and requirements in a higher education institution's (HEI's) merit and promotion system. Some HEIs struggle in terms of publications in reputable national and international journals. This study aims to analyze the trends of research publications of Bicol University from 2010 to 2021.

Method – The study is a descriptive type of research. The publication articles from 2010 to 2021 or 237 articles were subjected to analysis to determine the research publication productivity. The study used frequency count to determine the distribution and classification of published articles.

Results – The results showed that the university has a considerably low productivity in terms of published papers in national and international-refereed journal publications which served as the basis for institutional improvement and development. However, the



BU (Bicol University) R&D Journal significantly contributed to the attainment of the institution's targets and served as a faculty option for publication.

Conclusion – Bicol University needs to increase the number of publications of faculty members.

Recommendations – Strong support of the top management, sustaining and building strong linkages, partnerships, and collaborations with top HEIs in the country and abroad, publication assistance, subscription to journals and databases, sourcing externally funded research, improvements in the publication incentive system, and the institutionalization of publication training and mentoring programs are recommended.

Research Implications – The findings have significant implications for the university's policies to improve publication performance and provide an environment where senior researchers should lead as prime movers or influencers to cultivate a research and publication culture in the university.

Keywords – Bicol University, faculty, institutional policy, research, publications

INTRODUCTION

A tenured faculty member of an academic institution is expected not only to teach but to conduct research and publish as well. Research and publications are among the foundations of a university and are huge bases for determining its scholastic performance, progress, and university ranking. University research is primarily produced by its faculty members, graduate students, and research centers, and is strictly expected from tenured faculty with professorial positions. Academic archives and special collections, such as faculty research, can play a vital role in the cohesive research agenda in the future (Krause, 2010). Analysis of these archives can provide insight into the focus and highlights of academic practices through the years (temporal), collate generated knowledge, and annotate them to make them useful in the current milieu (spatial). Such has been seen in much undergraduate historical research that provides valuable documentation to understand present socio-cultural issues (Frusciano, 2002). This is similar to many biodiversity, medical, agricultural, and language courses where the turnaround of knowledge is fast-paced.

Research has always been a major consideration in all universities. However, the challenge to fully implement responsive, accessible, and quality research remains. Bicol University has produced a massive number of faculty research spanning various disciplines. The completed research of the university has been recorded since the 1980s, most of which is small, internally funded research. Yet, there is a clear disproportion between completion and publication. Terminal reports remain archived files rather than

being published for public or academic consumption. The study covers 2010 to 2021 due to the availability and presence of physical and online copies of articles retrieved, in the years before 2010 limited information was gathered because of many reasons such as transfer of office, no electronic copy, faculty researchers were already retired or not connected with BU, and others.

Bicol University is mandated to perform the four core functions of an HEI: instruction, research, extension, and production. In 1977, the Bicol University Research and Statistics Center (BURSC) was created to ensure that the university's research function was properly addressed. Its mandates were to initiate, undertake, coordinate, and integrate the university's research efforts about the national and regional development goals. The research and development thrusts of BURSC were focused on the priority commodities and areas set by national and regional research agencies and that of the university. The center also maintained a databank of relevant information supportive of the administration and management of the university.

In 2002, the BURSC was renamed Bicol University Research and Development Center (BURDC), directly emphasizing the university's important role and contribution to regional and national development through leading-edge, innovative, and responsive research. The center's function was research administration and management, while research implementation was lodged in the colleges.

In 2017, the BURDC was elevated to become the Bicol University Office of the Vice President for Research, Development, and Extension (BUOVRDE). Under it are divisions and centers that manage the research and extension outputs of the university. One of the divisions is the Bicol University Publication and Knowledge Management Division (BUPKMD), which is tasked to manage and database the publications of faculty members in the university.

To maintain its Philippine Association of State Universities and Colleges (PASUC) leveling, every year, the university sets targets, which are then cascaded to its units. Bicol University faculty members with ranks of at least associate professors are mandated to conduct research and extension. The study will assess the publication productivity from 2010 to 2021 which is essential in maintaining academic standards and contributing to knowledge management as a basis for institutional improvement and development. Additionally, the study will help in identifying possible strategies to improve the research activities.

LITERATURE REVIEW

The bibliometric method or “analysis” is a scientific methodology that establishes an integral part of the process of research evaluation. This method is used and has gained popularity in the way institutions and universities are ranked worldwide (Ellegaard & Wallin, 2015). Bibliometric analysis can also be used as an approach to understand and

analyze global research trends, identify research gaps and popular concepts, and assess the overall quality of research in a particular field with the input of academic publications published in national and international journals (Alsharif et al., 2020). One advantage of bibliometric analysis is that it can provide insights into research productivity, impact, and collaboration, which can be used to improve institutional policies and recommend future developments. Bibliometric analysis has a key contribution to the field of Knowledge Management (KM), where it can provide insights into research productivity and the impact on specific research in the field.

Knowledge management has grown over the years, and its importance has become multidimensional. It was able to provide the necessary tools in thrusting economic success by harnessing the information and knowledge assets of a specific community that eventually facilitated the success of local businesses (Jarboe & Alliance, 2001). In education, it was proven to enhance innovation of teaching and learning activities (Supermane & Tahir, 2017); it offered options on innovative measures for beneficial education systems along with enhanced qualitative assurance for higher education, such as academic policies and procedures (Zaki & Zubairi, 2012); as well as manifested an avenue for identifying experts within an institution and leadership's innovation among others (Nair & Munusami, 2019).

Part of KM is being able to database generated data. A **database is a** systematic collection of structured information composed of multiple tables (with fields and records) stored electronically and usually controlled by a Database Management System (DBMS). As data grows, suitable types of SQL and data archiving become more important. Information is no longer active but remains of importance or needs to be retained for future reference and stored in a physical storage device for long-term retention—the process is called archiving. The importance of archiving is that the user has control of the information, prevents data loss, and increases security (Secure Data Management, 2015). Policy-driven, efficient data movement, search to restore, insights and learning, internal data protection, and the ability to manage access are some of the insights presented for effective data archiving (Smith, 2018).

Educational institutions have already discovered the significance of electronic recording and archiving journals. Some have embraced open-access publication to widely disseminate the information. For example, the Directory of Open Access Journals (DOAJ) is a community of online directories that index high-quality, open-access, peer-reviewed journals. All data are free of charge and contain all areas of science, technology, medicine, social science, and humanities (DOAJ, 2020).

The University of Cambridge Press offers more than 272 open-access journals and 69 open-access books (University Cambridge Press, 2020). Even online libraries offer free journals and literature. The Penn Libraries and the University of Wyoming have a diversity of published literature along with publisher-controlled journals focusing on health

sciences, government, populations, and general databases (Penn Libraries, 2011; Libraries, 2020).

In the Philippines, the Department of Information and Communications Technology (DICT) developed the Agency Records Inventory System (AgRIS) and the Archives and Records Management Inventory System (ARMIS) for all government agencies (national or local), constitutional offices, government-owned and controlled corporations (GOCCs), government financial institutions (GFIs), and state universities. The purpose of the system is to database and properly maintain and preserve documents/records. The AgRIS is a web-based system that databanks government agencies' records and automates the submission of inventory records to the National Archive of the Philippines (NAP). The ARMIS is a cloud-based system with four key features: Document Tracking System, Records Management System, Archives Management System, and Security Management (DICT & NAP joint circular, 2016).

The Sorsogon State College developed a web-based record archiving and document repository system to connect satellite campuses geographically located in four municipalities of Sorsogon Province through a virtual private network. As a security feature of the system, the user credentials were validated using the 1024-bit Rivest-Shamir-Adleman (RSA) and Advance Encryption System (AES) encryption algorithm (Gamba et al., 2014).

The traditional archiving practices were redefined and influenced by the introduction of digital transformation (Reinsel et al., 2018). The shift towards digitization and online access shows encouragement and acceptance from different academic stakeholders. And, academic institutions underscored the connections between the owners, publishers, and librarians to develop effective schemes for data preservation (Smith, 2008). Data archiving plays an important role in maintaining any form of materials like student records, university publications, reports, theses, and dissertations (Kenney, 2010).

Digital transformation or digital preservation refers to steps that ensure that electronic documents either born digital, online (CD, diskette, or physical storage devices), or a product of analog-digital conversions have a longevity period, and when retrieved same content will be produced the way it was saved. A digital version of archive records and manuscripts such as collections of college publications, letters, and photographs of member institutions are collected and digitized (Versoza, 2005).

Completed but unpublished data becomes part of an institution's database. There is growing support that unpublished data are also crucial drivers of policy formation. The most basic difference between published and unpublished research is that published research is more likely to contain statistically significant results. Effect size estimates of published research are about one-third larger than those of unpublished studies. Unfunded and small sample studies are less likely to be published. Yet, importantly,

methodological rigor does not differ between published and grey literature (Conn et al., 2003). This may be very true, especially when funding agencies require researchers to report findings that can be beneficial towards the advancement of a motive, personal or not.

A survey of literature analysis is a technique used to define the current state of knowledge and identify the gaps that have not been fully explored. It defines a procedure to obtain answers to specific questions. Thus, this study applies survey of literature techniques to analyze the publication productivity performance of the institutions to aid managers in decision-making and strategic directions.

METHODOLOGY

The study is a descriptive type of research. A total of two hundred thirty-seven (237) published papers from 2010 to 2021 were subjected to analysis. Published articles are retrieved and recorded manually (Table 1). Access to online repositories (Google Scholar, Researchgate, and BU journal portal) and journals were explored to widen the retrieval coverage of the articles together with the request for the list of articles from faculty identified (in the database) with publications.

Table 1. Distribution of published articles by college/unit, 2010-2021

College/Unit	2010	2011	2013	2015	2016	2017	2018	2019	2020	2021	Total
BUCS				1	7	1	9	9	17	4	48
BUTC	3		2	9	10	6	6	5	3	2	46
BUCE	1			5	4	2	3	3	2	6	26
OVRDE	3	1	1		2				11	7	25
BUCN				5		3	4	3	1	2	18
BUCSSP				1	1	2	1	6	3	3	17
BUCAL				4	3	1	3	1	1		13
BUPC					5				7		12
BUCBEM					3	7					10
BUCIT				2		1		2	1		6
BUCENG	2						1	3			6
BUCAF							1	2	1		4
BUJMRIGD							1				1
BUGC										1	1
BUCM							1				1
BUOU								1			1
Total	9	1	3	29	35	23	30	35	47	25	237

A thorough evaluation of the articles was performed to identify and extract the keywords, terms, and other parameters (i.e. title of the paper, journal name, classification/type of journal, publisher, and college/unit) used in the classification process.

No duplications of the articles are observed. The study used frequency count and classification procedure of published articles through the Excel Pivot Table feature.

RESULTS

The publication trend of the University from 2010 to 2021 varies per year (see Figure 1). These publications are either regional, national, or international in scope. The highest publication trend was recorded in 2020. This was the year when publications of faculty members arising from graduate studies were included in the university database.

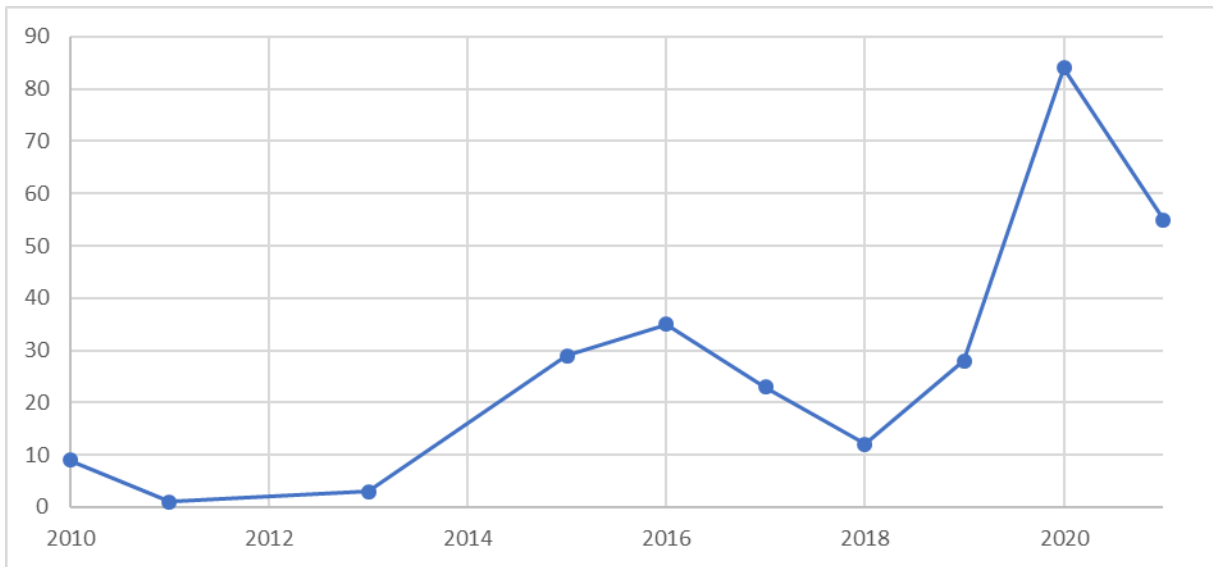


Figure 1. Publication trend from 2010 to 2021

Figure 2 shows the distribution of publications published in BU R&D Journal and other journals. A total of eighty-one (81) papers were published in BU R&D Journal and one-hundred fifty-six (156) in other journals. The journals are classified as regional, national, or international publications.

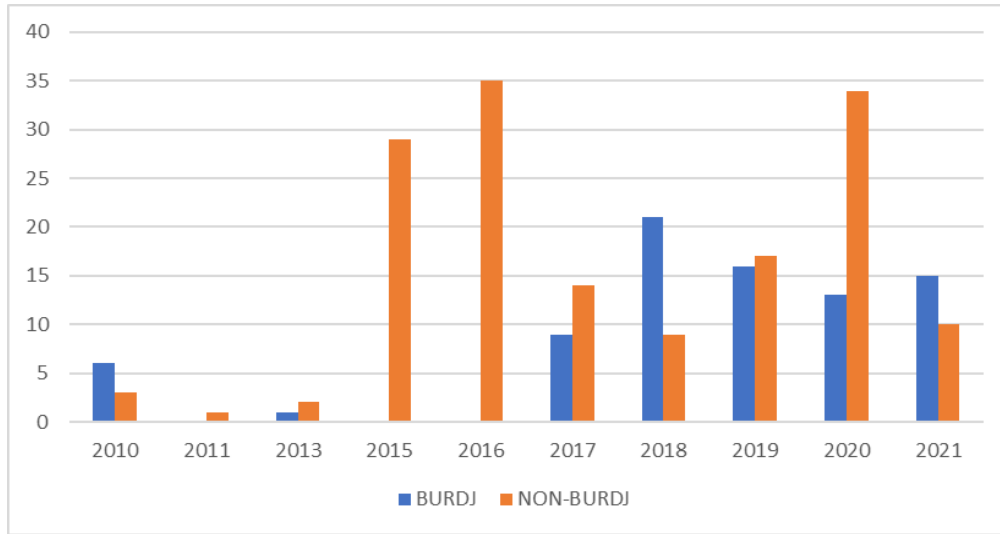


Figure 2. Distribution of BURDJ and non-BURDJ publications per year, 2010-2021

Figure 3 shows the number of articles published per year by type of journal. Regional journals are those whose scope is primarily the Bicol Region. National journals have a nationwide scope. They include publications that are recognized under CHED’s Journal Incubation Program (JIP), including the BURDJ. International journals are articles with global visibility and indexed with high reputability, such as Scopus, Web of Science (WoS), and ASEAN Citation Index (ACI).

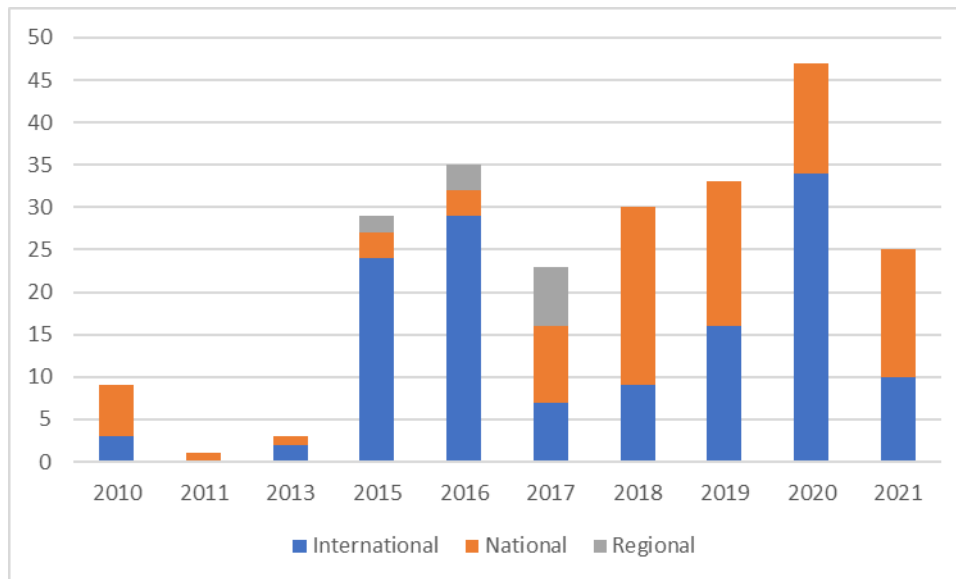


Figure 3. Publication Type, 2010- 2021

Publication of articles in an international refereed journal means global visibility of the researcher’s unique work. A total of twelve (12) articles were published in AACL Bioflux and 10 in Kuroshio Science (see Figure 4). Other journals with an international presence include the Journal of Business Economics and Management, IEEE, Asian

Intellect of Academics, and others. These journals are refereed and are indexed on Scopus and WoS.

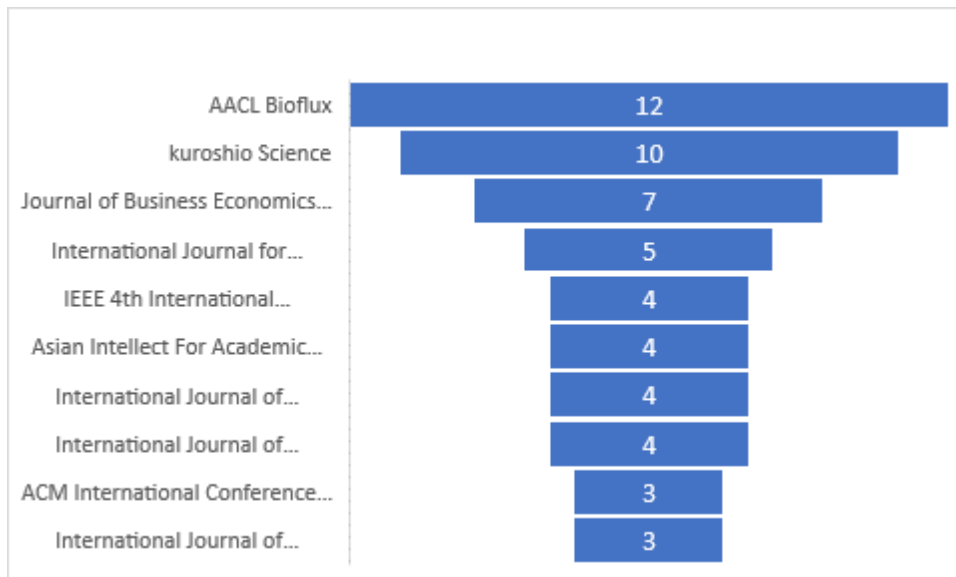


Figure 4. Top 10 International Journals, 2010-2021

Figure 5 shows the distribution of faculty publications per college/unit, which served as the performance of the college/unit. As shown, the Bicol University College of Science (BUCS) gained the highest number of publications. The campus contributed 21.88% of the articles published in national and international refereed journals. In 2020, BUCS noted an uptick in the number of publications as many faculty members published papers coming from their graduate studies. The BU Tabaco Campus (BUTC) and BU College of Education (BUCE) had 46 and 26 published articles, respectively. The BU Office of the Vice President for Research, Development, and Extension (BUOVRDE) contributed 13.13% of the published articles.

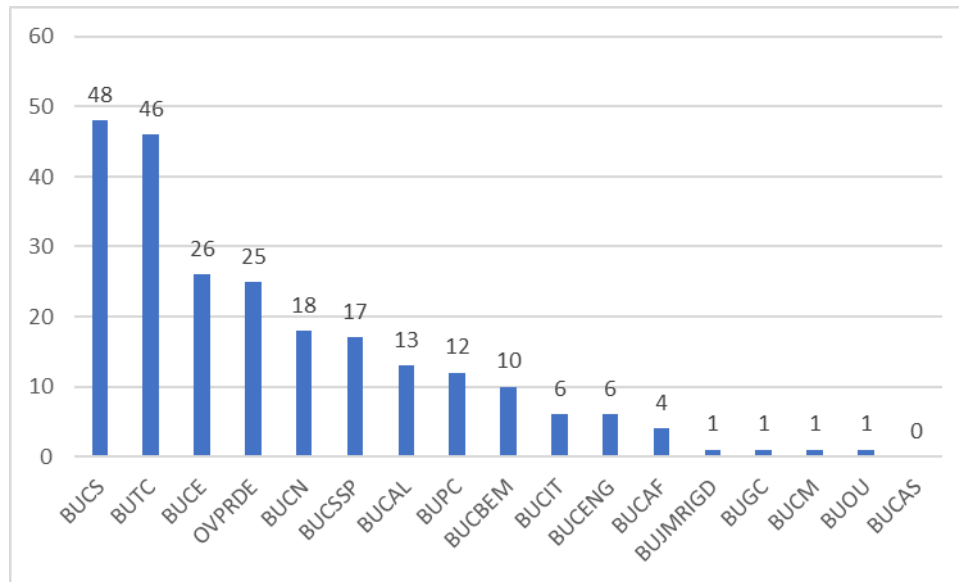


Figure 5. Distribution of Faculty Publication per College/Unit, 2010-2021

DISCUSSION

Higher Education Institutions (HEIs) have the mandate to contribute to knowledge generation and technology development through research to address the varied societal challenges to improve the quality of life of the people (Bicol University Board of Regents Resolution No. 457, 2019). Research institutions strongly advocate for publishing completed research to attain the mandated institutional outcomes. This is why they are widely recognized for their excellence in research, which makes them take the most renowned positions in the different worldwide university leagues (Lancho-Barrantes & Cantu-Ortiz, 2021).

For years, Bicol University has produced several research and publications across different fields and disciplines. However, publication rates have remained generally low for the past eleven (11) years. These were seen from the manuscripts retrieved and documents gathered from different archives, recorded and stored office files, and article searching via the internet.

The publication rate may be low because not all researchers publish their research outputs. Perhaps faculty members do not want to get out of their comfort zone, which is teaching. It is also possible that they do not have the self-confidence to publish. According to Wa-Mbaleka (2015), the most challenging factors preventing faculty from publishing or not publishing include the issue of having limited time, lack of training on publication, fear of rejection, lack of interest, faculty laziness, limited funds, and lack of institutional support.

The university has a research journal called the *Bicol University Research and Development Journal* (BURDJ), which is recognized by the Commission on Higher Education (CHED) through its Journal Incentive Program (JIP) (CHED Memorandum Order No. 50, series of 2017). The BURDJ is a multidisciplinary journal that aims to stimulate the interest of BU faculty members in research and development. Figure 2 shows the number of studies published in the BURDJ vis-à-vis those published in non-BURDJ journals.

In the early years, the BU R&D Journal was once the interest of faculty for publications. However, through the years, because of collaboration, training, and attendance at conferences, faculty started publishing in other journals. This may be because of changes in the academic landscape, which increasingly favored professors with a high citation rate. Publishing in international journals, especially those indexed in highly reputable indices, provides more visibility and access, thereby increasing the chances of citation. The international publication is recognized by faculty as vital not only to their careers but to the standing of the institution where they belong as well (Baldwin & Chandler, 2002).

In terms of publication by type of journal (see Figure 3), there were more publications in national than international journals. This may be because international journals are more selective and have a lower acceptance rate. It is also possible that the studies were location-specific and may not appeal to an international audience. In addition, the article publishing charges (APC) in open-access international journals are high. In contrast, many open-access national journals have no APC because they are funded by universities.

A total of 140 out of 320 (or 43.75%) publications appeared in international journals, with 129 articles published from 2015 to 2021. This sudden increase in recent years may be attributed to CHED's push for HEIs to conduct and produce research outputs. It also mandates state universities and colleges (SUCs) to contribute to nation-building by providing highly specialized educational experiences and emphasizing the development of new knowledge and skills through research and development. The focus on the development of new knowledge is articulated through an emphasis on bachelor's, master's, and doctoral degree programs (CHED Memorandum Order No. 46, series of 2012). In addition, CHED 2019 Guidelines for Granting Autonomous Status to Private Higher Education Institutions expressed that: At least 50 full-time faculty members or at least 30% of full-time faculty, whichever is higher, must have actively engaged in research or creative work in the last five years and at least 10% full-time faculty has patents or publications in refereed journals. Of these, at least 5% of full-time faculty has publications in internationally indexed journals and/or books published in reputable academic presses in the last five (5) years (Quitoras & Abuso, 2021).

For the choice of journals for publication, faculty preference depends on the reputability factors of the journals. Reputable journals are defined in the PASUC No. 52 series of 2019 as those indexed in the Institute of Scientific Information (ISI), now called

the Web of Science, and Scopus, or are CHED-recognized. Other journals considered reputable are those indexed in Science Citation Index Expanded (SCIE), Social Sciences Citation Index (SSCI), Medline (National Library of Medicine), Emerging Sources Citation Index (ESCI), Arts & Humanities Citation Index (AHCI), PubMed, and ASEAN Citation Index (ACI). Journals not listed in the said indexing services are considered reputable only if they meet strict criteria on the publisher's reputation, peer-review process, editorial board, editorial policy, and frequency of publication.

The BURDJ was the most preferred journal of Bicol University faculty researchers. A total of 159 articles, or 49.68%, contributed to the overall publication performance. In 2017, CHED awarded incentives to nine HEIs and scholarly organizations through the CHED JIP to promote and enhance the production of high-quality academic journals in the country. Bicol University's BURDJ was one of those awarded.

In terms of preference for international journal publication, faculty researchers are expanding linkages with foreign and local counterparts. These linkages and collaborations showed improvements in the research and publication performance they have networks and expertise. In many instances, faculty researchers have enjoyed the sponsorship given by their partners in the form of covering the registration to conferences, APC charges, sharing the incentives that they received (i.e., \$200 per article), and even covering round-trip tickets and full hotel accommodation. And, with the latest DBM-CHED Joint Circular No. 3 on the reclassification of faculty in SUCs, faculty are now more aware and selective in choosing journals. That is, the articles must be published in a journal listed in the database of international indexing bodies such as the ASEAN Citation Index, Scopus (by Elsevier), and Web of Science (by Clarivate Analytics). This implies, that researchers are now careful and assistance-oriented in taking the steps to publish the research output with the influenced mind-setting of the guidelines of the DBM-CHED guidelines.

In Figure 5, the distribution of publications per college/unit is presented. This reflects the contribution of the college/unit to the attainment of the institutional targets. The publications are the research output of faculty with completed research undertakings. The BUCS and BUTC have the most number of publications with 48 and 46 articles, respectively. The BUCS was established on September 10, 2004, under BOR Resolution 75, series of 2004. The college was formed to pool the facilities and manpower skills for the development of higher learning and research in basic and applied sciences and mathematics. The BS Biology BUCAS, BS Chemistry of BU-RSTC, and BS Computer Science of Computer Science Institute constituted the established BUCS. In 2015, Dr. Lucy P. Estioko published an article titled "*Differences in response to flooding by germinating seeds of two contrasting rice cultivars and two species of economically important grass weeds*" in the Journal for Plant Sciences. After this, the college continuously produced several publications in the areas of biology, chemistry, and technology. In 2020, the college produced several graduate studies publications. This happened because a lot of CHED,

DOST, and BU-HRDP scholars have produced publications as part of their subject and program requirements.

The BU Tabaco Campus (formerly BU College of Fisheries) gained the second-highest number of publications (based on gathered information). The campus contributed 19.4% of articles published in national and international refereed journals. Considering the number of faculty members on the campus, fourteen (14) researchers are active and with publications. The BU College of Education (BUCE) contributed 11.0% to the attainment of the publication targets.

Combining the publications of RSC, RDC, and OVRDE (they are all the same offices only that it was renamed or restructured due to changes in policy and requirements) the office contributed 10.5% of published articles. To date, the structures of OVRDE have four divisions (RDMD, PKMD, IPMD, & EMD) and six centers (CPSD, CTE, RCFSQA, CTCED, BRFICC, and RCSMED) aimed to undertake research undertakings, intellectual property (IP) registration, publication, extension activities, and support to provide technical assistance along education, food quality analysis, policy, innovation, and commercialization. There are seasoned and new researchers who have publications. Among the senior researchers are *Victor S. Soliman, Ronnel R. Dioneda Sr., Angelo Candelaria, Rebecca Rosario O. Bercasio, Carlos V. Cortez Jr., Fay M. Lauraya, and Antonia Lea R. Sala*. The new breed of researchers with publications are with the ranks of Instructors and Assistant Professors (by this time of writing). Some of the names that capture attention in publishing their outputs are *Elizabeth Alfane, Gremil Alessandro A. Naz, Cherryln P. Labayo, Emmanuel M. Preña, Benedicto B. Balilo Jr., Edgardo L. Besmonte, Janet I. Triunfante, Joan B. Sionicio, Al B. Besmonte, and Ma. Elma L. Mirandilla*.

CONCLUSION, RECOMMENDATIONS, AND IMPLICATIONS

Bicol University considers research publications as one of its priorities. Having the BURDJ provides an avenue for academic personnel to publish their papers, which contributes to the achievement of institutional targets. Attendance at conferences, membership in professional organizations, and graduate studies have a big impact on faculty publication activities. Faculty members managed to submit their papers to reputable journals in the Web of Science and Scopus, or those recognized by CHED. Journals may be considered reputable only if they meet the following criteria: publisher's reputation, peer-review process, editorial board, editorial policy, and frequency of publication.

Based on the integration of bibliometric analysis and social impact metrics, it is hypothesized that the research productivity of the higher education institutions in the Bicol Region will exhibit a positive trend from 2010 to 2021. The analysis is expected to reveal an increase in the number of publications, citations, and journal impact factor scores, indicating a growth in research output and impact. Furthermore, the study

anticipates identifying key research areas of strength and expertise within the institution, contributing to a deeper understanding of its academic contributions. Overall, the research outcome is predicted to demonstrate a significant advancement in the institution's publication trends and research productivity landscape, paving the way for strategic improvements and institutional development.

These findings have significant implications for the university's policies to improve publication performance and provide an environment where senior researchers should lead as prime movers or influencers to cultivate a research and publication culture in the university. These policies need to include the strong support of the top management, sustaining and building strong linkages, partnerships, and collaborations with top HEIs in the country and abroad, publication assistance, subscription to journals and databases, sourcing externally funded research, improvements in the publication incentive system, and the institutionalization of publication training and mentoring programs.

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Authors' Biography



A Doctor in Information Technology graduate at the Technological Institute of the Philippines, Quezon City (TIP-QC) last March 28, 2018. He was a CHED scholar under the CHED FDP-II program. A graduate of the Master in Information Technology (MIT) program from the University of the Cordilleras in 2015 as a CHED FDP-II Scholar, earned a Master's degree program in Business Administration (MBA) at Aquinas University of Legazpi in 2012 and a Bachelor of Science in Computer Science at DCC in 1994. He also earned units in Master in Information Systems (MIS) at UPOU-LB and a Bachelor of Laws (LLb) at Aquinas University of Legazpi.

He is the Dean of the BU Open University, Director of the Publication and Knowledge Management Division (PKMD) under the Office of the Vice President for Research, Development, and Extension (OVRDE), and ETEEAP Coordinator of the University. A Professor II of the College of Science, Bicol University, Legazpi City. The internal vice president of the Philippine Society of IT Educators (PSITE) Region V, a former Municipal Councilor (9 years), and a Consultant of Sto. Domingo, Albay from 2010-2013. A member of various professional organizations such as PSITE, PeLS, Philippine Cyber Professional, National Research Council of the Philippines (NRCP), and PAEDA. His interest is in the fields of Information/Cyber Security, Information Technology, and Emerging Trends.



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Dr. Naz finished his Doctor of Communication degree at the University of the Philippines Open University as a CHED dissertation grant awardee. He completed his master's degree in Development Communication as class valedictorian from the same university. He has another master's degree in Media, Culture, and Communication from New York University, where he was a full scholar of the Ford Foundation. He finished his bachelor's degree in Journalism, cum laude, from UP Diliman.